



**Maternal, Infant and Young Children Nutrition  
Knowledge Attitude and Practices  
Baseline Survey  
for  
Marsabit County**

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## **ABBREVIATIONS**

ANC	Ante natal Care
CHVs	Community Health Volunteers
CHEWs	Community Health Extension Workers
CI	Confidence Intervals
CSB	Corn Soya Blend
EBF	Exclusive breastfeeding
ENA	Emergency Nutrition Assessment
FGD	Focus Group Discussion
FH	Food for the Hungry
GAM	Global Acute Malnutrition
IFAS	Iron and Folic Acid Supplements
IQR	Interquartile Range
IYCF	Infant and Young Child Feeding
KAP	Knowledge Attitudes and Practices
KDHS	Kenya Demographic and Health Survey
KII	Key informant Interviews
MAM	Moderate Acute Malnutrition
MDD-W	Minimum Dietary Diversity for women
MIYCN	Maternal Infant and Young Child Nutrition
MNPs	Micronutrients Powders
MOH	Ministry of Health
MUAC	Mid-Upper Arm Circumference
ODK	Open Data Kit
NITWG	Nutrition Information Technical working Group
PLW	Pregnant and Lactating Women
SAM	Severe Acute Malnutrition
SE	Standard Error
SCHMT	Sub-county Health Management Team
SCNO	Sub-county Nutrition Officer
SMART	Standardized Measurement of Relief and Transition
TBA	Traditional Birth Attendant
UNICEF	United Nation Children Fund
WHO	World Health Organization
WRA	Women of reproductive age

## **Executive Summary**

### **Introduction**

Maternal, infant and young child nutrition (MIYCN) is critical for child health and survival. The maternal nutrition is critical to both the mother and child because it determines the success of pregnancy outcome and lactation while infant and young child feeding practices have been known to directly affect the nutritional status of children and, ultimately, impacting on child survival. A cross-sectional survey on MIYCN Knowledge, Attitude and Practices was conducted by Food for the Hungry – Kenya, in collaboration with the County Government of Marsabit and other implementing and donor partners in all the four sub-counties of Marsabit County: Laisamis, Saku, Moyale and North Horr. The aim of the survey was to provide baseline data on MIYCN indicators and establish related factors contributing to the existing status of care practices in the county. The target population were primary caregivers of children aged between 0 and 23 months (both men and women), community health workers, facility health workers, community leaders, grandmothers and religious leaders as well as implementing partners.

A two-stage stratified cluster sampling was used to achieve the desired representative sample size for quantitative data collection. In each stratum, stage 1 involved selection of clusters/villages based on probability proportional to size. In stage two, households were selected through simple random sampling. For qualitative data collection, key informants were purposively sampled while the focus group discussions were conducted in randomly sampled clusters from a list of 120 clusters sampled for the quantitative survey. The sample size was based on the Infant and Young Child Feeding (IYCF) Survey calculator proposed by the step-by-step IYCF Survey guide as recommended by the Ministry of Health's Nutrition Information Technical Information Working Group (NITWG). The survey methodology and findings were validated by the NITWG.

### **Summary of Key findings**

#### *Study population*

A total of 2230 women of reproductive age and 2102 children (0-23 months old) participated in the survey. These were weighted, based on the sub-county population sizes. Hence, 2231 women and 2096 children were included in analysis and reporting of the survey findings. The mean age for the women was 26.1(± Standard Error, 0.13) years while for the children it was 11.4 (± Standard Error, 0.15) months.

### *Breastfeeding practices*

Almost all the children from Marsabit County had been breastfed (99.1%). However, only 92.9% of the women had knowledge on early initiation of breastfeeding and 95.2% had initiated breastfeeding within the recommended period of one hour after birth, within 5.97 ( $\pm$ SE 0.28) minutes. More than 90% of the children from all sub-counties had been initiated to breastfeeding within the first one hour of birth. The children who were reported to have received pre-lacteal feeds were 14.7%. This may not however reflect the actual practice of pre-lacteal feeding based on qualitative findings of cultural practices of giving the child animal milk or water before initiating breastfeeding. Almost all mothers from the county however fed their children on colostrum (97.7%) due to their positive attitude (97.7%) towards feeding children on colostrum and the knowledge (95.5%) that most of them had on the benefits of colostrum.

Exclusive breastfeeding rate was high, 75.7% in Marsabit County. This could be due to two reasons. First, the assessment of exclusivity involved only those children who had received breast milk during the previous day according to WHO's current definition of exclusive breastfeeding as opposed to asking about "children who had received only breast milk from birth to six months". Second, the positive beliefs and attitude (79.3%) among caregivers and community members could have favored exclusive breastfeeding for the first six months. In North Horr County, however, only 68.9% of the caregivers believed that children can exclusively breastfeed for 6 months after birth and only 67.3% had exclusively breastfed their children. Continued breastfeeding in Marsabit County at 1 year (12-15 months) and 2 years (20-23) months) was reported by 93.4% and 69.0% of caregivers respectively. The main barriers to sustaining continued breastfeeding at one year and two years were found to be maternal workload, close birth spacing and poor maternal health. Knowledge on the benefits of breastfeeding and religious teachings were major boosters of continued breastfeeding. Bottle-feeding was reported by 13.9% of the caregivers who preferred it due to convenience in feeding. Only 14.8% of caregivers had knowledge on bottle-feeding.

### *Complementary feeding practices*

The caregivers who had knowledge on introduction of solid, semi-solid or soft foods were 49.6% while those who gave their children (6-8 months) solid and semi-solid foods the previous day were only 44.3%. Dietary diversity among children was poor, with only 15.5% of all the children, 6-23 months old, reported to have achieved the minimum dietary diversity of consuming at least four out of the 7 recommended food groups that ensures adequate nutrient intake. Among the breastfed children (6-23 months), only 15.3% achieved the minimum diversity while among the non-breastfed



children (6-23 months), 46.7% of them achieved their minimum dietary diversity. The minimum meal frequency of consuming at least two meals per day among all children 6 -23 months was achieved by only 48.5% of the children in the county, with majority being from Saku Sub-county (57.0%) and the least from Laisamis Sub-county (41.4%). The consumption of iron-rich or iron fortified foods as well as micronutrient powders among children 6-23 months was equally poor. Less than 20% of the children reported to have received micronutrient powders throughout the county and sub-counties. The main barriers to appropriate complementary feeding were food insecurity due to prolonged drought which contributes to limited availability of varieties of food in the community and poverty that limits households' ability to purchase food. Availability of relief food, support from older women, grandmothers and fathers as well as health talks provided at the health facilities however enabled caregivers to feed their children on some basic meal.

#### *Prevalence of malnutrition in Children*

The prevalence of global acute malnutrition (GAM) (MUAC less than 125 mm) in children was 6.9 % (95% C.I: 5.8 - 8.3) while that of moderate acute malnutrition (MUAC less than 125 mm and more than or equal 115 mm) was 5.0 % (95% C.I: 4.1 - 6.2) and severe acute malnutrition (MUAC less than 115 mm and/or oedema) was 1.9 % (95% C.I: 1.3 - 2.7).

#### *Health seeking behaviors*

Although 87.8% of the women in Marsabit County reported to have attended the antenatal care during their last pregnancy, only 27.5% of them attended ANC during first trimester and 39.3% of them attended the recommended four or more visits during their pregnancy period. The ANC attendance was notably better in Moyale (96.3%) and Saku (99.4%) than in Laisamis (84.4%) and North Horr (74.4%). Although 52.0% of the lactating women received combined iron and folic acid supplements (IFAS) in their previous pregnancy, only 2.3% of them consumed the IFAS for at least 90 days. Only 44.4% of the women in the county delivered under the care of a skilled birth attendant at a health facility, mainly from Saku (91.6%) and Moyale (65.2%). This survey also found that only 33.7% of the women sought post-natal care at health facilities within 24 hours after delivery.

#### *Maternal nutrition, dietary Diversity for women*

The malnutrition prevalence among the women (MUAC less than 21.0 cm) was 8.1% and those who were at risk of developing malnutrition (MUAC 21.0 - 22.9 cm) were 21.6%. Most of the women who were at risk of malnutrition were from North Horr (30.1%) and Laisamis (29.6%). The poor nutrition status of the women was reflected in their food intakes where only 36.9% of the women achieved a

minimum dietary diversity of consuming at least five recommended food groups that met their nutrient needs. The women in Moyale, and Saku sub-counties achieved just the minimum score of median, 5 (IQR=2) and 5(IQR=3) of the MDD-W respectively while in North Horr and Laisamis the median MDD-W scores were about 3 (IQR=2) in both sub-counties respectively.

**Summary tables for status of Key MIYCN KAP Baseline indicators**

Table 1: Summary of study population in quantitative survey

Sub-county	Normalized Weight*	Women (aged 15-49 years)		Children (aged 0-23 months)	
		Un-weighted (n)	Weighted (n)	Un-weighted (n)	Weighted (n)
Laisamis	0.865	563	487	564	488
Moyale	1.408	542	763	489	689
North Horr	1.010	566	572	544	549
Saku	0.732	559	409	505	370
Marsabit County	1.004	2230	2231	2102	2096
Mean Age		26.1± SE=0.13 years		11.4 ± SE=0.15 months	

\* Normalized weights, based on population sizes and sampled households per sub-county were applied to account for differences in population sizes and ensure generalization of study findings to Marsabit County

Table 2: Summary Findings of key MIYCN KAP Baseline indicators

INDICATOR	Percent (%) reported by Sub-county				Marsabit County (%)
	Laisamis	Moyale	North Horr	Saku	
<b>Early initiation of breastfeeding</b>					
Children ever breastfed	99.8	98.0	99.6	99.7	99.1
Early initiation (Immediately, 0 - 1 hour)	93.9	93.9	96.6	97.0	95.2
Knowledge on early initiation	97.5	93.6	96.9	96.5	95.9
Attitude on early initiation	90.1	93.2	92.7	96.5	92.9
<b>Feeding children on colostrum</b>					
Children fed on colostrum	98.6	96.4	97.4	99.2	97.7
Knowledge on early initiation	97.5	93.6	96.9	96.5	95.9
Attitude on early initiation	98.8	96.5	97.4	99.7	97.7
<b>Introduction of pre-lacteal feeds</b>					
Children given pre-lacteals (within the first 3 days after birth)	4.1	11.0	28.0	16.0	14.7
Knowledge on pre-lacteal feeding (caregivers who knew that a baby should be given something to drink other than breast milk 3 days after delivery)	4.5	8.6	25.3	6.2	11.6
<b>Exclusive breastfeeding (0 to 5 months)</b>					
Children 0 to 5 months exclusively breastfed the previous day	76.0	79.1	67.3	80.0	75.7
Attitude on exclusive breastfeeding	81.6	78.8	68.9	93	79.3
<b>Continued breastfeeding at 1 year and 2 years</b>					
Continued breastfeeding at 1 year (12 to 15 months)	90.8	89.0	99.1	95.8	93.4

Continued breastfeeding at 2 years (20 to 23 months)	75.0	42.6	91.3	76.9	69.0	
<b>Barriers and boosters of Breastfeeding initiation, colostrum, pre-lacteals, exclusive breastfeeding and continued breastfeeding</b>						
Barriers to early initiation	Home deliveries	√			√	√
	Perceptions “no milk”	√	√	√	√	√
	Cultural practices (birth-related rituals)	√	√	√	√	√
	Religion		√			
	Maternal Health		√		√	√
Barriers to colostrum	Perception: “Dirty for the baby”		√	√		
Boosters to colostrum	Knowledge on health benefits to the baby	√	√	√	√	√
Booster of pre-lacteal	Perception: breast milk is “not enough”	√	√	√	√	√
	Culture “animal milk must be given”	√	√	√	√	√
Barriers of Exclusive breastfeeding	Cultural beliefs and practices	√	√	√		
	Perceptions “breast milk not enough”		√	√	√	√
Boosters of Exclusive breastfeeding	Knowledge on benefits of EBF	√				
	Positive perceptions			√	√	√
Barriers of continued breastfeeding at 1 year & 2 years	Poor health or death of a mother	√	√	√	√	√
	Maternal workload					
	Close birth spacing	√	√	√	√	√
Boosters of continued breastfeeding at 1 year & 2 years	knowledge on the benefits of breastfeeding	√	√	√	√	√
	Religion			√		√
<b>Bottle feeding (0 to 23 months)</b>						
Children bottle-fed	2.0	18.8	8.8	27.1	13.9	
Knowledge on bottle feeding	6.5	18.2	11.7	25.9	14.8	
<b>Introduction of solid, semi-solid and soft foods (6 to 8 months)</b>						
Children 6 to 8 months introduced to solid, semi-solid and soft foods	42.6	38	46.8	50.9	44.3	
Knowledge on introduction of solid and semi-solid foods	33.9	55.7	53.2	54.7	49.6	
<b>Responsive feeding (6 to 23 months)</b>						
Children encouraged to eat	55.7	54.5	63.9	68.3	59.7	
Children completed food offered with encouragement	64.7	54.5	63.0	73.8	63.1	
<b>Feeding during illness (0 to 23 months)</b>						
Children fed less breast milk than normal	75.4	60.4	79.2	54.9	67.9	

during illness						
Children fed less food than normal during illness	71.7	57.2	78.9	66.6	67.9	
<b>MIYCN Support (Information, education and communication materials)</b>						
Caregivers received MIYCN information on child feeding (children 0 to 23 months)	40.2	54.0	50.7	62.7	51.5	
Main source of MIYCN information: Mother/mother-in-law	29.6	16.7	49.6	39.7	32.6	
Main source of MIYCN information is Health worker	32.2	33.9	27.7	35.8	32.4	
Women who had information on IFAS	56.6	74.7	62.8	88.6	70.3	
<b>Child Dietary Intake</b>						
Minimum Dietary Diversity (All Children 6 to 23 months)	5.3	21.0	4.8	34.9	15.5	
Minimum Dietary Diversity (Breastfed children 6 to 23 months)	5.3	20.4	4.8	34.8	15.3	
Minimum Meal Frequency All children (6-23 months)	41.4	48.0	49.3	57.0	48.5	
Minimum Acceptable Diet (All children 6 to 23 months)	5.4	21.0	4.8	34.8	15.6	
Consumption of iron-rich/iron fortified foods	16.5	7.6	30.9	32.7	20.2	
<b>Micronutrient Supplements (Children 6 to 23 months)</b>						
Children who consumed food with micronutrient powders added	3.1	2.8	13.0	16.2	8.0	
<b>Prevalence of malnutrition in Children 6-23 months (MUAC %(95% C.I.))</b>						
Prevalence of Global Acute malnutrition (MUAC less than 125 mm)	5.0 (3.3 - 7.5)	7.6 (5.3 - 10.8)	7.3 (5.2 - 10.2)	7.9 (5.6 - 11.0)	6.9 (5.8 - 8.3)	
Prevalence of moderate acute malnutrition (MUAC less than 125 mm and at least 115 mm)	2.8 (1.6 - 4.9)	5.7 (3.8 - 8.6)	5.4 (3.7 - 8.0)	6.3 (4.3 - 9.2)	5.0 (4.1 - 6.2)	
Prevalence of severe acute malnutrition (MUAC less than 115 mm)	(2.1 (1.1 - 4.0)	1.9 (0.9 - 3.9)	1.9 (1.0 - 3.7)	1.5 (0.7 - 3.3)	1.9 (1.3 - 2.7)	
<b>Barriers and boosters of complementary feeding practices and Child nutrition status</b>						
Barriers	Food insecurity	√		√	√	√
	Poverty	√	√	√	√	√
	Limited food variety	√	√			√
	Food taboos	√			√	√
	Lack of knowledge on child feeding			√		
	Dysfunctional health centers due to nurses strike	√			√	
Boosters	Relief food available		√		√	√
	Corn Soya Blend for children	√		√		
	Social support from family members		√	√		√
	Social support from community leaders		√			

	Health and Nutrition education				√	
	Functional health facilities during survey period	√		√		
<b>Ante-natal Care</b>						
	Lactating women who attended ANC during last pregnancy	84.4	96.3	74.4	99.4	87.8
	Lactating women who attended ANC during 1 <sup>st</sup> Trimester in last pregnancy	31.1	35.3	14.6	26.5	27.5
	Lactating women who attended at least 4 ANC visits	35.7	42.6	33.7	44.5	39.3
	Lactating women who received combined IFAS in previous pregnancy	67.0	32.7	63.3	50.0	52.0
	Women who consumed combined IFAS for at least 90 days in previous pregnancy	1.4	7.9	1.3	0.0	2.3
	Pregnant women who received combined IFAS	83.3	64.6	47.8	62.5	63.5
	Pregnant women who had IFAS information	76.9	79.4	47.8	78.3	75.3
	Facility-based deliveries (Hospital, Health center, clinic)	25.5	67.1	17.9	91.6	48.9
	Women who delivered under the care of a skilled birth attendant Nurse	18.8	65.2	17.1	91.6	44.4
	Women who sought post-natal care immediately (within 24 hours )	30.1	33.3	36.3	40.6	33.7
<b>Maternal nutrition</b>						
	Average MDD-W scores* (Median (Interquartile Range, IQR)	3(IQR=2)	5(IQR=2)	3(IQR=2)	5(IQR=3)	4 (IQR=2)
	Women who achieved MDD-W (were likely to have adequate micronutrient intake)	16.2	56.0	8.1	66.3	36.9
	Women malnourished (MUAC < 21.0 cm)	19.1	3.7	5.2	7.3	8.1
	Women at Risk of malnutrition (MUAC 21.0-22.9 cm)	29.6	13.5	30.1	15.6	21.6
<b>Barriers and Boosters of maternal nutrition including IFAS</b>						
maternal nutrition Barriers	Food insecurity	√	√	√	√	√
	Poverty	√			√	
Maternal nutrition Boosters	Cultural beliefs				√	
	Social support network	√	√	√	√	√
Barriers to IFAS Uptake	Nutrition knowledge	√	√		√	√
	Culture	√	√			
	Side effects (smell & metallic taste)	√	√	√	√	√
IFAS Booster	Cultural practice: "Animal blood better"	√		√	√	√
	Accessibility – "Distance"			√		
	Perceptions – "Pepsi cola with tomato sauce better"		√			
	Health workers	√	√	√	√	√

MDD-W Scores\* = These are not percentages but median scores

## Conclusions

1. Knowledge and practices on initiation of breastfeeding were close to 100%, with less than 20% of caregivers reporting use of pre-lacteal feeds despite the cultural practices upheld of giving children animal milk or water before initiating breastfeeding.
2. The Knowledge, attitude and practices on colostrum feeding was high, over 95%.
3. Exclusive breastfeeding rate was high. This could be attributed to either the 24-hour recall assessment method used as recommended by the World Health Organization or the positive beliefs and attitudes among caregivers and community members on exclusive breastfeeding.
4. Continued breastfeeding at one year (12 to 15 months) and at two years (20 to 23 months) was reportedly low and was attributed to maternal workload, close birth spacing and poor maternal health while knowledge on the benefits of breastfeeding were major boosters of continued breastfeeding.
5. The ideal complementary feeding practices of introduction of solid, semi-solid or soft foods, consumption of iron-rich or iron fortified foods as well as micronutrient powders among children 6-23 months were poor with very low proportion of caregivers reporting them.
6. The knowledge on introduction of solid, semi-solid or soft foods at recommended age, 6-8 months was low in Marsabit County and in all the sub-counties. The poor feeding practices were also blamed on food insecurity due to prolonged drought which contributes to limited availability of varieties of food in the community and poverty that limits households' ability to purchase food.
7. The dietary diversity pattern among children was poor throughout the sub-counties. In Laisamis and North Horr only 1 in every 10 children consumed a variety of food that met their minimum nutrient needs. In Moyale 1 in every 5 children achieved the minimum dietary diversity while in Saku, child feeding practices were slightly better with 1 in every 3 children feeding on nutritious diets. The consumption of minimum acceptable diet of at least four food groups per day at a minimum number of 2 meals per day for all the breastfed, 6-23 months or 4 meals per day for the non-breastfed children were equally poor in all sub-counties.
8. The prevalence of malnutrition in children 6-23 months was poor in all sub-counties with a global acute malnutrition (GAM) indicator range of 5.0 to 9.9%. Saku and Moyale had the highest prevalence of child malnutrition yet the performance of almost all MIYCN indicators was better than in the other two sub-counties. This was probably due to poor feeding practices and the National Nurses Strike which slowed down emergency activities in the sub-counties.

9. The main source of information on MIYCN for the caregivers were grandmothers (least influential in Moyale sub-county) and health workers (least influential in North Horr), but the main decision maker on child feeding remains the mother.
10. Although more than half of the women had received combined IFAS in their previous pregnancy, only 2.3% actually consumed the IFAS. The IFAS dose was not completed by most of the women due to the side effects of unpleasant, nauseating smell. The IFAS information uptake was however higher in Saku and Moyale than Laisamis and North Horr sub-counties.
11. The health seeking behaviors for ante-natal and post-natal care were notably poor. Although close to 90% of the women reported to have attended antenatal care clinics (ANC) during their last pregnancy, only one in every three women did so during their first trimester of pregnancy and the recommended four or more visits. For post-natal care (PNC), half of the women received assistance from traditional birth attendants (TBAs). The women who gave birth under the care of a skilled birth attendant at a health facility as well as those who sought PNC within the recommended period of 24 hours after delivery were less than half, with majority being from Saku and Moyale sub-counties.
12. The prevalence of malnutrition among women of reproductive age was low. However, one in every five women was at risk of getting malnourished and the situation was worse in Laisamis and North Horr where one in every three women was at risk of malnutrition. The poor nutrition status of women was reflected in their food intakes where less than half of them achieved a minimum dietary diversity of consuming nutritious food that met just the minimum of their nutrient needs. The minimum dietary intake was only achieved in Moyale and Saku sub-counties. Whereas drought, high food prices and food taboos limited availability and access to nutritious diets for most women, the level of nutritional knowledge and social support enhanced maternal nutrition in almost all sub-counties

## Recommendations

Table 3: Summary recommendations

MIYCN KAP Indicator	Recommended action	Target (audience)
Early Initiation to breastfeeding	<p>All mothers should be encouraged to initiate breastfeeding within 1 hour after birth in all sub-counties.</p> <p>Pilot community-based “Baby Friendly Community Initiative” (BFCl) to ensure close to 100% early initiation</p> <p>Further research on breastfeeding initiation practice and cultural practices and timing of the initiation in Marsabit County.</p>	TBAs, Breastfeeding mothers, Grandmothers, Fathers Sub-County Nutrition Officers (SCNO), implementing partners, researchers and religious leaders and key opinion leaders in the community.
Colostrum milk	Health education/ nutrition counseling on health benefits of colostrum to further sustain the current high level of knowledge, attitude and practices among caregivers.	TBAs, Breastfeeding mothers, Grandmothers, Fathers, CHV’s, Sub-county Health Management Team (SCHMT), SCNO, and religious leaders
Exclusive Breastfeeding	<ul style="list-style-type: none"> <li>In all sub-counties, encourage mothers to exclusively breastfeed for 6 months.</li> <li>Community-based nutrition counseling on benefits of exclusive breastfeeding to sustain the current high knowledge, attitude and practice</li> </ul>	Pregnant and lactating women (PLW), CHVs, Community Health extension workers (CHEWs), SCNO, Grandmothers, Fathers and TBAs
Continued breastfeeding at 1 year and 2 years	<ul style="list-style-type: none"> <li>Need for integration of Family Planning programs with MIYCN interventions</li> <li>The existing widespread knowledge on benefits of breastfeeding should be promoted to protect and enhance continued breastfeeding practices</li> <li>Behavior change communication strategies that promote and support breastfeeding, for example, through use of local radio stations, local drama festivals, community meetings and prayer meetings.</li> </ul>	Grandmothers, Fathers, SCHMT, SCNOs, County Nutrition Coordinators, Reproductive Health Team, CHVs, religious leaders, County Government of Marsabit and implementing partners
Complementary feeding including dietary	<ul style="list-style-type: none"> <li>Nutrition education and counseling on nutritious diets for children including community recipe development,</li> </ul>	CHVs, Agricultural Extension Workers, SCHMT, SCNO, Mothers, grandmothers, TBAs



<p>diversity for children</p>	<ul style="list-style-type: none"> <li>• Explore the use of “Trials of improved practices” in food preparation and child feeding to address the low dietary diversity among children.</li> <li>• Pilot community-based “Baby Friendly Community Initiative” (BFCl) to ensure close to 100% early initiation,</li> <li>• Promotion of localized food production mechanisms (e.g. Kitchen gardens),</li> <li>• Enhance social protection program to improve access to food (food distribution, food vouchers)</li> </ul>	<p>, fathers, County Government of Marsabit and implementing partners</p>
<p>Feeding during illness</p>	<p>Support mothers through nutrition education and counseling on the need to feed their children during and after illness</p>	<p>CHVs, SCNO, SCHMT, Fathers and other caregivers including grandmothers</p>
<p>IYCN information</p>	<p>Caregivers should be the primary targets with key messages on infant and young child feeding. Other key messages should be specifically developed for grandmothers, fathers and others</p>	<p>CHVs, Agricultural Extension Workers, SCHMT, SCNO, County Government of Marsabit and implementing partners</p>
<p>Maternal nutrition including IFAS</p>	<ul style="list-style-type: none"> <li>• Nutrition education and counseling on nutritious diets for pregnant and lactating women</li> <li>• Promotion of localized food production mechanisms (e.g Kitchen Vegetable gardens),</li> <li>• Promotion of income generation activities for women to improve their financial resource base.</li> <li>• Enhance social protection program to improve access to food (food distribution, food vouchers);</li> <li>• Nutrition education for women on benefits and adherence of IFAS,</li> <li>• Participatory education theatre during cultural festivals and <i>manyattas</i>.</li> <li>• Use of local radio stations to pass key MIYCN messages to caregivers and the community;</li> <li>• Nutrition interventions should also focus on those who are at risk of malnutrition.</li> </ul>	<p>Women, mother-in-laws, men, County Government of Marsabit, SCNO, SCHMT, CHVs religious leaders and implementing partners and Agricultural Extension Workers,</p>
<p><b>Recommended channels for behavior change communications for all MIYCN Indicators</b></p>		

All MIYCN Indicators	Pilot “Participatory Education Theatre” to engage community members through drama to address the cultural practices surrounding MIYCN practices in the community. This can be through the annual cultural festivals, or community gatherings.	County Government of Marsabit and implementing partners
All MIYCN Indicators	Pilot “Baby Friendly Community Initiative” (BFCI) whose key features are community participation, with the key training messages based on locally identified infant and young child feeding knowledge and practices. The BFCI further has the added advantage of promoting multi-sectoral linkages with other sectors to address underlying causes of malnutrition.	SCHMT, SCNO, County Government of Marsabit and implementing partners
All MIYCN Indicators	Support community units to enhance home visits by where home visits by CHVs	SCHMT, SCNO, County Government of Marsabit and implementing partners
All MIYCN Indicators	Use of local radio stations to pass key messages to caregivers and the community to enhance MIYCN practices.	SCHMT, SCNO, County Government of Marsabit and implementing partners
All MIYCN Indicators	Conduct a follow-up survey after two years (in October 2019), to review the status of all the MIYCN indicators that have been assessed in this survey.	County Government of Marsabit and implementing partners

## 1.0 INTRODUCTION

### 1.1 Background Information

Maternal, infant and young child nutrition (MIYCN) is critical for child health and survival. The maternal nutrition is critical to both the mother and child because it determines the success of pregnancy outcome and lactation while infant and young child feeding practices have been known to directly affect the nutritional status of children and, ultimately, impacting on child survival. Any nutritional deficits acquired by children during the first two years of life are difficult to reverse later in life. Hence Improving the feeding practices of children, particularly under the age of two years, is critical to their improved nutrition, health and development (WHO, 2008). Although the feeding practices are shaped by both the individual caregiver's experiences and resources at household level as well as the multiple and dynamic realities in the community (Bardeloos, 2014), most of them are informed by the community's shared norms and beliefs. Any attempts to design interventions for improving MIYCN must therefore first explore and understand the contextual drivers of the existing feeding practices which tend to be community specific. These are best assessed through a knowledge, attitude and practice (KAP) surveys

### Context of the baseline survey

#### Marsabit County

Marsabit County is located in the former Eastern province of Kenya. It covers an area of 70,961.3km<sup>2</sup>. It borders Ethiopia to the North, Lake Turkana to the West, Samburu County to the South West, Isiolo County to the South East and Wajir County to the North East. Marsabit County is divided into four sub-counties namely: Laisamis, Saku, Moyale and North Horr, all of which were included in this baseline survey. Marsabit County's population is estimated at 352,993, from an estimated 61,850 households (2017 population estimates-DHIS). The county is populated by the pastoral and agro-pastoral communities of Rendille, Borana, Samburu and Turkana

communities who are found in the four livelihood zones of: Pastoral, Agro-Pastoral, petty trade and fisher folk and formal employment.

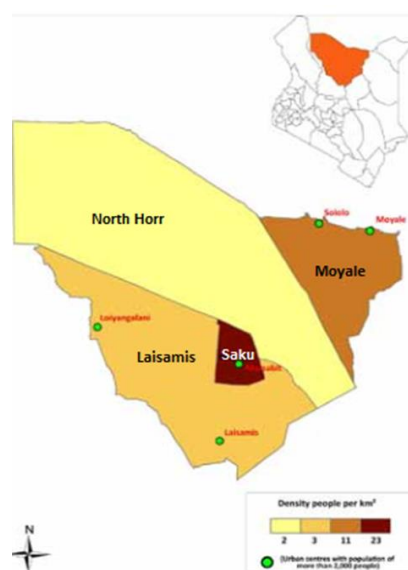


Figure 1: Map of Marsabit County

According to the National Drought Management Authority report for Marsabit County for 2017, most parts of the county did not receive rainfall during the three months' preceding this baseline survey, with a deteriorating food security situation. An unusual livestock migration in search of pasture and water was experienced in June leading to low milk production and access as well as food consumption scores remained below normal throughout the three months' period.

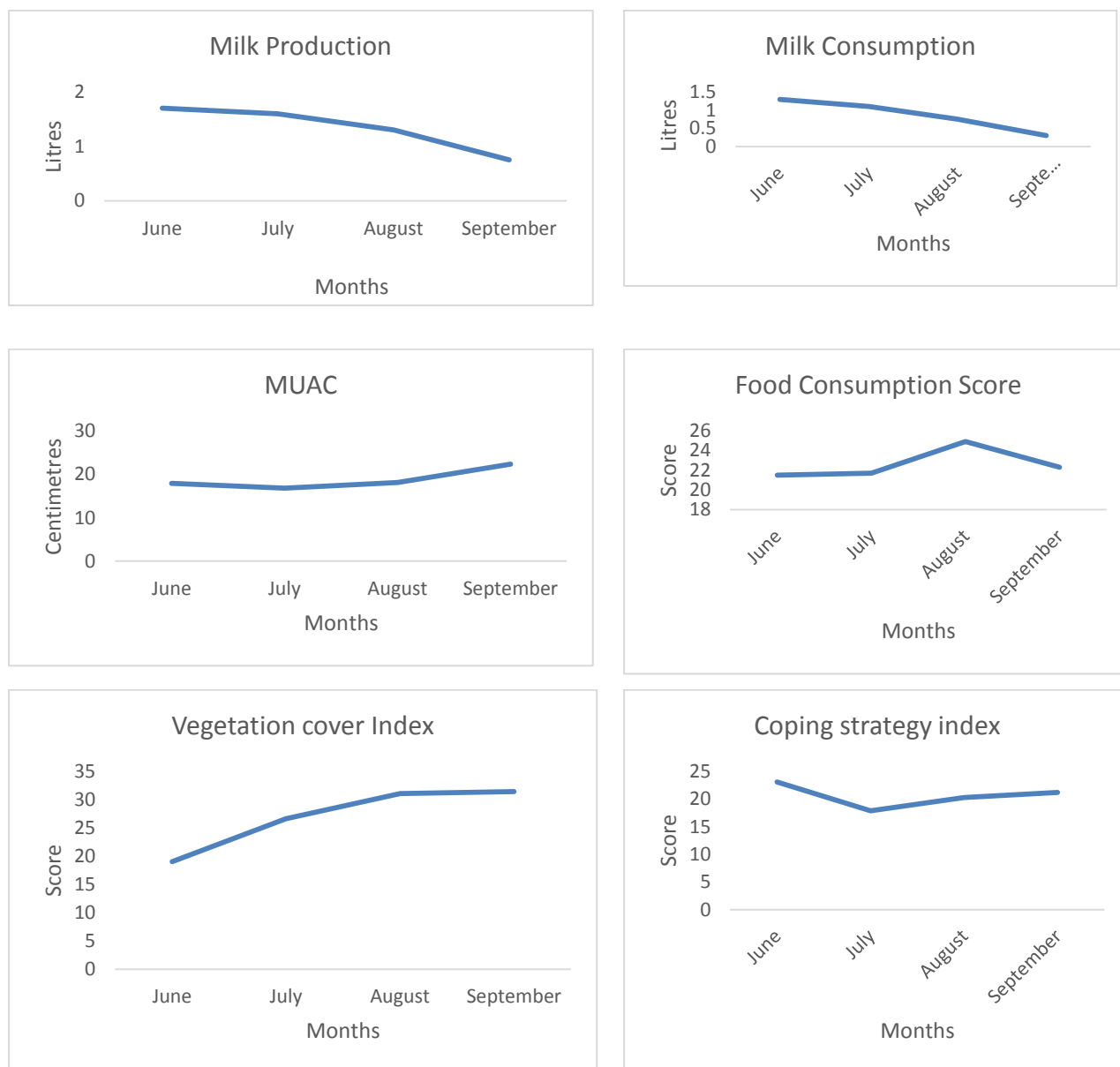


Figure 2: Trends in Early Warning Indicators for Marsabit County (June –September 2017)

### **Nutrition situation and feeding practices**

Although the proportions of children “at risk” of malnutrition were within the normal range of long-term average of 18.4% based on MUAC nutrition status indicator, according to the June 2017 nutrition survey results (MOH/CGM, 2017) Marsabit County had a weighted global acute malnutrition (GAM) of 16.9% among children under five. This was above the World Health Organization (WHO) critical threshold of 15%, with the highest levels of malnutrition reported from North Horr Sub-County (GAM=31.0%) and Laisamis (GAM=24.8%). The nutrition situation was however better in Saku (GAM=7.4%) and Moyale (GAM=5.4%) sub-counties. Among the children 6-23 months of age, the GAM (based on MUAC) malnutrition situation was also critical in Marsabit County, at 11.4% during the same period (MOH/CGM, 2017).

### **1.2 Justification of the KAP Baseline Survey**

High levels of malnutrition in Marsabit County have been attributed to inadequate food intake, poor infant feeding practices as well as poor health care due to inadequate health personnel and weak community health structures in place (MOH/CGM, 2017) (FHK/UNICEF, 2014). Promotion of optimum Maternal, Infant and Young Child Nutrition (MIYCN) and key health and hygiene messages have been proved as critical to preventing new cases of malnutrition and disease, as well as managing those already affected. In Marsabit County therefore, strategies for improving MIYCN indicators are needed as well as affordable and effective means to promote optimum MIYCN practices. It is against this background that Food for the Hungry (FK) – Kenya plan to initiate an integrated project on Livelihood, Wash and Nutrition to support the community in recovering from the current drought as well as building the capacity of women at household level on MIYCN practices.

The purpose of the survey was therefore to provide baseline data on MIYCN indicators and establish related factors contributing to the existing situation in Marsabit County. The findings will be used for decision making on interventions to MIYCN and care practices in the community.

### **1.3 Specific Objectives**

1. To determine the current status of core maternal, infant and young child nutrition (MIYCN) indicators among women of reproductive age (15-49 years) and children in Marsabit County
2. To determine current knowledge, attitude and practice of caregivers on maternal infant young child nutrition in Marsabit County,

3. Assess maternal health seeking behavior by caregivers in Marsabit County
4. Document cultural and traditional practices that enhances or undermines appropriate maternal infant and young children nutrition practices in North Horr and Laisamis Sub-Counties and Saku and Moyale Sub Counties.
5. Assess sources of MIYCN information, education and communication materials by caregivers
6. Recommend effective channels for behavior change communications.
7. To assess limiting and facilitating factors in utility/uptake of MIYCN among caregivers in Marsabit County

#### 1.4 Survey indicators

The core MIYCN KAP survey indicators recommended by the Ministry of Health (MOH, 2016) and the World Health Organization (WHO, 2010) that were included in this survey are presented on Table 4.

Table 4: Survey Indicators

Indicator	Age Group
Early Initiation to Breastmilk	0 - 23 Months
Feeding children on colostrum	0-23 months
Introduction to Pre lacteals (0-3 days after birth)	0-23 months
Exclusive Breastfeeding	0 - 5 Months
Continued Breastfeeding at 1 Year	12 - 15 Months
Continued Breastfeeding at 2 Years	20 - 23 Months
Bottle feeding	0-23 months
Introduction of Solid, Semi-Solid, or Soft Foods	6 - 8 Months
Minimum Dietary Diversity- Child - ALL	6 - 23 Months
Minimum Dietary Diversity - Breastfed	6 - 23 Months
Minimum Dietary Diversity - Non-Breastfed	6 - 23 Months
Minimum Meal Frequency (2+ Meals)	6 - 8 Months
Minimum Meal Frequency (3+) Breastfed	9 - 23 Months
Minimum Meal Frequency (4+) Non-Breastfed	9 - 23 Months
Minimum Meal Frequency ALL	6 - 23 Months
Minimum Acceptable Diet	6 - 23 Months
Consumption of iron-rich or iron-fortified foods	6 -23 months
Micronutrient supplementation (micronutrient powders)	6-23 months
Responsive feeding	6 - 23 months
Feeding during illness	0 – 23 months
Child Nutritional Status using MUAC	6 – 23 months
IFAS Supplementation	Women (15-49 Years)
Antenatal Visits (Previous pregnancy)	Lactating women (15-49 Years)
Antenatal Visits (Current pregnancy)	Pregnant women (15-49 Years)
Post-natal check within 24 Hours	Lactating women (15-49 Years)
Minimum Dietary Diversity-Women (MDD-W)	Women (15-49 Years)
Women’s Nutritional Status using MUAC	Women (15-49 Years)



## **2.0 SURVEY METHODOLOGY**

### **Survey Design**

This baseline survey was a cross-sectional study that utilized both quantitative and qualitative research methods. It involved in-depth assessment of socio-cultural and economic factors that influence knowledge, attitude, behavior, uptake and practices of MIYCN at community level in Marsabit County

### **Survey Area**

This survey was conducted in all the four sub-counties of Marsabit County namely: Laisamis, Saku, Moyale and North Horr.

### **Target Population**

The target population for this survey were primary caregivers of children aged between 0 and 23.9 months (both men and women), community health workers, facility health workers and other community members who play key roles in maternal, infant and young child nutrition as well as implementing partners.

### **Sampling**

For the quantitative data collection, the survey adopted a two stage stratified cluster sampling survey design which involved selection of clusters in stage 1 and selection of households in stage 2.

Marsabit County was stratified into two strata namely North Horr and Laisamis Sub-Counties as stratum 1 and Moyale and Saku as stratum 2, hence have two independent Survey. This stratification was based on the nutrition situation reported in June 2017 (North Horr and Laisamis, it was critical with a GAM more than 15% while Moyale and Saku it was poor with a GAM of 5.0% – 9.9%).

In each stratum, the first stage sampling involved selection of villages/clusters that were included in the survey. The villages/clusters were selected using probability proportional to size in ENA for SMART Software.

### **Quantitative Sample Size Calculation for North Horr and Laisamis Sub-counties**

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 the seven indicators with a wide age group was computed. The prevalence for indicator 1, 2, 3 4 and 6 was based on the Laisamis MIYCN KAP 2014, while for the indicator 5 a prevalence of 50% was used since no previous



estimate was available, and 50% gives optimal sample size, all other parameters are held constant. The step-by-step guide by Care recommends a precision of between 5% and 10%; in this survey, a precision of 7% was used. A design effect of 1.4 was used for the seven indicators. This was based on the assumption that there could be some level of heterogeneity in the IYCN practices in the county. A 95% Confidence Interval was also used. (Table 5).

Table 5: Sample Size Calculation for North Horr and Laisamis Sub-counties

Indicator	Estimate	Precision	Sample Size
1. Timely Initiation of Breastfeeding (0 – 23.9 Months)	79.5%	7%	179
2. Exclusive Breastfeeding (0 – 5.9 Months)	78.6%	7%	185
3. Minimum Dietary Diversity (6 – 23.9 Months)	20.6%	7%	180
4. Minimum Meal Frequency (6 – 23.9 Months)	83.6%	7%	150
5. Minimum Acceptable Diet (6 – 23.9 Months)	18.8%	7%	168
6. Consumption of Iron Rich or Iron Fortified Foods (6 – 23.9 Months)	50.0%	7%	274
7. Bottle Feeding (6 – 23.9 Months)	4.5%	7%	47

#### Quantitative Sample size for North Horr and Laisamis Sub-counties

Based on the parameters in Table 5, the maximum sample size (among the seven indicators) was 274, which when multiplied by four based on the four age categories for children 0-23 months (0 – 5, 6 – 11, 12 – 17 and 18 – 23.9). The four age categories were obtained by considering the smallest age range of 6 months for EBF indicator (Care 2010). This yielded a total sample size of 1098 children aged between 0 and 23 months. The total sample size was adjusted upward by a non-response rate of 3% which yielded the final sample size of 1132 children aged between 0 and 23 months. A total of 60 clusters were sampled for the survey in North Horr and Laisamis sub-counties (Appendix 1) using the PPS Method.

#### Sample Size Calculation of Moyale and Saku Sub-counties

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 the seven indicators with a wide age group was computed (Table 6). The prevalence for indicator 1,2, 3 4 and 6 was based on the KPC Survey conducted in Feb 2017 by Concern Worldwide, while for the other indicators, a prevalence of 50% was used since no previous estimate was available, and 50% gives optimal sample size when all other parameters are held constant. The step-by-step guide by Care recommends a

precision of between 5% and 10%. In this survey, a precision of 7% was used. A design effect of 1.2 was used for the seven indicators based on the assumption that there could be some level of heterogeneity in the IYCN practices in the county. A 95% Confidence Interval was also used (Table 6).

Table 6: Sample Size Calculation of Moyale and Saku Sub-counties

Indicator	Estimate	Precision	Sample Size
1. Timely Initiation of Breastfeeding (0 – 23.9 Months)	77.2%	7%	166
2. Exclusive Breastfeeding (0 – 5.9 Months)	59.4%	7%	227
3. Minimum Dietary Diversity (6 – 23.9 Months)	67.1%	7%	208
4. Minimum Meal Frequency (6 – 23.9 Months)	48.3%	7%	235
5. Minimum Acceptable Diet (6 – 23.9 Months)	50.0%	7%	235
6. Consumption of Iron Rich or Iron Fortified Foods (6 – 23.9 Months)	57.2%	7%	230
7. Bottle Feeding (6 – 23.9 Months)	50.0%	7%	235

#### Sample Size for Moyale and Saku Sub-counties

Based on the parameters in Table 6, the maximum sample size (among the seven indicators) was 235, which when multiplied by four based on the four age categories for children 0-23 months (0 – 5, 6 – 11, 12 – 17 and 18 – 23.9). The four age categories were obtained by considering the smallest age range of 6 months for EBF indicator (Care 2010). This yielded a total sample size of 940 children aged between 0 and 23 months. The total sample size was then adjusted upward by a non-response rate of 3% which yielded the final sample size of 969 children aged between 0 and 23 months. A total of 60 clusters were sampled for the survey in Moyale and Saku Sub-counties (Appendix 1) using the PPS Method.

#### Selection of Households for quantitative survey

In the second stage of sampling, simple random sampling method was used to select households for the survey in each sub-county.

#### Sampling for Key Informant Interviews

A total of 38 key informants were purposively sampled and interviewed to solicit information on critical issues, facilitators and barriers of MIYCN practices among community leaders, religious leaders, health workers, Traditional Birth Attendants (TBAs), Community Health Volunteers (CHVs)

and grandmothers. A summary of the key informant interviews (KIIs) conducted are presented on Table 7.

Table 7: Summary of KIIs conducted by sub-county

Key informant	Sub-county				
	North Horr	Laisamis	Moyale	Saku	Total
Community Leaders	2	-	4	1	7
Religious Leaders	2	-	4	1	7
Grandmothers	2	-	4	-	6
TBAs	-	4	5	1	10
CHVs	-	2	3	1	5
Health workers		2		1	3
<b>Total</b>	<b>6</b>	<b>8</b>	<b>20</b>	<b>4</b>	<b>38</b>

### Sampling for Focus Group Discussions

Twenty-one (21) Focus Group Discussions (FGDs) were conducted in randomly sampled clusters from a list of 120 clusters sampled for the quantitative survey. The FGDs targeted fathers (n=10) and mothers (n=10) of children aged 0 to 23 months as well as CHVs (n=1) in all the four sub-counties of Marsabit. A summary of FGDs conducted are presented on Table 8.

Table 8: Summary of FGDs Conducted by sub-county

FGD Group	North Horr	Laisamis	Moyale	Saku	County
Fathers	2	3	4	1	10
Mothers	2	3	4	1	10
CHVs	-	-	-	1	1
<b>Total</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>3</b>	<b>21</b>

### Data Collection tools

Both quantitative and qualitative data was collected using the standard MIYCN tools recommended by the WHO and adopted, validated and recommended by the Ministry of Health-Nutrition and Dietetics Unit (MOH-NDU) Nutrition Information Technical Working Group (NITWG). The quantitative data was collected electronically using Open Data Kit (ODK) platform on iPads. Trained enumerators administered the MIYCN KAP Survey Questionnaire (June 2015 Version). For qualitative data, the KII and FGD guides based on the survey objectives were used to guide the in-depth interviews and discussions on caregivers' and community's perceptions on MIYCN knowledge, attitude and practices as well as the cultural, socio-economic, and other factors influencing MIYCN. Both quantitative and qualitative tools are in Appendix 2 and 3.

### Organization of the Survey

There were 120 clusters for this surveys which were sampled using PPS. The survey was conducted by 20 Teams of 2 enumerators and 1 Team Leader. Each team had one Local Guide from the sampled villages. Data collection in all the 4 sub-counties lasted for 5 days

### Data quality control measures

The enumerators in the survey team had Form 4 level of education and they could all speak, read and write English, Kiswahili and the local language. Prior to the survey, the field teams were trained for 4 days including 1 day for the piloting the survey. The data collection process was supervised by teams from the nutrition implementing agencies in the county: FHK, WVK, CWW and CNC. Daily debriefing sessions were held with the survey teams to review the day's accomplishments and plans for the following day. A member of the consultancy team also conducted spot checks during data collection for validity and clarity of the questionnaire, completeness of questionnaires at the household and uploading of data forms on the ODK server.

### Data management and analysis

Quantitative data was analyzed in SPSS version 20.0. The final sample size used in quantitative data analysis was weighted to account for differences in sub-county population sizes and ensure generalization of the study findings to the whole of Marsabit County (Table 9)

Table 9: Normalization of quantitative data

Sub-County	Estimated Population *	Estimated # of HHs	Sampled Households			Normalized Weight (Ns/N)/(ns/n)	Sample
				ns/n**	Ns/N** *		
Moyale	139,341	22,336	510	0.236	0.332	1.408	718
Laisamis	75,159	15,334	570	0.264	0.228	0.865	493
Saku	58,075	11,615	510	0.236	0.173	0.732	373
North Horr	90,572	17,913	570	0.264	0.267	1.010	576
<b>Total</b>	<b>363,147</b>	<b>67,198</b>	<b>2,160</b>	<b>3.789</b>	<b>3.751</b>	<b>1.004</b>	<b>2,160</b>
<p><i>**ns/n: ns =Number of sampled households; n=Total number of households sampled;***Ns/N: Ns=Estimated number of households; N=Total number of estimated households; +The actual number of households sampled was 2101</i></p>							

### 3.0 FINDINGS AND DISCUSSIONS

#### 3.1 Introduction

The KAP baseline survey in Marsabit County was aimed at documenting existing information on knowledge, attitudes and practices on maternal, infant and young child nutrition among communities to guide implementation of nutrition-related activities in the county. Findings from the KAP survey are presented by sub-county to allow for comparison across the sub-counties. The weighted counts have been used in the analysis and reporting of the findings to ensure generalization of the study findings to the whole of Marsabit County.

#### 3.2 Socio-demographic characteristics

##### Study population

A total of 2230 women of reproductive age (WRA) and 2102 children (0-23 months old) participated in the survey. These, when weighted, based on the sub-county population sizes, were 2231 and 2096 for women and children respectively. The mean age for the women was  $26.1 \pm SE=0.13$  years while for the children it was  $11.4 \pm SE=0.15$  months (Table 10)

Table 10: Distribution of women and children by sub-county

Sub-county	Normalized Weight*	Women (aged 15-49 years)		Children (aged 0-23 months)	
		Un-weighted (n)	Weighted (n)	Un-weighted (n)	Weighted (n)
Laisamis	0.865	563	487	564	488
Moyale	1.408	542	763	489	689
North Horr	1.010	566	572	544	549
Saku	0.732	559	409	505	370
Total (N)	1.004	2230	2231	2102	2096
Mean Age		26.1± SE=0.13 years		11.4 ± SE=0.15 months	

\* Normalized weights, based on population sizes and sampled households per sub-county were applied to account for differences in population sizes and ensure generalization of study findings to Marsabit County

Demographic characteristics of the WRA, 15-49 years, are shown on Table 11. A majority of women were married and living with their spouses (91.1%). A majority of caregivers had never been to school (75.2%). Most of those who had never been to school were from North Horr (91.8%) and Laisamis (84.6%). For those who had been to school, the highest level of education achieved was primary school (46.2%). Most caregivers were Muslims (51.7%), Christians (26.5%) or Traditional believers (21.7%). In Laisamis, about half (49.5%) were Christians, while the other half were traditional believers (48.7%). In Moyale, almost all were Muslims (94.2%). In North Horr, 41.4% were traditional believers while 30.2% were Christians and 28.3% were Muslims. The traditional believers have their own ways of worship different from the Christians or Muslims. Data from in-

depth discussions with key informants revealed that traditional believers believe a lot in traditional ceremonies when a child is born. Some of these ceremonies may antagonize the ideal feeding practices for women and children. It is worth noting that the sub-counties with more traditional believers are also the ones where the indicators for MIYCN are poor.

Table 11: Demographic characteristics of WRA, 15-49 years

Characteristic		Laisamis (n = 487)		Moyale (n = 763)		North Horr (n = 572)		Saku (n = 409)		County	
		n	%	n	%	n	%	n	%	N	%
Marital status	Married	420	86.4	718	94.1	528	92.5	364	89.0	2030	91.1
	Cohabiting	35	7.2	0	0.0	3	0.5	4	1.0	42	1.9
	Separated	11	2.3	17	2.2	11	1.9	17	4.2	56	2.5
	Widowed	10	2.1	10	1.3	20	3.5	8	2.0	48	2.2
	Single/never married	10	2.1	18	2.4	9	1.6	16	3.9	53	2.4
Ever been to school	No	412	84.6	525	68.8	524	91.8	217	53.1	1678	75.2
	Yes	75	15.4	238	31.2	47	8.2	192	46.9	552	24.8
Highest Level of Education	Less than Primary	18	24.0	76	31.9	21	44.7	53	27.7	168	30.5
	Primary	39	52.0	113	47.5	19	40.4	84	44.0	255	46.3
	Secondary	17	22.7	41	17.2	6	12.8	37	19.4	101	18.3
	College	1	1.3	7	2.9	1	2.1	17	8.9	26	4.7
	Post-graduate	0	0.0	1	.4	0	0.0	0	0.0	1	0.2
Religion	Christian	241	49.5	34	4.5	173	30.2	143	35.0	591	26.5
	Muslim	8	1.6	719	94.2	162	28.3	265	64.8	1154	51.7
	Traditional	237	48.7	10	1.3	237	41.4	1	0.2	485	21.7
	Hindu	1	0.2	0	0.0	0	0.0	0	0.0	1	0.0

### Physiological status of study women

Majority of the women were lactating (83.8%) as seen on Table 12. This was expected since sampling was based on the IYCN indicators for children aged 0-23 months.

Table 12: Physiological status of study women

	Laisamis (n = 487)		Moyale (n = 763)		North Horr (n = 571)		Saku (n = 409)		Total (n = 2230)	
	n	%	n	%	n	%	n	%	n	%
<b>Physiological status</b>										
Pregnant	12	2.5	131	17.2	23	4.0	23	5.6	189	8.5
Lactating	443	91.0	541	70.9	536	93.9	348	85.1	1868	83.8
Pregnant & lactating	3	0.6	8	1.0	1	0.2	1	0.2	13	0.6
Neither Pregnant nor Lactating	29	6.0	83	10.9	11	1.9	37	9.0	160	7.2

## Occupation

The main sources of income for women in the survey were pastoralism (35.7%) and casual labor (17.1%). Close to one third of the women were also house wives (29.9%) as seen on Table 13.

Table 13: Occupation by Sub-county

	Laisamis (n = 487)		Moyale (n = 763)		North Horr (n = 572)		Saku (n = 409)		County N= 2231	
	n	%	n	%	n	%	n	%	N	%
Formal Employment	6	1.2	41	5.4	10	1.8	36	8.8	93	4.2
Informal employment / Juakali	3	0.6	35	4.6	4	0.7	4	1.0	46	2.1
Casual labor	28	5.7	191	25.1	52	9.1	119	29.2	390	17.5
Own business	20	4.1	34	4.5	17	3.0	29	7.1	100	4.5
Petty trading / hawking	7	1.4	8	1.0	4	0.7	18	4.4	37	1.7
Farming	0	0.0	3	0.4	2	0.4	5	1.2	10	0.4
Pastoralist	292	59.7	49	6.4	433	75.8	23	5.6	797	35.7
Dependents	15	3.1	11	1.4	17	3.0	10	2.5	53	2.4
Housewife	115	23.5	372	48.8	31	5.4	149	36.5	667	29.9

## Characteristics of the index child, 0-23 months

The male children were 52.8% while the females were 47.2%, giving a sex ratio of 1:0.9. For most (76.6%) children, the age was verified using the individual health cards (Table 14). Where there were no health cards, birth certificates (0.5%) or events calendars (13.9%) were used to determine the child's age.

Table 14: Child Characteristics

Child Characteristics	Laisamis (n = 487)		Moyale (n = 688)		North Horr (n = 550)		Saku (n = 370)		County 2095	
	n	%	n	%	N	%	n	%	N	%
<b>Child gender</b>										
Male	266	54.6	360	52.3	294	53.5	184	49.7	1104	52.7
Female	221	45.4	328	47.7	256	46.5	186	50.3	991	47.3
<b>Child age</b>										
0 to 5	131	27.0	152	22.1	111	20.4	93	25.0	487	23.3
6 to 11	127	26.1	170	24.7	159	29.2	95	25.5	551	26.3
12 to 17	124	25.5	189	27.4	147	27.0	100	26.9	560	26.8
18 to 23	104	21.4	178	25.8	128	23.5	84	22.6	494	23.6
<b>Age verification</b>										
Health card	418	85.7	473	68.8	370	67.4	342	92.7	1603	76.6
Birth certificate	1	0.2	8	1.2	0	0.0	1	0.3	10	0.5

Events calendar	46	9.4	106	15.4	132	24.1	4	1.1	288	13.9
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### 3.3 Current status of IYCN indicators and analysis of barriers and boosters

#### Breastfeeding

Breastfeeding has many health benefits for both the mother and infant, and, the decision not to breastfeed has been proved to have major long-term effects on the health, nutrition, and development of the child as well as on mother’s own health (Victora, et. Al., 2016). According to the WHO recommendations on breastfeeding, children should be exclusively breastfed for the first six months of life. The Kenya National Policy guideline on MIYCN (MOPHS, 2012) has adopted WHO recommendations and advocates for promotion, protection and support of exclusive breastfeeding for the first 6 months of life and continued breast feeding at one year up to 2 years or more. In the current Marsabit KAP survey, almost all the children (99.1%) who participated had been breastfed, with 91.1% of them reportedly breastfeeding during the survey period.

#### Early initiation of breastfeeding

Early initiation of breastfeeding refers to provision of mother’s breast milk to infants within one hour of birth (WHO, 2017). In the current Marsabit KAP survey, about 95.2% of children were reported to have been put to the breast immediately after birth (Table 15). Among the mothers who put their children to the breast immediately (n=1979), 95.2% of them initiated breastfeeding within the recommended period of one hour or less.

Table 15: Initiation of breast feeding

Duration of Initiation of Breastfeeding	Laisamis (n = 457)		Moyale (n = 627)		North Horr (n = 530)		Saku (n = 365)		County 1979	
	n	%	n	%	n	%	n	%	N	%
Immediately (0-1 hour)	429	93.9	589	93.9	512	96.6	354	97.0	1884	95.2
Within hours(1-24 hours)	25	5.5	35	5.6	16	3.0	9	2.5	85	4.3
Within days(Above 24 Hrs)	3	0.7	3	0.5	2	0.4	2	0.5	10	0.5

The mean duration of initiation of breastfeeding in the county was 5.97 ( $\pm$ SE 0.28) minutes. It was however noted that the initiation took place earlier in North Horr, within mean 2.50 ( $\pm$ SE 0.35) minutes, and Moyale, mean 3.20 ( $\pm$ SE 0.34) minutes than in Saku and Laisamis sub-counties where the mean durations were 8.79 ( $\pm$  SE 0.84) and 11.70 ( $\pm$  SE 0.73) minutes respectively as seen on Table 16.



Table 16: Time of Early initiation of breastfeeding within one hour

Time of Early initiation of breastfeeding within one hour					
Knowledge and practice	Laisamis (n = 487)	Moyale (n = 688)	North Horr (n = 550)	Saku (n = 370)	County N=2095
	Minutes(Mean, ±SE)	Minutes (±SE)	Minutes (±SE)	Minutes (±SE)	Minutes (±SE)
Knowledge	11.42 (±0.72)	2.75 (±0.33)	2.38 (±0.35)	8.30 (±0.82)	5.66 (± 0.28)
Practice	11.70 (± 0.73)	3.20 (± 0.34)	2.50 (± 0.35)	8.79 (± 0.84)	5.97 (± 0.28)

This KAP survey also found that 95.9% of caregivers in the county had knowledge on early initiation of breastfeeding while 92.9% of them believed that infants should be given breast milk soon after birth. It was also noted that throughout all the sub-counties of Marsabit, over 90% the caregivers had positive attitudes and knowledge on early initiation of breastfeeding and initiated the breastfeeding within one hour of birth (Figure 3).

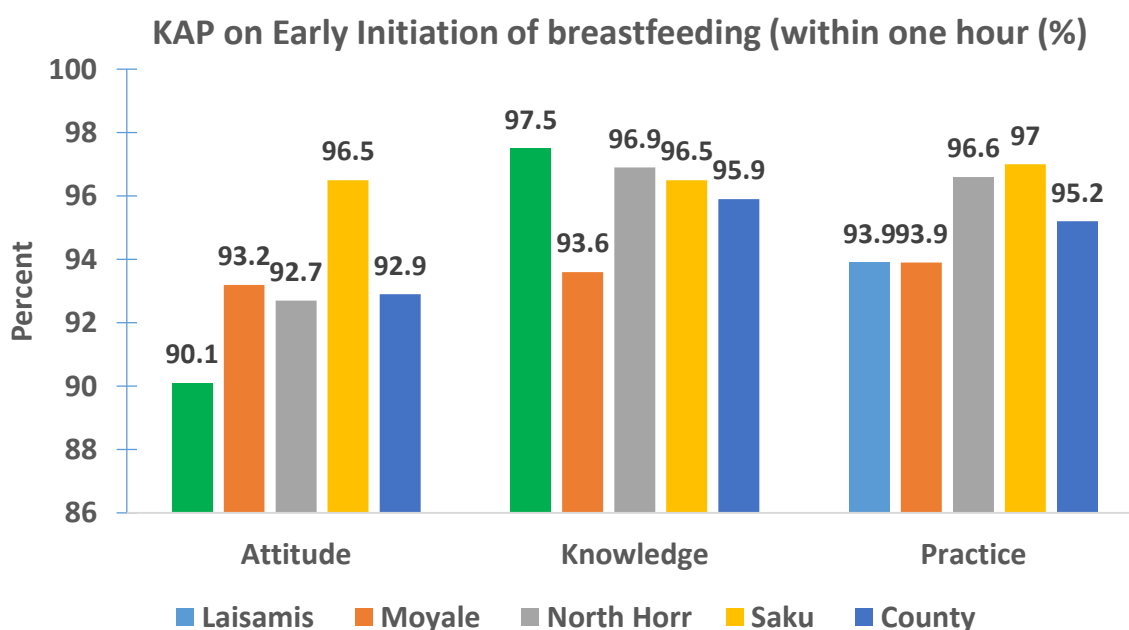


Figure 3: KAP on Early Initiation of breastfeeding (within one hour (%))

### Feeding babies on Colostrum milk

The study established that 95.9% of women had knowledge on feeding their newborn babies the first milk, colostrum. Qualitative data also indicated that knowledge was a main enhancer of feeding babies on colostrum. Almost all the women believed (97.7%) that they would feed their babies on colostrum due to its nutritional value (27.7%) and immunity (21.3%). Almost all the women, 97.7%, fed their babies on colostrum (Figure 4). A majority of the women with knowledge on benefits of colostrum were from Laisamis (97.5%) but those who believed that colostrum is good and actually fed their babies on it were from Saku (attitude=99.7%; practice=99.2%).

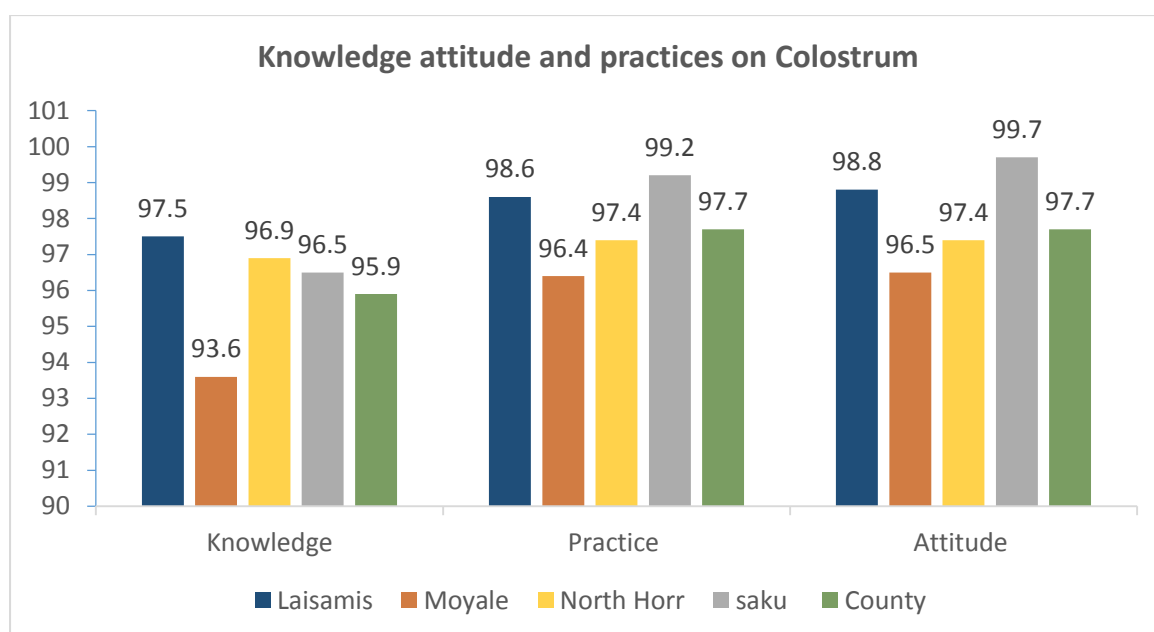


Figure 4: KAP on colostrum feeding

These findings that close to 100% of babies received colostrum points to the fact that the knowledge on the health and nutritional benefits of colostrum is high as seen in the proportion of those caregivers with knowledge on colostrum benefits (95.9%) from quantitative data and the qualitative findings which revealed that participants from all sub-counties cited knowledge on the health benefits of colostrum for children as the main facilitator for use of this first milk. (Table 17)

Table 17: Perceived Benefits of colostrum

Benefits of colostrum	Laisamis (n = 791)		Moyale (n = 414)		North Horr (n = 398)		Saku (n = 508)		County	
	n	%	n	%	n	%	N	%	n	%
Nutritious for baby	195	40.5	169	25.5	142	26.6	60	16.3	566	27.7
Nutritious for baby and prevents diseases	108	22.4	142	21.4	107	20.0	79	21.5	436	21.3
Nutritious , prevents diseases and cleans baby stomach	35	7.3	72	10.9	42	7.9	65	17.7	214	10.5
Nutritious to baby and cleans baby stomach	15	3.1	37	5.6	18	3.4	50	13.6	120	5.9
Prevents diseases and cleans baby stomach	46	9.5	68	10.3	134	25.1	70	19.1	318	15.5
No knowledge on benefits	75	15.6	163	24.6	85	15.9	39	10.6	362	17.7

The women who did not feed their children on colostrum (2.3%) mainly considered it dirty (54.3%), dirty and not good for the baby (17.3%) or cultural reasons (11.4%). The rest of the caregivers who did not give their babies colostrum cited a combination of the above reasons as well as the fact that a mother needs to rest soon after giving birth (17.9%), (Table 18).

Table 18: Reasons for not feeding child on colostrum

Reasons for not feeding child colostrum	Laisamis (n = 9)		Moyale (n = 24)		North Horr (N = 14)		Saku (n = 10)		County N=57	
	n	%	n	%	n	%	n	%	n	%
It is dirty	0	0.0	10	66.7	9	69.2	0	0	19	54.3
Cultural practices	1	14.3	1	6.7	2	15.4	0	0	4	11.4
Its dirty and other factors (not good, child refused)	1	14.3	3	20.0	1	7.7	0	0	5	17.3
Not sufficient and others(not good, child refused)	3	42.9	0	0.0	0	0.0	0	0	3	8.6
Mother needs to rest and cultural practices	1	14.3	0	0.0	1	7.7	0	0	2	5.8
Its dirty, not sufficient, cultural reason and mother needs to rest	1	14.3	1	6.7	0	0.0	0	0	2	3.5

### Analysis of barriers to early initiation of breastfeeding and use of colostrum

Traditional beliefs and rituals were found to be the main stumbling blocks to early initiation of breastfeeding within the recommended first one hour of birth. In Marsabit County, across all the sub-counties, there were reports of traditional rituals which must be observed before a baby can be put to the breast. Among these traditional practices reported in this survey were giving a new born animal milk (from goat, cow, sheep or camel), water or applying some oil on the forehead of the

baby, particularly the male child as seen in these sentiments from FGDs and KIIs conducted from all the four sub-counties in Marsabit County:

*“There are some clans that would not allow the mother to breastfeed the baby until some rituals are performed (Itungana entanak ngera Ingejepa)”. “...a boy child is not supposed to breastfeed immediately until “Harab” (tongue) is sacked by the child”, “the boy child is given water while a girl is given milk” and “the father has to smear baby’s face with honey first before breastfeeding can be initiated”.*

Among the Elmolo community, if a child is born in the evening, breastfeeding is not initiated until the following day in the morning after the elders have brought *“a special bark of a tree to be tied on the child”* as part of the rituals. According to the caregivers and community members interviewed, the tradition of giving the boy child water immediately after birth is believed to *“removes all the dirt from the stomach and also helps him in future endeavors by providing water when he will be grazing and they is no water”*. Where there are no rituals to be performed, breastfeeding may be initiated immediately after birth. However, perception among women that *“the child refuses to breastfeed immediately”* (6/8 interviews), as *there is no milk and the mother is also pain, child is weak or that breast may be dirty* (6/12 interviews) may hinder early initiation of breastfeeding. These findings from qualitative data therefore suggest that the meaning of initiation of breastfeeding *“immediately after birth”* in Marsabit refers to *“putting the child on the breast immediately after the traditional birth-related ceremonies have been performed”* as opposed to the WHO’s recommended definition of *“within one hour after birth”*.

Globally, further evidence on early initiation of breastfeeding suggests that it is associated with a reduction in the risk of neonatal mortality (Khan, Vesel, Bahl, & Martines, 2015). It ensures that the infants take the “first milk”, which contains protective factors against infections (WHO,2017). From the qualitative data collected, the main barrier to feeding infants on colostrum was cited as cultural reasons (Moyale, 4/4). Traditionally, some mothers believe that *“colostrum is dirty hence they breast feed until after their days after giving birth”*. Some caregivers from Saku also had fears and myths that *“colostrum makes the child to grow big”*. Whereas the quantitative data revealed that children do not receive colostrum because it is mainly considered dirty (54.3%), this was only confirmed by a few participants from Moyale and North Horr. Most participants from all sub-counties however had knowledge on the health benefits of colostrum for children. According to them, colostrum is *“good for brain development and protects the child against diseases”* (Laisamis, 4/7). Other benefits of colostrum were that *“it is nutritious, healthy and protects the child against diseases”* (Moyale, 4/7), *“makes children grow and cleans their stomach”* (North Horr and Saku, 3/7), (Table 19).

Table 19: Barriers to early initiation of breastfeeding

Sub-county	Barriers
<b>Laisamis</b>	<p><b>Home deliveries:</b> Most women give birth at home</p> <p><b>Perception:</b> It is not possible to initiate breastfeeding within one hour after delivery as the child refuses to breastfeed (6/8)</p> <p><b>Traditional beliefs:</b> If a child is born at night he/she is breastfed the following day. All traditional ceremonies must be observed before initiating breastfeeding (7/11)</p>
<b>Moyale</b>	<p><b>Traditional Beliefs:</b> Baby gets sick if mother is still bleeding; B/Milk is watery; (1/12)</p> <p><b>Maternal Health:</b> Lack of energy after birth; ...<i>others faint...</i>; Over bleeding, causing weakness (3/12)</p> <p><b>Perceptions:</b> No milk immediately after birth, women weak after delivery, and breast is dirty (4/12)</p> <p><b>Religion:</b> Baby must first drink water blessed by sheikh first before breastfeeding. <i>'It is noble to wait upon the sheik to bless the water which must be given to the child first before the breast milk'</i>, <i>"Mother has to wash breast with holy water"</i> ( 1/12)</p>
<b>North Horr</b>	<p><b>Perception:</b> The mother feels pain soon after delivery and does not have enough breast milk (2/2)</p> <p><b>Traditional Beliefs:</b> Traditional rituals like naming of child to be observed before initiations of breastfeeding(1/2)</p>
<b>Saku</b>	<p><b>Traditional beliefs:</b> Rituals (e.g. a father must apply honey on his son's forehead before the baby can be put to breast). Other rituals are naming of the child (<i>harab</i>) and animal milk given first as first feed <i>".... a baby should be fed on raw milk (from goat, cow, sheep and camel) immediately after birth in case a mother does not produces enough breast milk or in case the mother dies after giving birth"</i>, (3/3)</p> <p><b>Perception:</b> The child is too weak to breastfeed (2/3)</p> <p><b>Death of a mother</b> after birth (2/3)</p> <p><b>Home deliveries:</b> Many women giving birth at home</p>

### Introduction of Pre-lacteal feeds

About 14.7% of the children (0-23 months) were reported to have received pre-lacteal feeds three days after birth. Most of the children who received the pre-lacteal feeds were from North Horr (28.0%) and Saku (16.0%) sub-counties. The knowledge on whether to give a new born any drink before breastfeeding was however mainly high 11.6% and highest in North Horr, 25.3% (Figure 5).

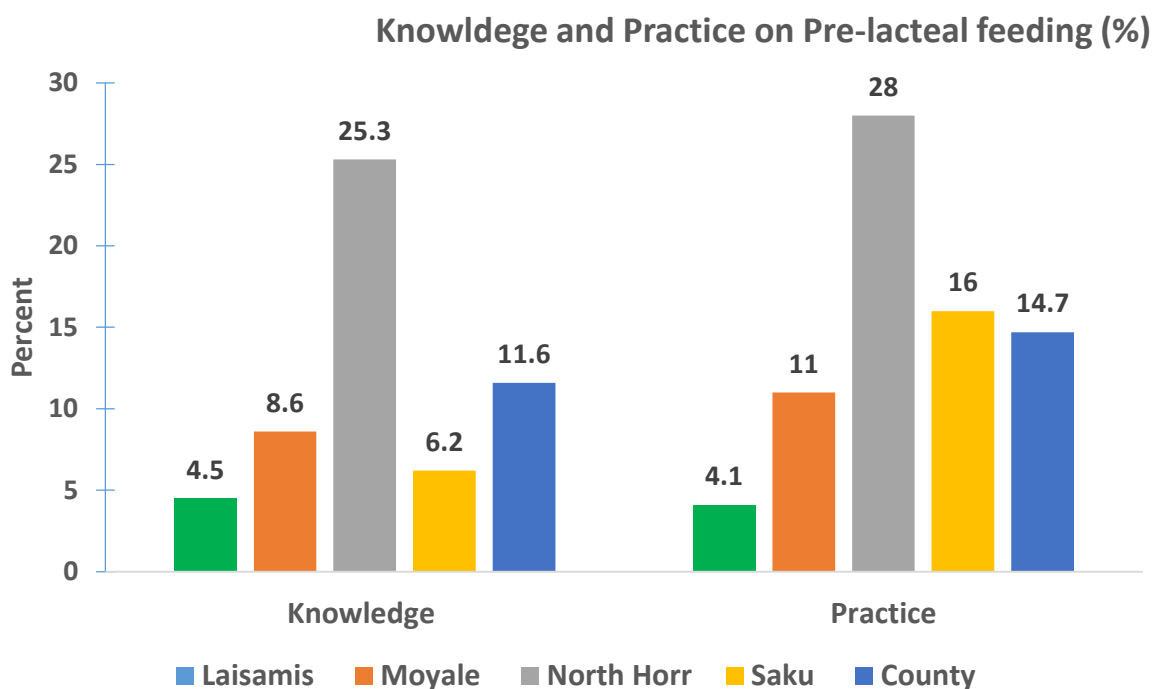


Figure 5: KAP on Pre-lacteal feeding (%)

The main pre-lacteal feeds given to children were: milk alone (36.0%), milk and plain water (22.4%), plain water (22.4%), plain water and sugar/glucose, milk, water, sugar/glucose, water and Fruit juice and Milk and sugar/glucose. Other pre-lacteal drinks given were: milk + Honey; plain water+ local herbs. Only 11.6 % of the caregivers interviewed reported that a baby should be given something else to drink other than breast milk (Table 20).

Table 20: Pre-lacteal feeds given by sub-county

Pre-lacteal feeds indicator		Sub-county (N=272)									
		Laisamis (n = 33)		Moyale (n = 47)		North Horr (n = 111)		Saku (n = 81)		Sub-total	
		n	%	n	%	n	%	n	%	n	%
Pre-lacteal Feeds given	Milk	6	18.2	3	6.4	81	73.0	8	9.9	98	36.0
	Milk and plain water	3	9.1	0	0.0	16	14.4	42	51.9	61	22.4
	Plain water	24	72.7	26	55.3	7	6.3	4	4.9	61	22.4
	Sugar/Glucose	0	0	10	21.3	1	0.9	3	3.7	14	5.1
	Other non-milk liquids	0	0	1	2.1	2	1.8	12	14.8	15	5.5

### Reasons for giving infants pre-lacteal feeds

The caregivers who gave pre-lacteal feeds were mainly compelled by cultural reasons 112 (41.0%) and the belief that breast milk was not enough 85 (31.1%). Others felt that the baby cried too much 8 (2.9%) or the belief that breast milk was not good for babies 3 (1.0%) (Table 21). In depth interviews and focus group discussions also confirmed that pre-lacteal feeds are mainly given due to cultural beliefs and practices of giving newborns animal milk or water before putting them to the breast. In one of the FGD with women, it was observed that ...“at birth, a boy gets water while the girl is given milk”. The other reason for giving pre-lacteal feeds was the perception women have that breast milk is not enough. These two boosters for pre-lacteal feeds were upheld by participants from all the sub-counties.

Table 21:Reasons for giving infants Pre-lacteal feeds

Reason for pre-lacteal feed	Sub-county (N= 273)				Sub-total n (%)
	Laisamis (n = 31)	Moyale (n = 48)	North Horr (n = 112)	Saku (n = 82)	
	n (%)	n (%)	n (%)	n (%)	
Cultural reasons	10 (32.3)	20 (41.7)	80 (71.4)	2 (2.4)	112 (41.0)
Breast milk not enough	8 (25.8)	13 (27.1)	13 (11.6)	51 (62.2)	85 (31.1)
Baby crying too much	3 (2.7)	1 (2.1)	4 (3.6)	0 (0)	8 (2.9)
Weather too hot	4 (12.9)	0 (0)	1 (0.9)	3 (3.7)	8 (2.9)
Not enough breastmilk and cultural reasons	0 (0)	3 (6.2)	3 (6.2)	3 (6.2)	9 (3.3)
Baby crying too much and cultural reasons	1 (3.2)	1 (3.2)	4 (3.6)	2 (2.4)	8 (2.9)
Other reasons (hot weather, not enough milk and culture...)	3 (9.7)	6 (12.5)	4 (3.6)	14 (17.1)	27 (9.9)

### Exclusive and continued breastfeeding

The children (0-5 months of age), who were exclusively breastfed a day prior to the study were 75.7%. This is the proportion of infants 0–5 months of age who received only breast milk during the previous day according to WHO’s current definition of exclusive breastfeeding (EBF) indicator (WHO, 2010). This definition of EBF is adopted in assessment of exclusive breastfeeding to avoid recall bias. The proportion of the children exclusively breastfed was however low in North Horr with only 67.3% whereas in the other sub-counties it was over 70% (Table 22).

Table 22: Children exclusively breastfed (0 to 5 months) \*

	Laisamis		Moyale		North Horr		Saku		Subtotal (N =477)	
	n	%	n	%	n	%	n	%	n	%
Exclusively breastfed	98	76.0	117	79.1	74	67.3	72	80.0	361	75.7
Not exclusively breastfed	28	21.7	30	20.3	36	32.7	17	18.9	111	23.3

\*This is the proportion of children 0-5 months who exclusively breastfed one day prior to the survey

The caregivers who believed that children can survive on breastmilk alone from birth to five months were 79.5%, which is also comparable with the proportion who reported to have exclusively breastfed their children the previous day. In North Horr County, however, less than 70% of the caregivers believed (68.9%) that children can exclusively breastfeed for 6 months after birth (Figure 6).

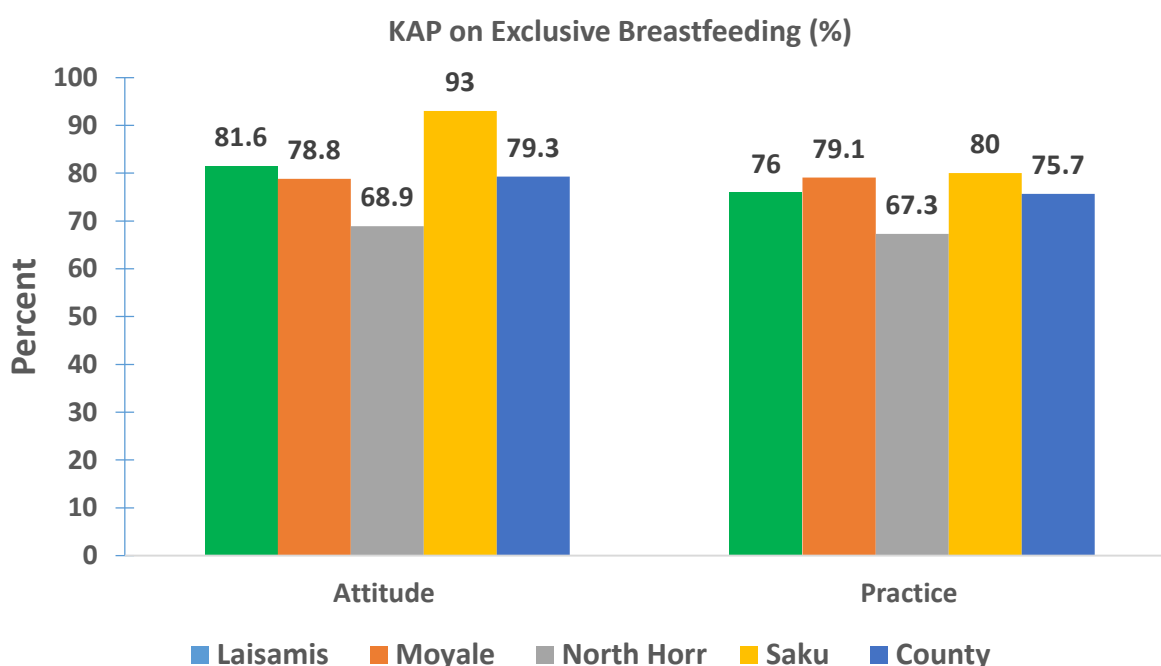


Figure 6: Children exclusively breastfed (0-5 months)

The observed high proportion of caregivers of 75.7% reporting EBF could be attributed to two reasons. First, the assessment of exclusivity of EBF involved only those children who had received breast milk during the previous day according to WHO’s current definition of exclusive breastfeeding as opposed to asking about children “children who had received only breast milk from birth to six



months”. Second, the positive beliefs and attitude (79.3%) among caregivers and community members could have favored exclusive breastfeeding for the first six months.

### Analysis of Barriers and Boosters of exclusive breastfeeding

Cultural practices were reported as a major barrier to exclusive breastfeeding from all sub-counties except Saku. Traditionally, new-born babies from all communities must drink animal milk (camel or cow milk) or special water before starting to breastfeed.

*“Culturally a baby is supposed to be breast fed alongside cow’s milk, the animals milk is important, the breast milk is light and not enough”. It was also observed that “a baby cannot be entirely fed on breast milk alone, water is important to the baby and it helps calm the stomach”. Furthermore, it is believed that exclusive breastfeeding is “not possible because some mothers do not have enough breast milk”. Most caregivers were also concerned that exclusive breastfeeding interferes with the mother’s health and other competing household chores as expressed in the following statement “EBF for 5 months is not possible, it makes the mother sick, weak and dizzy, so it is good to give the baby cow’s milk to avoid such problems for the mother, the mother has other chores to attend to which needs energy”, and “5 months is a long time to breast feed a child exclusively”.*

There were, however, positive beliefs that favor exclusive breastfeeding in Marsabit. For example, the fact that there are no cultural practices that hinder exclusive breastfeeding in Saku sub-county and the belief that children below six months of age cannot feed on family food to prevent them from developing stomach problems. Furthermore, many women, especially from Laisamis have knowledge on the benefits of exclusive breastfeeding (Table 23).

Table 23: Barriers and boosters of exclusive breastfeeding

Sub-county	Barriers	Boosters
Laisamis	<b>Culture:</b> child is given breast milk together with animal milk (4/17)	<b>Knowledge:</b> the women have knowledge on the importance of EBF (8/17)
Moyale	<b>Cultural:</b> At birth, a boy gets water while the girl is given milk Women (FGD) (18/28) Culturally a sick mother is not allowed to breastfeed because it is believed she might infect to the child. <b>Perceptions:</b> Breast milk not enough; (11/28)	<b>Religion:</b> Islamic sharia law of breastfeeding a child up to 2 years. (2/28)
North Horr	<b>Cultural belief:</b> Children must be fed with animal milk from birth; Mother gets bored during breastfeeding & is forced to be with baby all the time (4/10)	<b>Perceptions</b> that infants are unable to feed on family foods (2/10)

	<b>Perception:</b> Mother’s immune system weakened due to breastfeeding(4/10)	
<b>Saku</b>	<b>Perception:</b> EBF “not possible because some mothers do not have enough breast milk” (Grandmother); (6/7)	<b>Perceptions:</b> Women belief that EBF helps child to be healthy and strong (2/7) There are <b>no cultural practices</b> that would hinder EBF (6/7)

### Continued breastfeeding at 1 year and 2 years

Continued breastfeeding at 1 year (12-15 months) and 2 years (20-23 months) was reported by 93.4% and 69.0% of caregivers respectively. Whereas the proportions of participants reporting these optimum breastfeeding practices were high in Laisamis, North Horr and Saku sub-counties, they were notably lower in Moyale sub-county. In Kenya, slightly more than half of the children (51%) continue breastfeeding at 2 years (KDHS, 2014) as seen in Table 24.

Table 24: Continued breastfeeding at 1 year and 2 years

	Sub-county								County N=2096	
	Laisamis		Moyale		North Horr		Saku			
	n	%	n	%	n	%	n	%	n	%
Child ever breastfed (0-23) months	487	99.8	674	98.0	547	99.6	368	99.7	2076	99.1
Continued breastfeeding at 1 year (12-15)	79	90.8	113	89.0	109	99.1	69	95.8	370	93.4
Continued breastfeeding at 2 years (20-23)	48	75.0	46	42.6	84	91.3	40	76.9	218	69.0

\* The total number of children in the study aged 12-15 months = 395 and 20-23 months=306.

### Barriers and boosters of continued breastfeeding

The main barriers to continued breastfeeding at 1 year and 2 years in all the sub-counties were maternal workload, poor maternal health and close birth spacing. It was also noted that in case of divorce or separation, traditionally a woman should stop breastfeeding. Most women’s perceptions about continued breastfeeding are summarized in the following statements:

*‘even those who do it don’t exceed 1 year, it’s not practical, you have a lot of chores to do and the baby should be on his own playing with others, gain some independence because the follower could be on the way. 2 years is a long time to breast feed’.*

*“Continued breast feeding at one year or even beyond nine months is dangerous because it makes mothers weak and sickly, not enough energy for the mother to exercise that. “Some mothers lose weight extremely so they stop breast feeding in order to gain weight”.*

The close birth spacing, as a barrier to breastfeeding, was mainly attributed to cultural expectations of stopping breastfeeding when a woman resumes sexual intercourse with her husband as seen in these sentiments: *“Breast feeding stops once a husband demands for sex, this is also a cultural expectation that a man obtains his conjugal rights”. “Our culture also upholds that breast feeding stops once the mother resumes sex with the husband”, “... and once sex resumes, breast feeding stops”*

The knowledge on the health benefits of breastfeeding was however found to be a major booster for continued breastfeeding and was widespread throughout the county (Table 25). The knowledge on the benefits of breastfeeding should be promoted to protect and enhance continued breastfeeding practices at two years of the children’s life.

Table 25: Barriers and boosters of continued breastfeeding

Sub-county	Barriers	Boosters
Laisamis	<ul style="list-style-type: none"> <li>• Another pregnancy (6/17)</li> <li>• Mother grazing animals for hours (3/17)</li> <li>• HIV/AIDS infection in mother (5/17)</li> <li>• Not enough milk (4/17)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Knowledge:</b> Healthy – for growth including child’s brain development (8/17); Protects against disease (6/17)</li> <li>• Used to stop a child from crying(4/17)</li> </ul>
Moyale	<ul style="list-style-type: none"> <li>• Close child spacing - Mother gets pregnant (8/28)</li> <li>• When the mother is sick (15/28)</li> <li>• <b>Traditional belief:</b> “Boy should be given water and breastfed short time,</li> <li>• Cultural expectation that breastfeeding stops when mother resumes sexual intercourse.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Knowledge:</b> ...breast milk is nutritious and makes baby look healthy.... (8/28)</li> <li>• .... Child grow faster and helps in brain development.... (14/28)</li> <li>• Prevent diseases (11/28)</li> </ul>
North Horr	<ul style="list-style-type: none"> <li>• When mother is sick or dies (8/10)</li> <li>• Child refuses to breastfeed (2/10)</li> <li>• Close child spacing – mother gets pregnant (6/10)</li> </ul>	<p><b>Knowledge:</b> Healthy for child and prevent diseases (8/10); Has essential nutrients for growth and development (4/10)</p> <p><b>Religion:</b> “according to Islamic laws a child should be breastfed for 2 years”(2/10)</p>

<b>Saku</b>	<ul style="list-style-type: none"> <li>• <b>Perception:</b> Milk not enough (1/7)</li> <li>• Poor health or death of a mother (6/7)</li> <li>• Birth spacing: – Another pregnancy(3/7)</li> </ul>	<b>Knowledge:</b> Healthy-For growth and brain development (7/7); Helps in fighting against diseases (3/7)
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### Containers for feeding children (0-23)

A total of 73.8% (n=1548) children 0-23 months were fed from a container. The most commonly used containers reported were: cup with spout (33.7%), cup with hole (26.4%) cup only (19.6%) and bottle with nipple (13.9%) as seen on Table 26.

Table 26: Container used to feed children 0-23 months

Container used	Laisamis (n= 344)		Moyale (n= 516)		North Horr (n= 411)		Saku (n= 277)		County	
	n	%	n	%	n	%	N	%	n	%
Cup with spout	162	47.1	196	38.0	129	31.4	34	12.3	521	33.7
Cup with hole	83	24.1	54	10.5	140	34.1	132	47.7	409	26.4
Bottle with nipple	7	2.0	97	18.8	36	8.8	75	27.1	215	13.9
Cup only	69	20.1	125	24.2	82	20.0	27	9.7	303	19.6
Cup/bowl with spoon	14	4.1	37	7.2	23	5.6	7	2.5	81	5.2
Others (feeding with hand, guard...)	9	2.6	7	1.4	1	0.2	2.	0.7	19	1.2

The proportion of caregivers with knowledge on use of these containers also varied. The caregivers who knew that the right containers to be used were a cup with spout were 31.1%, cup with hole were 20.5%, cup only were 20.8%. For bottle feeding, while 14.8% of the caregivers knew that the right container to use for feeding children 0-23 months was a bottle with nipple (Table 27).

Table 27: Knowledge on type of Container for feeding (0-23)

Indicator	Sub-county (N=2095)									County
	Laisamis (n= 489)		Moyale (n= 687)		North Horr (n= 549)		Saku (n= 370)		n	
	n	%	n	%	n	%	N	%		
Cup with spout	214	43.8	235	34.2	167	30.4	35	9.5	651	31.1

Cup with hole	79	16.2	62	9.0	142	25.9	146	39.5	429	20.5
Cup only	118	24.1	146	21.3	136	24.8	36	9.7	436	20.8
Bottle with nipple	32	6.5	118	18.2	64	11.7	96	25.9	310	14.8
Cup/bowl with spoon	7	1.4	35	5.1	14	2.6	7	1.9	63	3.0
Others (feeding with hand, guard...)	9	1.8	1	0.1	0	0.0	1	0.3	11	0.5
Don't know	30	6.1	90	13.1	26	4.7	49	13.2	195	9.3

### **Boosters of bottle feeding**

The main boosters of bottle feeding as reported from the qualitative data in the KII and FGDs were that it is convenient especially when the mother is absent from home (5/6). The caregivers also argued that when using the bottle to feed liquids to a child, chances of food wastage are reduced as the feed from the bottle does not easily pour out (5/6).

### **Complementary Feeding**

#### **Introduction to solid semi-solid or soft foods and responsive feeding**

Introduction of solid, semi-solid or soft foods indicator is measured as the proportion of infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day prior to the study (MOH, 2016; WHO, 2010). This was computed here as the proportion of children 6-8 months, who fed on Maize, rice, wheat, porridge, sorghum, bread, or other foods made from grains the previous day during the day or night. The knowledge on introduction of solid, semi-solid or soft foods was low. The caregivers who had knowledge on introduction of solid, semi-solid or soft foods were 49.6% while those who gave their children (6-8 months) the food the previous day were only 44.3% (Figure 7).

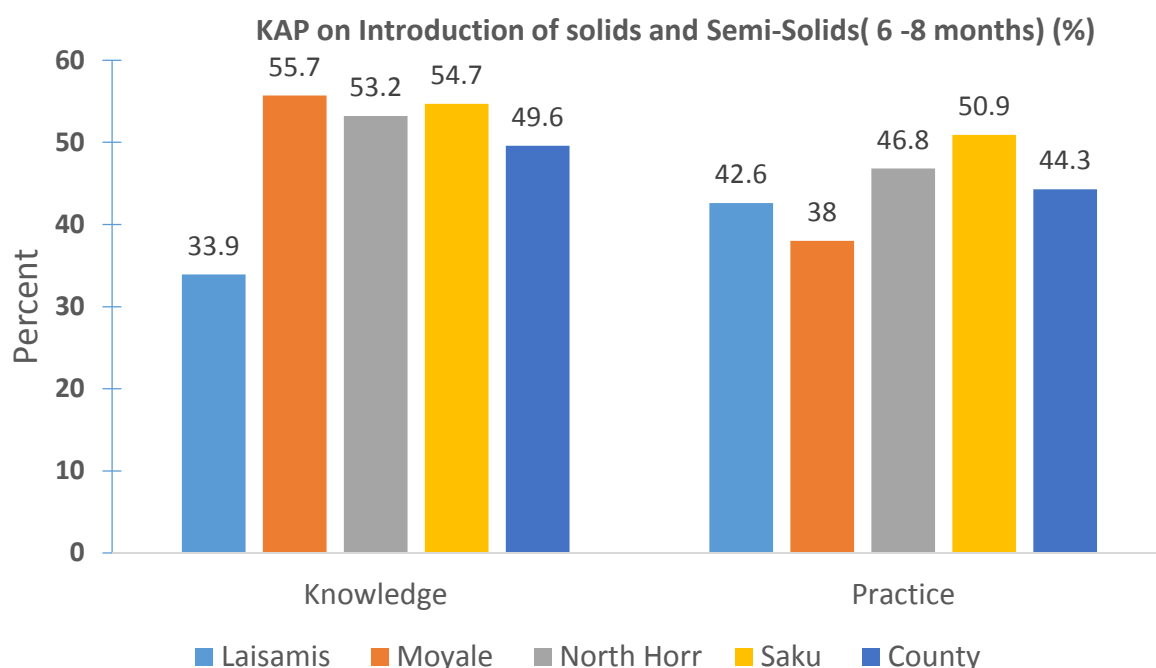


Figure 7: Introduction to solids and semi-solids (6 to 8 months))

From the FGDs and KIIs, most children were introduced to complementary feeding as early as 3 months' animal milk, porridge and anjera. One participant in the FGD had to say this. *"Introduction of complementary foods we know should start at 6 months as we are told when we go to the hospital, but it depends with the mother, if the baby is not getting satisfied and cries most of the time then we give them porridge, then anjera can be given at 4 months, even fruits at times if available like bananas we give"*. This is another sentiment of one of the participants. *"Truly speaking a child who is given food at 3 or 4 months grows fat and faster compared to those who breast feed for long"*.

The mother's choices of food to introduce to a child on complementary feeding is influenced by the food availability, thus, majority of the mothers introduce readily available foods as can be accessed from markets and from food aid as distributed by the government and non-governmental organizations in the region. *"I can say that I give to the child what is available, I may want to give a certain food for example porridge to a 3-month old baby and that time there is no flour to prepare porridge, so I end up giving food that is available be it soup and rice or anjera and soup"*.

### Responsive feeding for children

Responsive feeding is the process of recognizing your baby's cues for hunger and fullness and responding to them appropriately. Non-responsive feeding characterized by absence of encouragement during feeding has been previously found to contribute to loss of interest in food and non-completion of the food offered among children (Mwase, Mutoro, Owino, Garcia, & Wright, 2015). More than half of the children were encouraged to eat (59.7%). More than half of the children who were encouraged to eat completed their food (63.1%) while 36.9% of them did not complete their food because they were not encouraged. This baseline survey also confirmed that children are more likely to complete their food when encouraged to eat. The most common responsive feeding action was talking to the children as they ate and encouraging them to complete food offered (54.3%) (Table 28).

Table 28: Responsive feeding for children (6 – 23 months)

	Laisamis		Moyale		North Horr		Saku		County	
	n	%	n	%	n	%	N	%	n	%
<b>Child encouraged to eat (N= 1611)</b>										
No	158	44.3	245	45.5	158	36.1	88	31.7	649	40.3
Yes	199	55.7	293	54.5	280	63.9	190	68.3	962	59.7
<b>Completion of food offered (N = 890)</b>										
Child completed food	215	44.1	266	38.7	227	41.3	182	49.2	890	42.5
Child completed food without encouragement	76	35.3	121	45.5	84	37.0	48	26.2	329	36.9
Child completed food with encouragement	139	64.7	145	54.5	143	63.0	135	73.8	562	63.1
<b>Responsive feeding actions (N=958)</b>										
Encouraged verbally	90	45.2	191	66.3	144	51.8	95	49.2	520	54.3
Offered other food/liquid and Encouraged verbally	22	11.1	24	8.3	26	9.4	17	8.8	89	9.3
Offered other food/liquid	13	6.5	4	1.4	17	6.1	45	23.3	79	8.2
Other actions (verbal encouragement with modeled eating, force, offer other foods)	12	6.0	8	2.8	22	7.9	4	2.1	206	21.5

Qualitative data also confirmed that mmajority of mothers in all the sub-counties encouraged children to eat and finish the quantity served by singing and playing with the children while others tried giving different foods.

*“If the child is adamant to eat the food I sing while playing and in the process the baby joyfully eats all the food. When they eat well, they don’t disturb you can do other things”.*  
*“me I sing to the child as a way of persuading the child to eat all the food served, you know sometimes they can be stubborn”.* *If the child refuses to eat, I do sing and dance so the child enjoys the food and in the process they finish the food given”.* *“Personally I try different food for example if I give the baby smashed potatoes and they don’t eat well, I will give porridge and then next meal I give rice and soup”.*



### Infant and young child feeding during illness

More than half of the children in Marsabit County were fed less milk (67.9%) and less food (67.9%) when they were ill because they refused to feed. However, 2.4% (n=50) and 2.5% (n=52) of the children also fed less on breast milk and food respectively because of the mother's decision. as seen in Table 29.

Table 29: Feeding during illness

Feeding during illness	Laisamis (n=488)		Moyale (n=690)		North horr (n=549)		Saku (n=370)		County (N=2097)	
	n	%	n	%	n	%	N	%	n	%
<b>Amount of breast milk given</b>										
Less, because child refused	368	75.4	417	60.4	435	79.2	203	54.9	1423	67.9
Child has never been sick	66	13.5	61	8.8	27	4.9	68	18.4	222	10.6
The same	14	2.9	87	12.6	69	12.6	58	15.7	228	10.9
More	1	0.2	92	13.3	7	1.3	5	1.4	30	1.4
Less, mothers decision and child never breastfed	13	2.7	20	2.9	8	1.5	9	2.4	50	2.4
Don't know	26	5.3	13	1.9	8	1.5	19	5.1	66	3.1
<b>Amount of non-breast milk given</b>										
Less, because child refused	350	71.7	394	57.2	433	78.9	247	66.6	1424	67.9
Child never fed non-breast milk	70	14.3	82	11.9	29	5.3	68	18.3	249	11.9
The same	10	2.0	79	11.5	65	11.8	7	1.9	161	7.7
More	6	1.2	89	12.9	2	0.4	3	0.8	100	4.8
Less, mothers decision	4	0.8	31	4.5	11	2.0	6	1.6	52	2.5
Don't know	48	9.8	14	2.0	9	1.6	40	10.8	111	5.3

Child feeding during illness was equally poor, with more than half of the sick children reportedly receiving less milk and food (Figure 8).

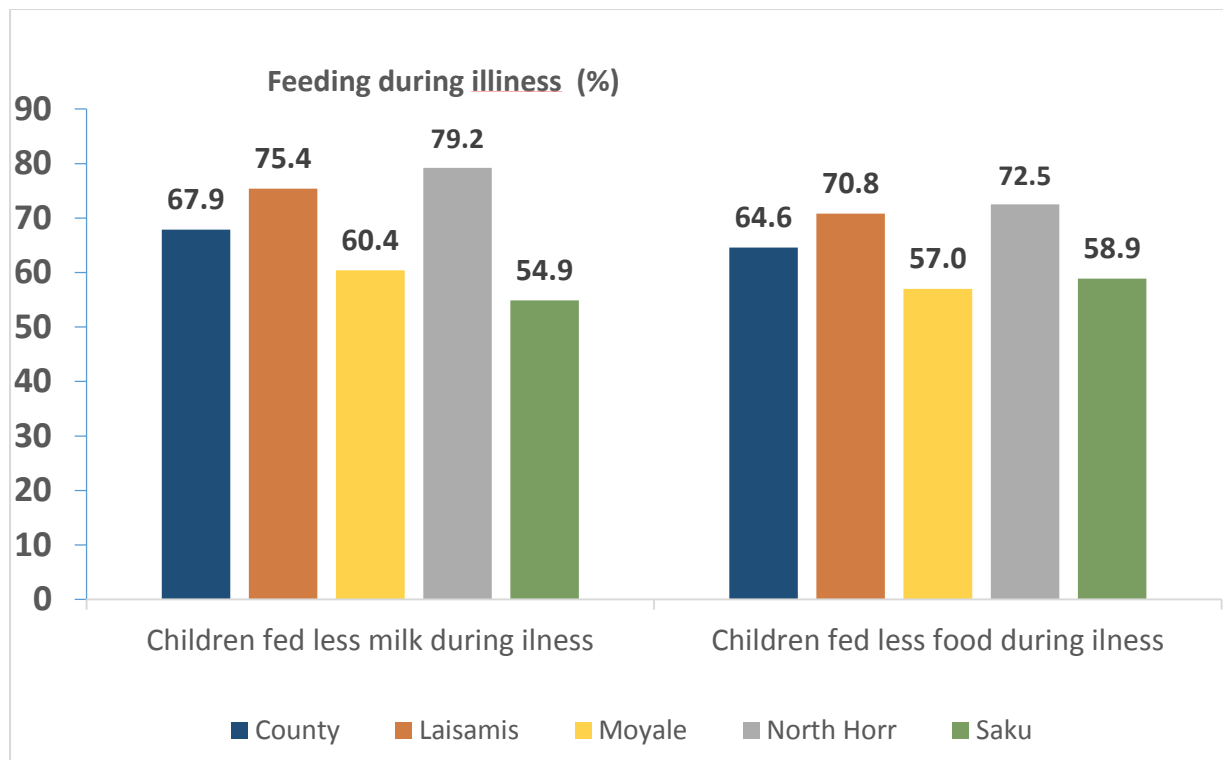


Figure 8: Feeding during illness

**Barriers and boosters to appropriate feeding during illness**

The main barriers to infant feeding during illness were loss of appetite and lack of food. The social support from grandmothers and nutrition counseling and education were however the main facilitators of feeding children during illness (Table 30).

Table 30: Barriers and boosters to appropriate feeding during illness

Sub-county	Barriers	Boosters
<b>Laisamis</b>	<ul style="list-style-type: none"> <li>Child is less active (5/11)</li> <li>Lack of appetite to eat food. (6/11)</li> </ul>	<ul style="list-style-type: none"> <li><b>Social support:</b> Grandmothers assist in feeding sick children</li> </ul>
<b>Moyale</b>	<ul style="list-style-type: none"> <li>Belief: a sick child can't feed (4/12)</li> <li>Eat small amounts of food (6/12)</li> <li>Much time spent on feeding (5/12)</li> <li>Child only eats what wants (2/12)</li> <li>Loss of appetite during illness (4/12)</li> </ul>	<ul style="list-style-type: none"> <li><b>Nutrition counseling and education:</b> received from health workers (3)</li> </ul>
<b>North Horr</b>	<ul style="list-style-type: none"> <li>Lack of appropriate food for a sick child (2/2)</li> <li>Lack of appetite hence child takes less food/ refuses to eat (2/2)</li> </ul>	<ul style="list-style-type: none"> <li><b>Community leaders:</b> advice the mothers on child feeding (2)</li> </ul>
<b>Saku</b>	<ul style="list-style-type: none"> <li>Symptoms like loss of appetite, diarrhea prevents mothers from feeding children; (2/3)</li> <li>Caregiver spends much time persuading child to eat (3/3)</li> </ul>	<ul style="list-style-type: none"> <li><b>Nutrition education</b> from health facilities encourages mothers to feed children during sickness (1)</li> </ul>

### Minimum dietary diversity for children

Dietary diversity is a proxy for the micronutrient density of infant and young child diet (WHO, 2010). In this study, only 15.5% of all the children, 6-23 months, were reported to have achieved the minimum dietary diversity of consuming at least four out of the 7 recommended food groups during the previous day and are more likely to have adequate micronutrient intake. The proportion of children with this minimum dietary diversity was even lower among those children who were only breastfeeding, at 15.3%. Among the non-breastfed children aged 6-23 months (n=15), only 46.7% of them achieved the minimum dietary diversity (Table 31).

Table 31: Minimum Dietary Diversity

Minimum Dietary diversity -Children	Laisamis		Moyale		North Horr		Saku		Subtotal	
	n	%	n	%	n	%	n	%	n	%
Minimum Dietary diversity (All children 6 - 23) N=1605	19	5.3	113	21.0	21	4.8	97	34.9	250	15.5
Minimum Dietary diversity (breastfed children 6 -23) N = 1589	19	5.3	107	20.4	21	4.8	96	34.8	243	15.3
Minimum Dietary diversity (non-breastfed children 6 -23) N=15	0	0.0	6	46.2	0	0.0	1	100	7	46.7

These findings suggest that dietary diversity was poor throughout the sub-counties, with only Saku having slightly more than one third of the children reportedly consuming a variety of food that met their minimum nutrient needs (figure 9). This further suggests that some of the children, 6-23 months, only breastfed the previous day and did not receive any complementary feed. This is not acceptable because after 6 months of age, breast milk alone is not adequate to provide the child with the required nutrients. Some of it must come from complementary food.

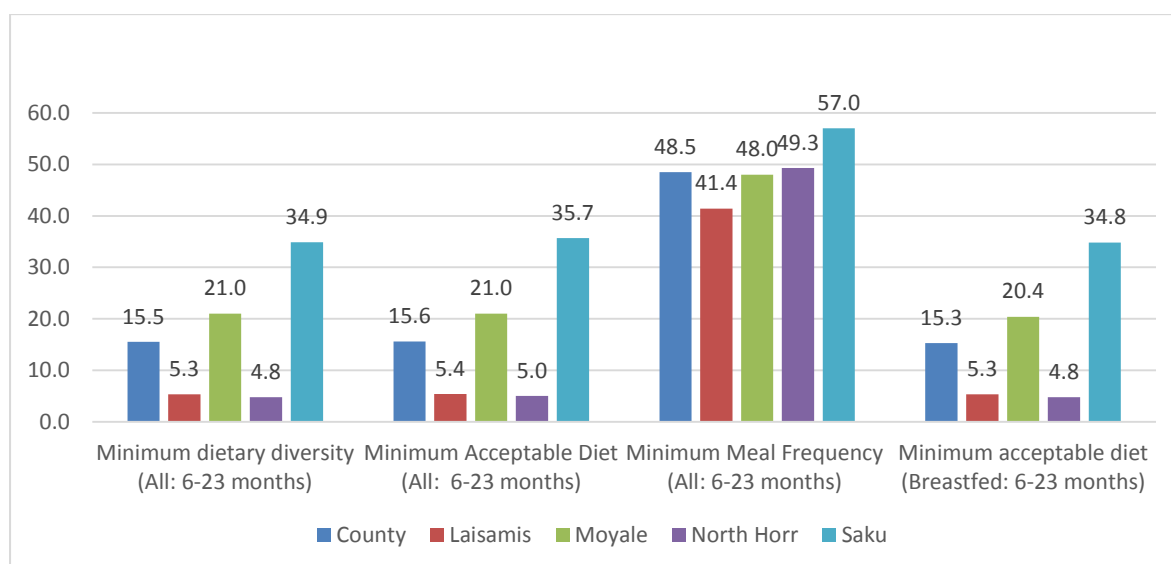


Figure 9: Dietary Diversity for children indicators by sub-county

The minimum meal frequency for all children 6-23 months, which is the proportion of breastfed and non-breastfed children 6–23 months of age who received solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) at least two times the previous day (WHO, 2010) was 778/1605 (48.5%) for Marsabit County in this Survey. Saku Sub-county had the highest proportion (57.0%) of children who achieved this minimum meal frequency while Laisamis Sub-county had the least, 41.4% compared to Moyale (48.0%) and North Horr (49.3%) sub-counties (Figure 9 and Table 32).

This survey also found that only 15.6% of all the children (both breastfed and non-breastfed) from Marsabit County consumed a minimum acceptable diet and only 15.3% of the children who were only breastfed (6-23 months) consumed a minimum acceptable diet (Table 30 and 32). In Kenya, only 21% of children aged 6-23 months receive a minimum acceptable diet (KDHS, 2014).

Of all the children 6 to 23 months who were breast feeding at the time of the survey (n=1589), only 15.3% of them received a minimum acceptable diet of at least four food groups per day and a minimum meal frequency of at least two meals per day (Table 32).

Among the breastfed children (6-8 months) only 23 children (North Horr=5; Saku=10; Laisamis=0; Moyale=8), received a diversity of food of at least 4 food groups and a minimum frequency of 2 that meets their nutrient needs. Overall therefore, the proportion of children 6 to 8 months who were breastfed and were expected to have been introduced to solid and semi-solid foods that met their micronutrient needs was only 8.7%. The children in the age-group 9-23 months who were breastfeeding and received a minimum acceptable diet of at least four food groups and a minimum of three meals per day were 220/1325 (16.6%) in the county and most of them were from Saku (38.6%) and Moyale (21.7%) sub-counties. (Table 32).

Table 32: Minimum Acceptable diet and Meal Frequency

<b>Minimum Dietary Diversity Indicator</b>	<b>Laisamis</b>	<b>Moyale</b>	<b>North Horr</b>	<b>Saku</b>	<b>County</b>
Total 6 – 23 (All breastfed)	354	526	432	277	1589
6 -23 (min diversity & frequency 2+)	19	107	21	96	243
<b>Minimum Acceptable diet (Breastfed)</b>	<b>5.4%</b>	<b>20.3%</b>	<b>4.9%</b>	<b>34.7%</b>	<b>15.3%</b>
<b>Minimum Acceptable diet (Breastfed 6-8 months)</b>					
Total 6 – 8 months (breastfed only)	61	70	79	54	264
Minimum meal frequency 2+ (breastfed)	0	8	5	10	23
<b>Minimum Acceptable diet breastfed 6-8 months)</b>	<b>0.0%</b>	<b>11.4%</b>	<b>6.3%</b>	<b>18.5%</b>	<b>8.7%</b>
<b>Minimum Acceptable diet (Breastfed 9-23 months)</b>					
Total 9 – 23 months (Breastfed only)	293	456	353	223	1325
Minimum dietary diversity, meal frequency 3+ (breastfed)	19	99	16	86	220
<b>Minimum Acceptable diet (Breastfed 9-23 months)</b>	<b>6.5%</b>	<b>21.7%</b>	<b>4.5%</b>	<b>38.6%</b>	<b>16.6%</b>
<b>Minimum acceptable diet (Non-breastfed 6-23 months)</b>					
Total 6 – 23 months (Non-breastfed)	1	11	2	1	15
Minimum meal frequency 4+ (non-breastfed)	0	6	0	1	7
<b>Minimum acceptable diet (Non-breastfed 6-23 months)</b>	<b>0.0%</b>	<b>54.5%</b>	<b>0.0%</b>	<b>100.0%</b>	<b>46.7%</b>
<b>Minimum Acceptable Diet All Children (6-23)</b>					
Total 6 – 23 months (All children)	355	537	434	279	1605
Minimum meal frequency All (min dietary diversity & minimum meal frequency of 2+)	19	113	21	97	250
<b>Minimum Acceptable Diet All (6-23)</b>	<b>5.4%</b>	<b>21.0%</b>	<b>4.8%</b>	<b>34.8%</b>	<b>15.6%</b>
<b>Minimum meal frequency (All children 6-23)</b>					
Total 6 – 23 months (All children)	355	537	434	279	1605
Minimum meal frequency 2+	147	258	214	159	778
<b>Minimum meal frequency (All children 6-23 months)</b>	<b>41.4%</b>	<b>48.0%</b>	<b>49.3%</b>	<b>57.0%</b>	<b>48.5%</b>

The main solid, semi-solid or soft foods consumed by the children (6 to 23 months) were cereal based foods (74.3%), beans and lentils (45.2%), roots and tubers (33.3%) and flesh meat (27.7%) as seen on Table 33.

Table 33: Food items consumed by children 6 to 23 months

Foods consumed	Laisamis (n= 355)		Moyale (n= 537)		North Horr (n = 434)		Saku (n= 279)		County (N = 1605)	
	n	%	n	%	n	%	n	%	n	%
Cereals	240	67.6	421	78.4	320	73.7	212	76.0	1193	74.3
Beans and lentils	101	28.5	296	55.1	207	47.7	122	43.7	726	45.2
White potatoes, yams and cassava	33	9.3	328	61.1	7	1.6	167	59.9	535	33.3
Flesh meats	80	22.5	139	25.9	147	33.9	78	28.0	444	27.7
Dark green leafy vegetables	23	6.5	100	18.6	14	3.2	132	47.3	269	16.8
Organ meats	51	14.4	24	4.5	110	25.3	43	15.4	228	14.2
Any other fruit/vegetable	16	4.5	77	14.3	16	3.7	92	33.0	201	12.5
Eggs	16	4.5	68	12.7	17	3.9	85	30.5	186	11.6
Pumpkin, carrots and squash	12	3.4	48	8.9	16	3.7	86	30.8	162	10.1
Ripe mangoes, papaya and guavas	14	3.9	54	10.1	6	1.4	82	29.4	156	9.7
Cheese/other milk products	9	2.5	32	6.0	18	4.1	61	21.9	120	7.5
Fish/sea food	3	0.8	0	0.0	34	7.8	15	5.4	52	3.2
Other solid foods	104	29.3	218	40.6	144	33.2	130	46.6	596	37.1

Qualitative data from FGDs and KIIs confirmed that porridge was the most common complementary food given to a majority of children mainly at 3 months, followed by *anjera* at 4-6 months then smashed potatoes, bananas, available fruits and beans at 6-8 months, with rice, *ugali*, eggs and meat being introduced as from 9 months. By the 12th month, the children eat "*soccotus*" (a mix of maize and beans) and green leafy vegetables (*Sukuma wiki*). The following were opinions and sentiments of the mothers expressed during the FGD sessions. "*First children are given porridge, anjera and milk - these enable them to grow faster*". Another mother had this to say. "*As they continue growing they can accommodate other foods like potatoes, fruits like ripe bananas and even anjera and beans,*

so we smash and give them and we don't see any problem with this, in fact beans and anjera makes them fat".

With the type of dietary consumption pattern among the children that was described by women during the discussions, it is unlikely that most children were able to consume a minimum of four food groups that met their micronutrient needs, hence the observed poor dietary diversity and acceptable diets.

**Consumption of iron-rich or iron-fortified foods and micronutrient powders:**

The proportion of children 6–23 months of age who received an iron-rich food or iron-fortified food that is specially designed for infants and young children, or that is fortified in the home as defined in the MOH and WHO guidelines (MOH, 2016; WHO, 2010) was 20.2%.

Over 90% of caregivers reported that their children (6-23 months,) did not take micronutrient powder or sprinkles (92.0%). Only 8.0% consumed food to which a micronutrient powder/sprinkle was added seen in Figure 10.

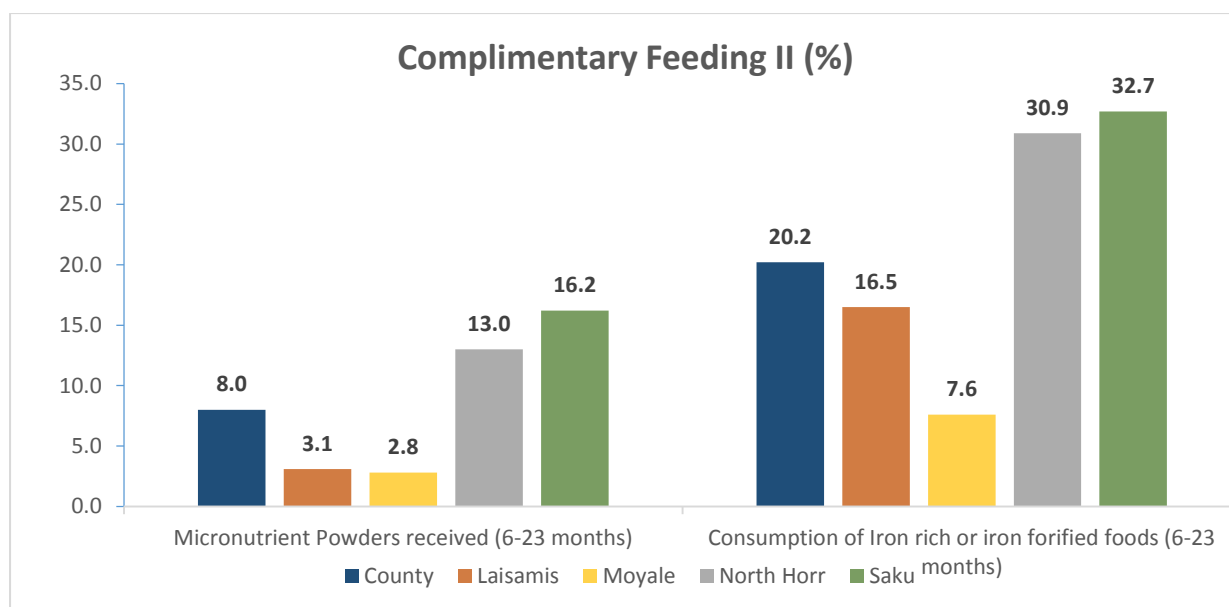


Figure 10: Consumption of iron-rich or iron-fortified foods and micronutrient powders

The main fortified foods consumed were breakfast cereals (Weetabix, Oats, Quick porridge) reported by 37.2% of the caregivers, corn soya blend (36.0%) and *Cerelac* milk and other formula (20.1%) (Figure 11).

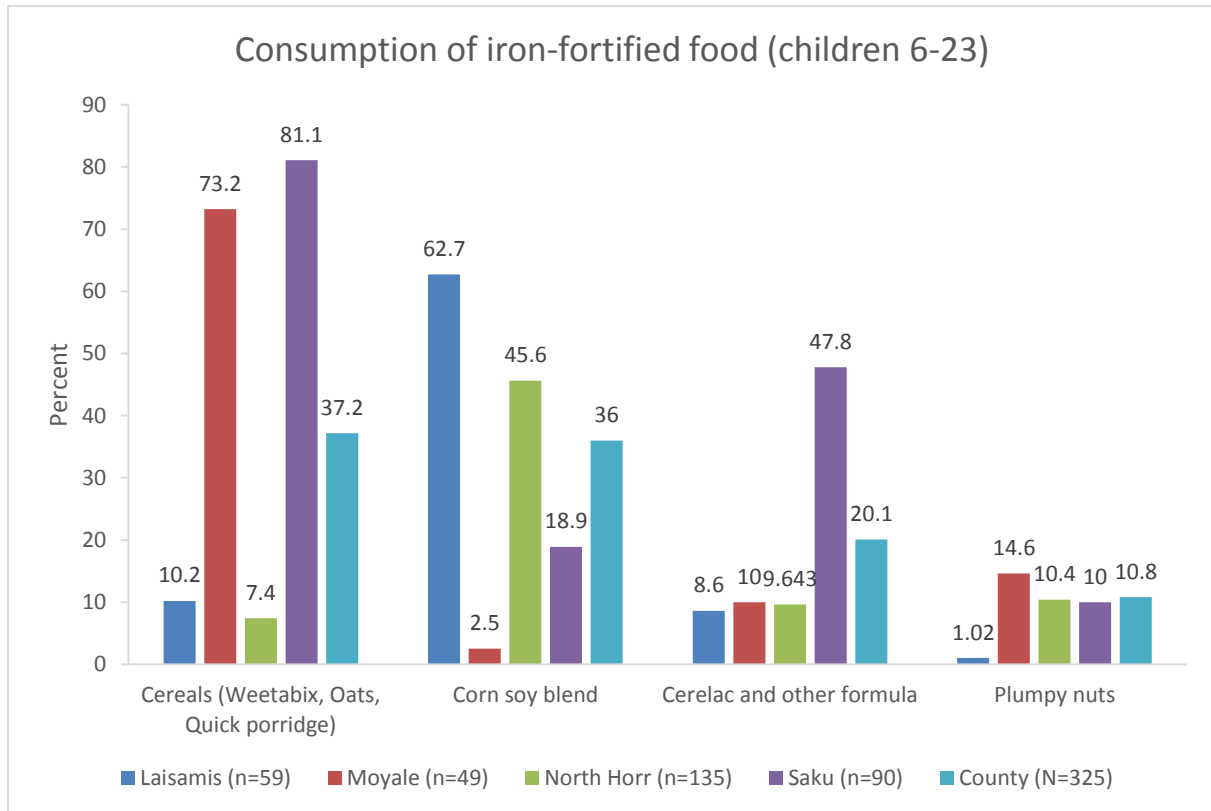


Figure 10 :Consumption of iron-fortified food (children 6-23)



### Barriers and boosters of complementary feeding practices

The main barrier to appropriate complementary feeding was food insecurity due to prolonged drought which contributes to limited availability of varieties of food in the community. Poverty also limits the ability of households to purchase food. Other barriers were lack of knowledge on food and child feeding as well as cultural beliefs and perceptions that hinder children from consuming certain foods. The facilitating factors in complementary feeding were availability of relief food, social support from older women, grandmothers and fathers as well as health talks provided at the health facilities (Table 34).

Table 34: Barriers and boosters of complementary feeding practices

Sub-county	Barriers	Boosters
Laisamis	<ul style="list-style-type: none"> <li>Food insecurity due to drought and financial constraints</li> </ul>	
Moyale	<ul style="list-style-type: none"> <li>Poverty (18/28)</li> <li>Lack of nutritional knowledge on foods (6/28)</li> <li>Belief that "... a child's system is not fully developed" (7/28)</li> <li>Lack of adequate food varieties (13/28)</li> </ul>	<ul style="list-style-type: none"> <li>Relief food readily available (3/28)</li> <li>Health talks from the hospitals</li> <li>Advise from older mothers</li> <li>Grand mothers decides on support in childfeeding</li> </ul>
North Horr	<ul style="list-style-type: none"> <li>Perception that solid food may choke child (2/10)</li> <li>Food insecurity due to prolonged drought, hence limitation on food intakes which affects children too (10/10) "... <i>The place is marginalized and no food variety.</i>"</li> <li>Lack of knowledge on child feeding;</li> <li>Poverty (4/10)</li> </ul>	Fathers support in child feeding (2/10)
Saku	<ul style="list-style-type: none"> <li>No money to buy variety of food (3/7)</li> <li>Cultural belief (taboo)- they believe that eating some foods like fish and sheep meat affects the baby's speech development (4/7)</li> </ul>	<ul style="list-style-type: none"> <li>Health and nutrition talks</li> <li>Food avilability. The food if provided through humaniterrian aid (2/7)</li> </ul>

### **Prevalence of malnutrition (MUAC) in children 6-23 months**

The prevalence of global acute malnutrition (GAM) (MUAC less than 125 mm) was 6.9 % (95% C.I: 5.8 - 8.3) while that of moderate acute malnutrition (MAM) of MUAC less than 125 mm and more than or equal 115 mm was 5.0 % (95% C.I: 4.1 - 6.2) and severe acute malnutrition (MUAC less than 115 mm and/or oedema) was 1.9 % (95% C.I: 1.3 - 2.7). This was “slightly” better compared to the July SMART Survey findings for MUAC for children 6-23 months which showed a serious condition of GAM 11.4 % (95% C.I: 8.3 - 15.5), MAM of 8.8% (6.5 - 11.8 95% C.I.) and severe malnutrition of 2.6 % (1.3 - 5.0 95% C.I.) (MOH/CGM, 2017) (table 35). These findings therefore show that there has been some improvement in the nutritional status of children in Marsabit County. The improvement is considered “slight” due to overlap in the 95% Confidence Intervals for the GAM rates for the July SMART survey and the current MIYCN KAP survey. It was however observed that in the current KAP survey, the children were more malnourished in Saku and Moyale than in Laisamis and North Horr in terms of GAM and MAM. In Saku GAM was 7.9% while MAM was 6.3%. In Moyale, the GAM was 7.6% and MAM was 5.7%. These figures are higher than for Laisamis (GAM=5.0%, MAM=2.8%) and North Horr (GAM=7.3%, MAM=5.4%).

The current findings by sub-county are different from the July SMART survey ones where the prevalence for both GAM and SAM were higher in North Horr and Laisamis than in Saku and Moyale. The observed nutrition situation in this baseline survey was probably due to the National Nurses Strike that was going on a few months before and during the KAP survey where almost 75% of health facilities were closed in Saku and Moyale and only about 3 out of 16 facilities were closed in North Horr and Laisamis. Furthermore, a number of emergency response activities were going on in both Laisamis and North Horr while in Moyale and Saku there was none. The nurses strike could have therefore affected both the health seeking behaviours among the caregivers of the children as well as the feeding practices. For example, whereas most children in Laisamis (62.7%) and North Horr (45.6%) fed on corn soya blend (CSB), only 18.9% of the children in Saku and 2.5% children in Moyale received the CSB. Most of the children in Moyale and Saku fed on purchased cereal-based porridge (Fig. 9).

Table 35: Prevalence of malnutrition (MUAC) in children 6-23 months by sub-county

Nutritional Status (MUAC)	Laisamis n=423	Moyale n=367	North Horr n=423	Saku n=394	All (County) n = 1607
Prevalence of global acute malnutrition ( less than 125 mm )	(21) 5.0 % (3.3 - 7.5 95% C.I.)	(28) 7.6 % (5.3 - 10.8 95% C.I.)	(31) 7.3 % (5.2 - 10.2 95% C.I.)	(31) 7.9 % (5.6 - 11.0 95% C.I.)	(111) 6.9 % (5.8 - 8.3 95% C.I.)
Prevalence of moderate acute malnutrition (< 125 mm and >= 115 mm)	(12) 2.8 % (1.6 - 4.9 95% C.I.)	(21) 5.7 % (3.8 - 8.6 95% C.I.)	(23) 5.4 % (3.7 - 8.0 95% C.I.)	(25) 6.3 % (4.3 - 9.2 95% C.I.)	(81) 5.0 % (4.1 - 6.2 95% C.I.)
Prevalence of severe acute malnutrition (< 115 mm )	(9) 2.1 % (1.1 - 4.0 95% C.I.)	(7) 1.9 % (0.9 - 3.9 95% C.I.)	(8) 1.9 % (1.0 - 3.7 95% C.I.)	(6) 1.5 % (0.7 - 3.3 95% C.I.)	(30) 1.9 % (1.3 - 2.7 95% C.I.)

### 3.4 MIYCN information, education and communication materials

#### Information and decision making on child feeding

A total 1079 (51.5%) of caregivers of children aged 0-23 months had received information on child feeding (table 36).

Table 36: Caregivers who received information on child feeding (0 – 23 months)

	Laisamis (n = 487)		Moyale (n = 689)		North Horr (n = 550)		Saku (n = 370)		Total (n = 2096)	
	N	%	n	%	n	%	n	%	n	%
Did not receive	288	59.1	314	45.6	269	48.9	135	36.5	1006	48.0
Received	196	40.2	372	54.0	279	50.7	232	62.7	1079	51.5

The main source of information on child feeding practices was the child's grandmother 32.6%, health workers, 32.4% as shown on table 36 Grandmothers were mainly relied on in North Horr (49.6%), Saku (39.7%) and Laisamis (29.6%) while the health workers were the main source of information in Laisamis (32.2%), Moyale (33.9%) and Saku (35.8%) as seen on Table 37.

Table 37: Source of information on child feeding (age 0-23)

Source of information (0-23 months)	Laisamis (n=199)		Moyale (n=366)		North Horr (n=278)		Saku (n=232)		Sub-total (n= 1075)	
	n	%	n	%	n	%	n	%	n	%
Mother/Mother-in-law (Child's grandmother)	59	29.6	61	16.7	138	49.6	92	39.7	350	32.6
Health worker	64	32.2	124	33.9	77	27.7	83	35.8	348	32.4
Community health volunteer and health worker	7	3.5	49	13.4	14	5.0	29	12.5	99	9.2
Mother and health worker	11	5.5	34	9.3	10	3.6	6	2.6	61	5.7
Community health volunteer	12	6.0	11	3.0	13	4.7	4	1.7	40	3.7
Mother and CHVs	3	1.5	39	10.7	4	1.4	1	0.4	47	4.4
Others ( siblings, house help, media, neighbor and other relative, )	43	21.6	48	13.1	22	7.9	17	7.3	130	12.1

Qualitative findings confirmed the quantitative information that the main source of information for the caregivers were the grandmothers and health workers.

Most mothers especially the first time mothers' food choices in the Sub-County is influenced by the mothers in law and to some extent older mothers, thus those mothers whose children are aged 36 months and older, their opinions are highly regarded because it is believed that they are talking from experience. *"My mother- in-law helps me a lot when it comes to child feeding, she would tell me what to give to the child citing the benefits of such foods, because even herself she fed her children in a similar manner". I don't have my mother in law but I get a lot of advice from my co-wife whose children are older and healthy, I want to do exactly what she does to her children.*

Other women's food choice was influenced by advice from the health facility, especially those whose children were on supplementary feeding programs. *"I feed my child based on what the nurse at the hospital tells me, I regularly take my child for weighing and at the same time I get food which I prepare and give the child, I can also give the child porridge besides the food I receive from the hospital".*

The baby's mother was however the main decision maker (97.8%) on what the child ate as reported by the caregivers (Table 38). In a few instances, the grandmother (0.9%), house help, friends and relatives (0.9%) and fathers (0.4%) were also involved in making decisions on feeding the children.

The policy implications for these findings on MIYCN information is that the caregivers should be the primary targets with key messages on infant and young child feeding. However, other key messages should be specifically developed to the grandmothers, fathers, house helps, friends and relatives.

Table 38: Decision maker on child feeding for children aged 6-23 months

Decision maker	Sub-county (N= 1611)									
	Laisamis (n= 358)		Moyale (n=538)		North Horr (n=437)		Saku (n=278)		County (N=1611)	
	n	%	n	%	n	%	n	%	n	%
Baby's mother	352	98.3	527	98.0	428	97.9	269	96.8	1576	97.8
Baby's grandmother	1	0.3	8	1.5	3	0.7	3	1.1	15	0.9
Baby's father	0	0.0	3	0.6	1	0.2	2	0.7	6	0.4
Others (house girl, other relative, neighbor, siblings)	5	1.4	0	0.0	6	1.4	4	1.4	14	0.9

### Information on IFAS

The women who had received information on IFAS were 70.3%. Majority of those who had received information on IFAS were from Saku (88.6%) and Moyale (74.7%) sub-counties. The information on IFAS was mainly obtained from the health facilities/clinics (69.0%) where the women attended their antenatal care (ANC) clinics (Table 39).

Table 39: Information on IFAS

Indicator on IFAS information	Laisamis		Moyale		North Horr		Saku		County	
	n	%	n	%	n	%	n	%	n	%
<b>Women who received information on IFAS</b>										
Lactating Women who received information on IFAS N=1868	266	60.0	406	75.0	336	62.7	310	88.8	1318	70.5
Pregnant women who received information on IFAS	10	76.9	104	79.4	11	47.8	18	78.3	143	75.3
<b>Sources of information on IFAS for pregnant women</b>										
Health facility worker/support group	8	80	90	89.2	9	81.8	16	88.9	123	87.9
CHV	1	10	4	4	2	18.2	1	5.6	8	5.7
CHV and other family members	0	0	1	1	0	0	1	5.6	2	1.4

### 3.5 Maternal health seeking behaviors in Marsabit County

#### Ante Natal Care (ANC)

Antenatal care (ANC) for pregnant women is the care they receive from skilled health-care professionals in order to ensure the best health conditions for both mother and baby during pregnancy. The ANC reduces maternal and perinatal morbidity and mortality through timely detection and management of pregnancy-related complications, referral to an appropriate level of care as well as providing opportunities for prevention and management of concurrent diseases like malaria or HIV through integrated service delivery (WHO, 2016). It is therefore recommended that all pregnant women go for ANC during their pregnancy period. During the survey 87.8% of lactating women and 70.4% of the pregnant women reported that they attended ANC clinics (Table 40). This is higher than the figure previously reported for Marsabit County in *Pro PAN*, 2016 findings of 68.8% of women seeking antenatal care.

Table 40: Antenatal care practices for Pregnant Women

Care practice	Laisamis		Moyale		North Horr		Saku		County	
	n	%	n	%	n	%	n	%	n	%
Lactating women who attended ANC clinic in last pregnancy	374	84.4	521	96.3	399	74.4	346	99.4	1640	87.8
Pregnant women who attended ANC	10	83.3	100	76.3	8	34.8	15	65.2	133	70.4
<b>Lactating women who attended ANC by Trimester (N=1639)</b>										
First Trimester	116	31.1	184	35.3	58	14.6	92	26.5	450	27.5
Second Trimester	204	54.7	276	53.0	275	69.1	236	68.0	991	60.5
Third Trimester	37	9.9	58	11.1	63	15.8	18	5.2	176	10.7

Whereas the World Health Organization recommends that all pregnant women attend at least four ANC visits during their pregnancy (KDHS, 2015), only 39.5% of the women reported to have done so (Figure 12), compared to the national figure for Marsabit County of 42.8% (KDHS, 2014). The women who had attended the clinic in their first trimester of pregnancy were also few, only 27.5% and 39.5% of them attended the recommended four or more visits during their pregnancy period. In all the sub-counties the proportion of women who had sought for ANC services in their first trimester was less than half (Figure 12). It was however encouraging to note that most of the women who attended the ANC clinic in their previous pregnancy had been attended to by a nurse (88.0%) who is

a skilled health professional (Figure 12). In Kenya, whereas 61.8% of all pregnant women are attended to by a skilled health provider, only 25.8% of them had been reported from Marsabit County in 2014 (KDHS, 2014). These findings therefore suggest that there has been an improvement in the number of pregnant women seeking antenatal care at the health facilities in Marsabit county.

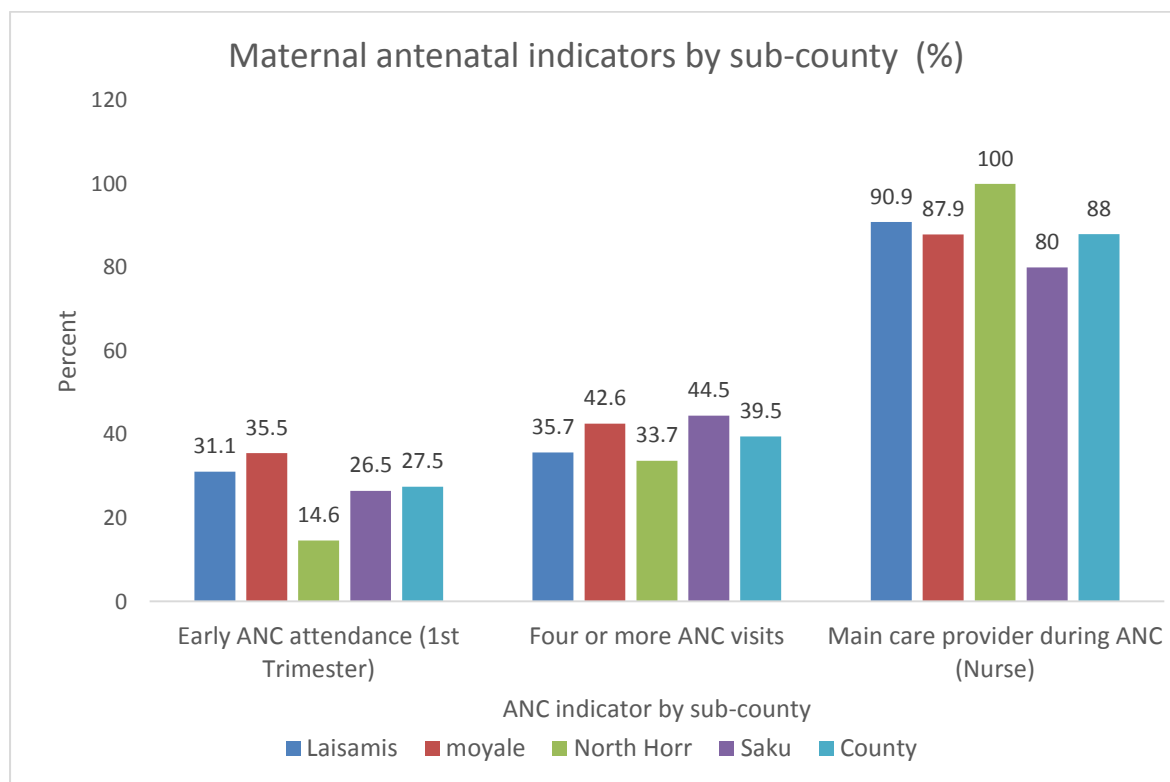


Figure 11: Maternal antenatal indicators by sub-county (%)

### Post-natal care

Post-natal period is a critical phase in the lives of mothers and newborn babies because most maternal and infant deaths occur during this time. It is therefore recommended that all newborns should receive post-natal care immediately, within the first 24 hours of birth. However, not all deliveries occur at a health facility. In Kenya, according to the KDHS 2014 report, only 61.2% of deliveries occur in health facility and only 51% of the women sought post-natal care within 24 hours after delivery. In the current survey in Marsabit County, the percent of births which occurred at home were 51.2% while at the health facility they were 48.9% (Figure 13). Most of the births that occurred at home in the county were through assistance from TBAs (49.8%). North Horr (82.1%) and Laisamis (74.5%) had the highest proportion of women giving birth at home with support from TBAs and mid-wives.

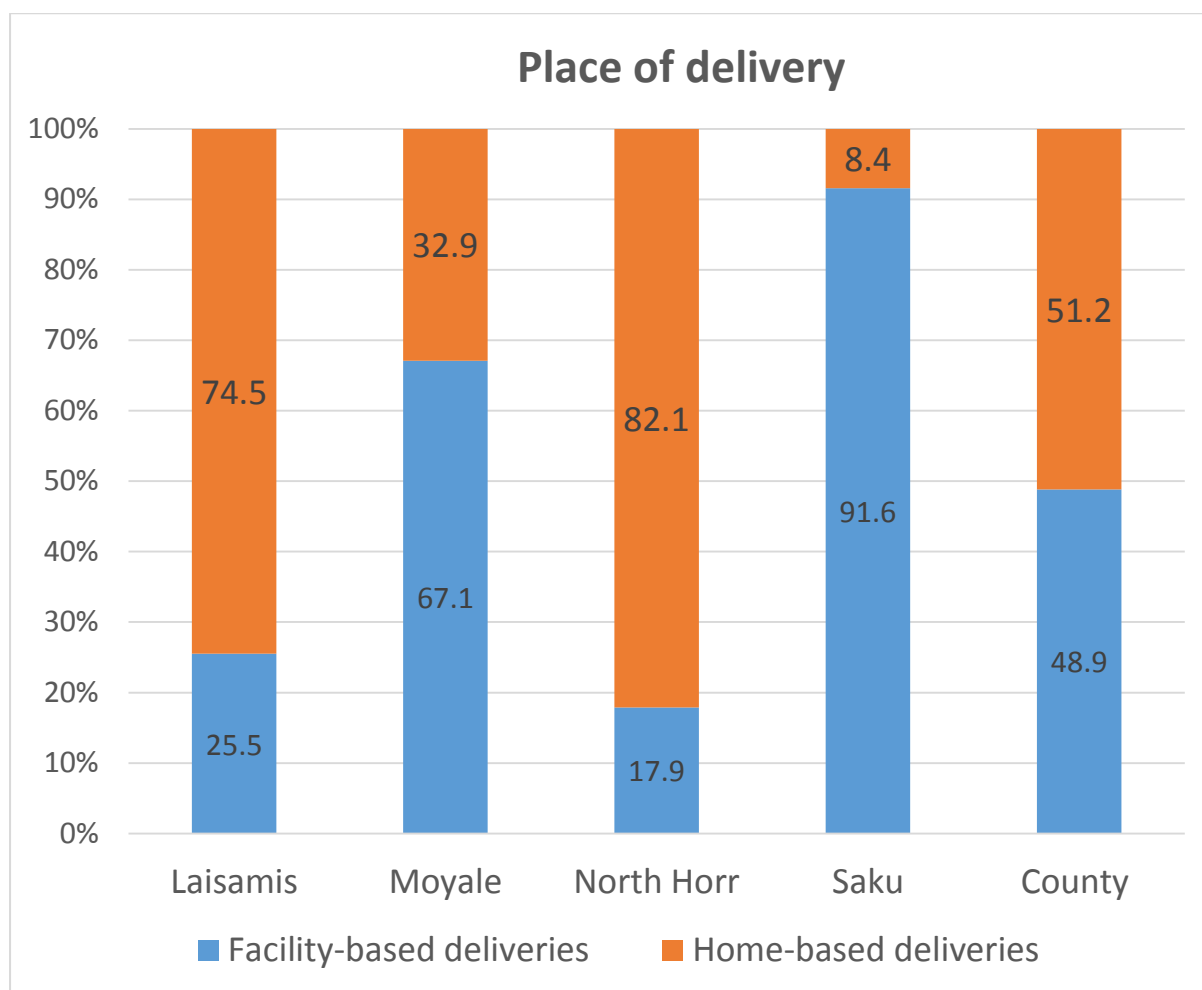


Figure 12: Place of delivery by Sub-county (%)

Those who were assisted by skilled birth attendants at the health facility were only 44.4% in the county, with majority being from Saku (91.6%) and Moyale (65.2%) sub-counties (Figure 14). These figures are higher than the KDHS 2014 report where 25.8% of deliveries occurred in health facilities with support from 25.8% of skilled health workers. The present findings, together with the KDHS 2014 findings for post-natal care in Marsabit County suggest that most women preferred giving birth at home with the support of TBAs. This could be attributed to the TBAs accessibility and their past records in supporting women with deliveries in the community. Most women therefore trust the TBAs and prefer to go to them than going to the hospital.



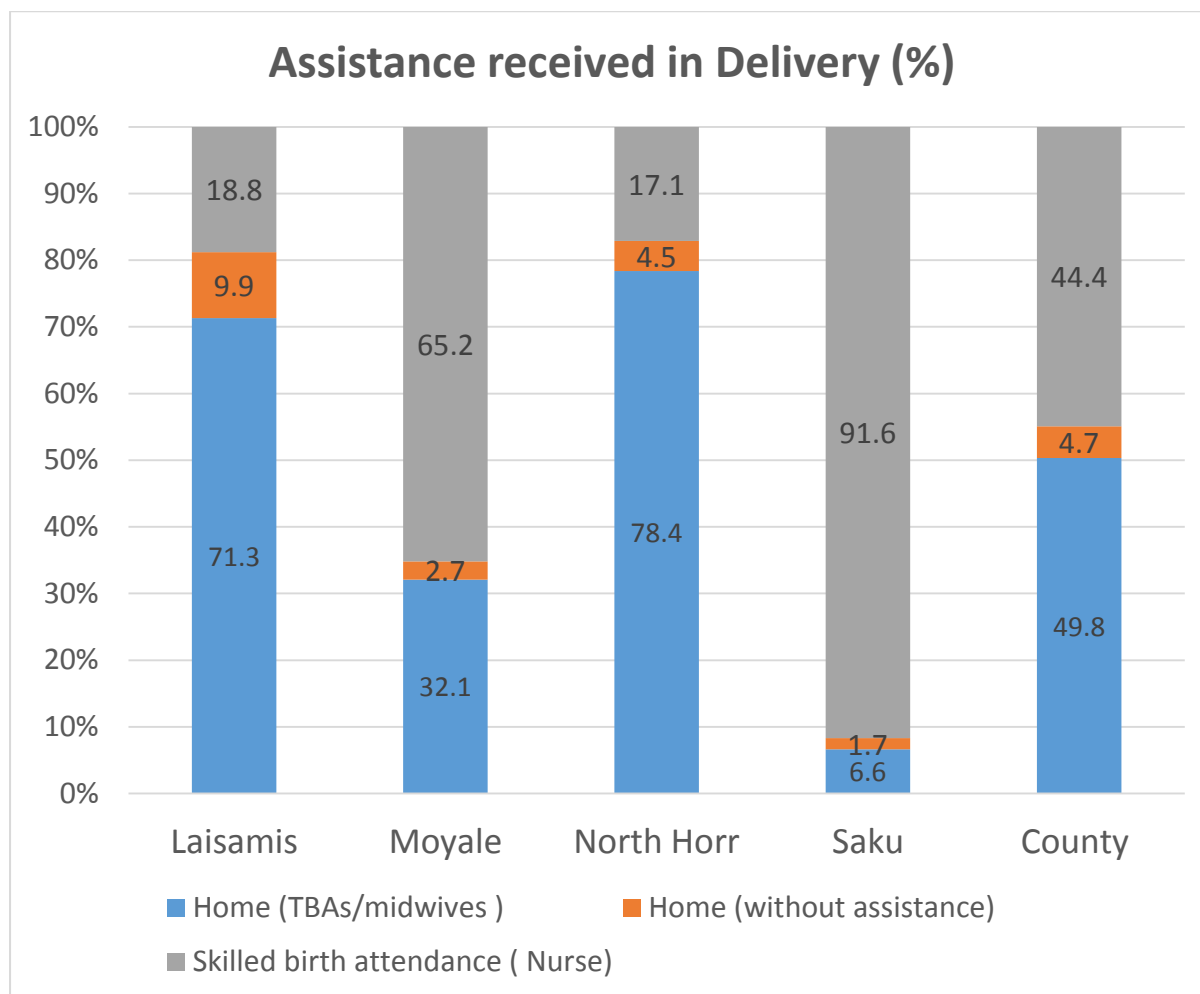


Figure 13: Assistance received by women during (%)

This survey also found that only 33.7% of women sought post-natal care immediately within 24 hours after delivery. The rest of the women sought post-natal care after one month (25.1%) or between two weeks and one month (Table 41). The poor health-seeking behavior for post-natal care could be partly attributed to distance to health facilities and the nomadic lifestyle among most communities in Marsabit County which restricts them from timely access to health services. According to the Saku Sub-County Health Management team members, the outreach activities have not been effective in addressing the problem of poor access to health services in the county. This is due to inconsistency brought about by heavy reliance on health implementing partners. Furthermore, these partner-supported outreach activities are also not sustainable in the long term because when the organization stops operating, then the outreach activities also stop.

Table 41: Post-natal care sought after birth

Indicator	Laisamis		Moyale		North Horr		Saku		County	
	n	%	n	%	n	%	n	%	n	%
<b>Post-natal care sought after birth</b>										
Immediately (within 24 hours)	104	30.1	68	33.3	161	36.3	13	40.6	346	33.7
Within first 2 weeks	86	24.9	54	26.5	82	18.5	11	34.4	233	22.7
Between 2 weeks and 1 month	63	18.2	30	14.7	28	6.3	1	3.1	122	11.9
After 1 month	67	19.4	42	20.6	147	33.1	2	6.3	258	25.1
Child not taken	17	4.9	10	4.9	23	5.2	4	12.5	54	5.3
No intention of taking child to clinic	9	2.6	0	0.0	3	0.7	1	3.1	13	1.3

### 3.6 Maternal Nutrition Indicators

#### Iron Folate supplementation

The purpose of iron and folic acid supplementation is to reduce maternal anemia, risks of low birth weight, neural tube defects in pregnancy and improve overall pregnancy outcomes (GoK, 2013). In Kenya, the prevalence of anemia is 41.6% (MoH, 2011), which is above the 40% minimum threshold that requires all pregnant women to take IFAS. In this survey slightly more than half, 52.0%, of the women in Marsabit County had taken combined iron and folic acid during their previous pregnancy. The proportion of women who had received IFAS from Moyale was however low (32.7%) compared to other sub-counties (Laisamis=67.0%; North Horr=63.3%; Saku=50%). It was also observed from the qualitative data that young women particularly from Moyale, have developed a habit of drinking Pepsi Cola soft drink mixed with tomato source instead of taking IFAS because they believe the mixture can enhance their blood volume.

Among the women who were pregnant during the survey, those who had received IFAS were 63.5%. The percent of pregnant women who had received IFAS was however low in North Horr (47.8%) compared to other sub-counties (Laisamis =83.3%; Moyale 64.6% and Saku=62.5%) (Table 42).

Table 42: Women who received iron and folic acid supplements during pregnancy

	Laisamis (n = 321)		Moyale (n = 440)		North Horr (n = 376)		Saku (n = 324)		County (n = 1461)	
	n	%	n	%	n	%	n	%	n	%
<b>Lactating women who received IFAS during previous pregnancy</b>										
Iron tablet	214	66.7	328	74.7	201	53.3	247	76.2	990	67.8
Folic acid tablet	202	62.9	272	61.8	237	63.0	231	71.3	942	64.5
Combined Iron and folic acid	215	67.0	144	32.7	238	63.3	162	50.0	759	52.0
<b>Women who received IFAS during current pregnancy</b>										
Pregnant Women who received combined IFAS	10	83.3	84	64.6	11	47.8	15	62.5	120	63.5

For preventive measures, it is recommended that in regions where the prevalence of anemia is more than or equal 40.0% all pregnant and lactating women should take IFAS for six months during pregnancy and three months postpartum. However, in this survey, only 2.3% of the lactating women reported that during their previous pregnancy, they took the combined iron and folic acid supplement for at least 90 days. Majority, 97.7%, of the women had consumed the combined iron and folic acid supplement for less than 90 days (Table 43).

Table 43: Consumption of IFAS among lactating women

	Laisamis (n = 218)		Moyale (n = 140)		North Horr (n = 237)		Saku (n = 160)		Total (n = 755)	
	n	%	n	%	n	%	n	%	n	%
Less than 90 days	215	98.6	129	92.1	234	98.7	160	100.0	738	97.7
More than 90 days	3	1.4	11	7.9	3	1.3	0	0.0	17	2.3

Qualitative data from all the four sub-counties indicated that women do not complete the IFAS dose they receive due to side effects of the supplements. According to the women, IFAS has an unpleasant smell that makes them feel nauseated, hence they end up not completing the dose given. The other side effect reported were a feeling of metallic taste in the mouth and increased heartbeat. Some of these side effects of IFAS were as expressed in the following sentiments:

*"I don't take the medicine because it makes it smells bad so that I'm unable to eat well and also vomits". "The medicine makes me vomit, plus it has bad smell, when you take it you can't eat immediately so I avoid it". "The medicine makes me vomit I don't like it". "I only took it until I realized it makes my heart beats fast than normal so I stopped it I think after 3 attempts".*

The cultural practice of traditional management of anemia using animal blood also hindered women from using IFAS (Table 44). It was however also observed that four out of the 12 KII from all the sub-counties that health workers encouraged mothers to take the IFAS.

Table 44: Barriers to completing IFAS Supplement dose

Sub-county	Barriers
Laisamis	<ul style="list-style-type: none"> <li>• <b>Side effects:</b> “It has bad smell that initiate nausea and vomiting (5/11)</li> <li>• <b>Culture:</b> There are cultural ways of managing anemia and blood loss with animal blood(1/11)</li> </ul>
Moyale	<ul style="list-style-type: none"> <li>• <b>Side effects</b></li> <li>• <b>Perception</b> – Pepsi cola with tomatoes sauce better than IFAS</li> </ul>
North Horr	<ul style="list-style-type: none"> <li>• <b>Side effects:</b> Causes vomiting (2/2)</li> <li>• <b>Culture:</b> Animal blood boosts blood volume among anemic women (1/2)</li> <li>• <b>Accessibility:</b> Not accessible due to long distance walk to facilities/purchase (1/2)</li> </ul>
Saku	<ul style="list-style-type: none"> <li>• <b>Side Effects:</b> metallic taste, induces nausea and increases heart beat (3/3)</li> <li>• <b>Culture:</b> Culturally women take animals blood if anemic(1/3)</li> <li>• Forgetting to take every day</li> </ul>

### Women Dietary Diversity

The percent of WRA (15-49 years) who achieved the minimum dietary diversity (MDD-W) of at least five food groups was only 36.9% in Marsabit County. These women are more likely to have adequate micronutrient intakes than the 76.2% of women who did not ( $X^2=474.29$ ,  $df=3$ ,  $p=0.000$ ,  $N=2233$ ). The women in Moyale, and Saku sub-counties achieved just the minimum score of median, (Interquartile Range, IQR), 5 (IQR=2) and 5(IQR=3) of the MDD-W while in North Horr and Laisamis the median MDD-W scores were about 3 (IQR=2) in both sub-counties (Figure 15). Overall, for Marsabit County, the MDD-W score was 4(IQR=2). These findings suggest that in Marsabit County, and throughout the sub-counties, the women’s diet is inadequate and does not provide for their



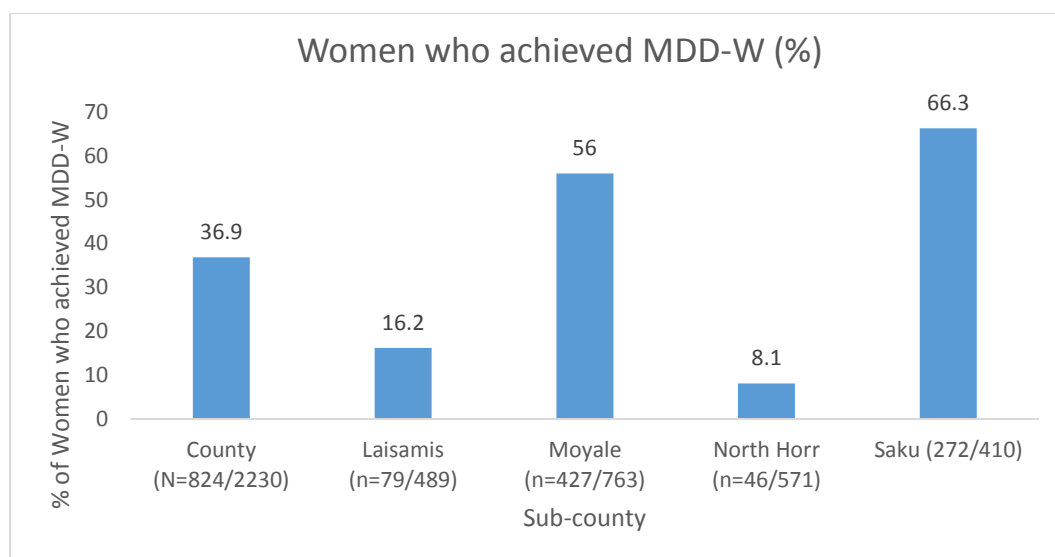


Figure 15: Women who achieved MDD-W (%)

The main foods consumed by women that contribute to their dietary diversity score were cereals (96.6%), milk and milk products (71.2%) and legumes and nuts (68.7%). Consumption of the rest of the major food groups was poorly reported. The consumption of meat, fruits and vegetables was reported by less than 50% of the women while that for vitamin A rich fruits and vegetables was reported by less than 20% of the women. The less nutritious food items that do not contribute to the women's dietary diversity scores were however consumed by a majority of the women, with 93.5% for oils/fats, 89.9% for sugar/sweets and 74.8% for Spices/condiments/beverages (Table 46)

Table 46: Food items consumed by Women in Marsabit County

Food	Laisamis (n = 487)		Moyale (n = 764)		North Horr (n = 571)		Saku (n = 409)		Subtotal (N = 2231)	
	n	%	n	%	n	%	n	%	n	%
<b>Foods consumed (N = 2241)</b>										
Cereals	472	96.9	752	98.6	528	92.5	402	98.3	2154	96.6
White root tubers	82	16.8	458	59.9	26	4.6	296	72.4	862	38.6
Vitamin A rich vegetable	41	8.4	163	21.4	13	2.3	179	43.7	396	17.7
Dark green leafy vegetables	52	10.7	366	48.0	25	4.4	275	67.1	718	32.2
Other vegetables	134	27.5	655	85.8	59	10.3	326	79.7	1174	52.6
Vitamin A rich fruits	32	6.6	83	10.9	10	1.7	144	35.2	269	12.1
Other fruits	23	4.7	31	4.1	15	2.6	109	26.7	178	8.0
Organ meats	160	32.9	65	8.5	210	36.7	116	28.3	551	24.7
Flesh meats	227	46.6	322	42.2	262	45.8	183	44.7	994	44.6
Eggs	29	6.0	113	14.8	32	5.6	133	32.5	307	13.8
Fish/sea food	16	3.3	3	0.4	57	10.0	33	8.1	109	4.9
Legume/nuts/seeds	320	65.7	549	72.0	399	69.8	264	64.5	1532	68.7
Milk/milk products	234	48.0	665	87.0	320	56.0	369	90.2	1588	71.2
Oils/fats	434	89.1	727	95.2	527	92.3	400	97.6	2088	93.5
Sweets /sugar	399	81.9	712	93.3	505	88.3	389	95.1	2005	89.9
Spices/condiments/beverages	269	55.2	696	91.1	339	59.4	365	89.2	1669	74.8

### Nutritional status of women (15-49 years)

Data on nutritional status of women (MUAC), revealed that 8.1% of the women (15-49 years) were malnourished. There were more women from Laisamis Sub-county (19.1%) who were malnourished than Moyale (3.7%), North Horr (5.2%) or Saku (7.3%) sub-counties. The proportion of women who were at risk of getting malnourish in Marsabit County was 21.6% and most of them were from North Horr (30.1%) and Laisamis (29.6%) (Figure 17).

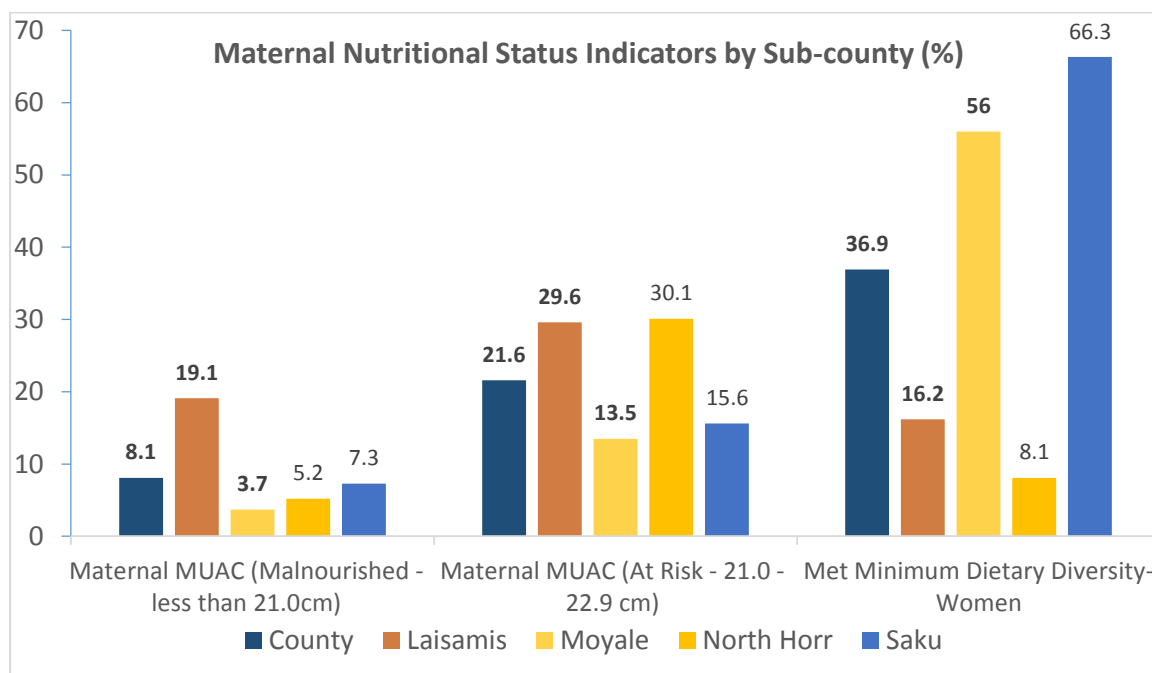


Figure 16: Maternal Nutritional Status Indicators by Sub-county (%)

Although the prevalence of malnutrition among women of reproductive age was low, one in every five women was at risk of getting malnourished and the situation was worse in Laisamis and North Horr where one in every three women were at risk. This could be attributed to the observed poor dietary diversity that contributed to inadequate nutrient intake. Less than half of the women in the whole county consumed the recommended minimum of five food groups for a healthy diet (FAO/FANTA, 2014), mainly cereals, milk and milk product and legumes. The trend in dietary intake was parallel to that of the poor nutrition status of women in the four sub-counties. In Laisamis and North Horr, dietary intake was poor; with the MDD-W score less than the recommended minimum score of 5 and the proportion of women who achieved the minimum dietary intake less than 20% of all the women who participated in the survey. Similarly, the proportion of women who were at risk of getting malnourished was higher in Laisamis and North Horr than in the rest of the sub-counties. The overall poor dietary diversity in the whole of Marsabit County could however be attributed to persistent food insecurity due to drought and generalized poverty. This had in turn contributed to

poor access to a variety of food for most households. The social support actions by family members (grandmothers and husbands) however ensured that women had something to eat. The role of social support actions for pregnant and lactating women has been previously proven in other studies to improve maternal nutrition and health status as well as birth outcomes (Mukuria, Martin, Egondi, Bingham, & Thuita, 2016; Nguyen et al., 2017). The main barriers to maternal feeding were drought which affected availability and access to food for most households, high food prices that limited access to the available food cultural taboos that prohibit consumption of certain foods such as fish. The boosters of maternal nutrition were however found to be nutritional knowledge from nutrition talks, social support from mother-in-laws, men, elderly women and religious leaders (Table 47).

Table 47: Barriers and boosters of maternal nutrition

Sub-county	Barriers	Boosters
Laisamis	<p><b>Cultural practices:</b> Food taboos hinder consumption of certain foods like fish (2)</p> <p><b>Drought:</b> Affect livelihood hence limit food intakes (8)</p> <p><b>Cost of food:</b> Foods are expensive since they are not locally produced (9)</p> <p><b>Poverty:</b> Most households are poor (15)</p>	<p><b>Nutrition Knowledge:</b> Nutrition talks from health worker’s/health facilities</p> <p><b>Social support:</b> mothers-in-law provide food and advice(1)</p> <p><b>Cultural practices:</b> “<i>anemic mothers drink animals blood</i>” (2)</p>
Moyale	<p><b>Cost of food</b> for fruits, vegetables limits their consumption (17)</p> <p><b>Food availability:</b> limited foods available in the market affects food consumption</p> <p><b>Variety:</b> Lack of a variety of food limits dietary intakes and diversity (7)</p>	<p><b>Nutrition knowledge:</b> Talks from health workers &amp; CHVs influence food intake</p> <p><b>Social support:</b> Mother-in-laws share their food with them (2)</p> <p><b>TBAs:</b> Advice on food consumption (2)</p> <p><b>Traditional feeding with <i>Ititu</i></b> (locally fermented milk) given to women two weeks after delivery</p>
North Horr	<p><b>Ignorance:</b> some mothers not aware of benefits of certain foods (1)</p> <p><b>Cultural practices:</b> strict adherence to cultural practices (1)</p> <p><b>Drought:</b> effects on livelihood limits food accessibility (2)</p> <p><b>Food availability:</b> “<i>Food intakes is limited to what is available for us</i>” (4)</p> <p><b>Long distance walk to the market:</b> affects physical accessibility to foods (2)</p>	<p><b>Social support:</b> Mothers in law influence food consumption through cooking the right foods and encourage their sons to provide for their families (2); Community leaders solicits for food and money in support of poor families</p> <p><b>Religious leaders:</b> emphasize on good dietary practices</p>
Saku	<p><b>Cultural practices:</b> strict adherence to cultural norms like eating fish is a taboo (4)</p> <p><b>Drought:</b> Affect livelihood and limits food accessibility and availability (4)</p> <p><b>Poverty:</b> affect food availability (3)</p>	<p><b>Fathers:</b> Provide food for family (2)</p> <p><b>Nutrition knowledge:</b> from health workers</p>



### 3.7 Summary of cultural and traditional beliefs that influence MIYCN practices

Qualitative data from the KIIs and FGDs revealed that the indicators on breastfeeding practices, particularly early initiation to breastfeeding, were the ones influenced most by the cultural and traditional practices compared to other MIYCN indicators in all the sub-counties in Marsabit County (Table 48).

Table 48: Summary of cultural and traditional beliefs collected during the KIIs and FGDs conducted

Sub-county	Cultural and traditional beliefs on:		
	Initiation of breastfeeding	Exclusive and continued breastfeeding	Complementary feeding
Laisamis	<p>Main birth rituals are naming of the child and Leaking of the child's tongue for power transfer, Boy child is not supposed to breastfeed immediately until the child sucks "<i>harab</i>" (Harab-tongue)); Boys are given water, girls given animal milk</p> <p>In some clans when a boy child is born he is not supposed to be breastfeed until honey is brought for him to taste first as a sign of "adherence to the rules of the clans"</p> <p>When boy child is born at night he will not be breastfeed until the following day when <i>mor</i> is slaughtered.</p> <ul style="list-style-type: none"> <li>Boys also not allowed to breastfeeding until a certain celebration called (meitanaki lgejepa) is done;</li> </ul> <p>Some clans would not allow the mother to breastfeed until the rituals (Itungana entanak ngera lngejepa) are performed.</p> <p>All traditional ceremonies must be observed before initiating breast-feeding.,</p> <ul style="list-style-type: none"> <li>Among the Elmolo community ,don't initiate during breastfeeding if the child is born in the evening until next morning when elders go to fetch back of</li> </ul>	<p>It is not possible for a child to feed on breast milk only, this is because the child is given breast milk together with animal's milk (camel milk and water)</p> <p>Children should be given cow's milk to make them strong</p> <ul style="list-style-type: none"> <li>Boys are breast fed for longer period compared to girls</li> </ul>	.

	the tree to be put on the child		
Moyale	<p>That a boy child should be given water immediately they are born and a girl is given animal milk first</p> <p>The culture of giving the boy child water immediately after birth helps remove all the dirt from the stomach and also helps the boy in future endeavours by preventing him from getting thirsty when he will be grazing.</p> <p>Religious practices of a baby must first drink water blessed by sheikh before breastfeeding. 'It is noble to wait upon the sheik to bless the water which must be given to the child first before the breast milk', ". The mother must also wash breast with holy water</p>	<p>Children must be given cow's milk for energy and faster growth;</p> <p>Culturally a sick mother is not allowed to breastfeed because it is believed she might infect to the child</p>	<p>If children are fed on a variety of foods, this makes them sick, they suffer constipation and indigestion so it is better giving them food that will not cause them problems".</p> <p>The mutton is not given to children below two years because they believe it causes floppiness of the tongue, not talk/develop speech as expected Giving children different foods subject them to digestive problems as their digestive system cannot accommodate different foods, so it's better giving them one food they are used to".</p> <p>'... children who eat chicken are not brought up as pastoralists"</p>
North Horr	<p>The main cultural beliefs surrounding breastfeeding are those related to initiation where certain rites have to be observed. In some communities, initiation of breastfeeding does not occur until some rituals are done, Some clans don't advocate for early initiation of breastfeeding and the child has to first be given animal milk especially camel milk. This is culturally referred to ANKARO</p> <p>If a child is born when animals are away from home in "boma", the child cannot breastfeed until all animals return home. If there is no ritual, a baby is put on the breast immediately after birth. Cow's milk must however be given first before breast feeding,</p> <p>Boys are first given water, girls</p>	<p>Traditionally, the community does not believe in exclusive breastfeeding since the children must be fed with animal milk from birth</p>	

	<p>given milk,</p> <p>Among the Gabra community, the name “<i>Rengumo</i>” if given to a child, prevents mother from breastfeeding the baby till the following morning because it gives the child super natural powers</p> <ul style="list-style-type: none"> <li>• When a woman resumes sexual intercourse with her husband, she has to stop breastfeeding,</li> </ul> <p>If the young mother for the first time gives birth to twins it is bad taboo and infants cannot breastfeed</p>		
Saku	<p>Boys are not breast fed immediately after delivery, the father has to apply some honey on their faces first.</p> <p>It is also believed that a baby should be fed with row animals milk</p>		<p>Food taboos related to eating fish,</p> <p>Women with malnourished are stigmatised and considered “Lazy”, “incapable of taking care of their own children”, “not able to buy food for herself, but relies on free handouts from the hospital”. Hence, such women prefer buying the food supplements from the shops rather than getting free supply from the hospital because of fear of stigmatization.</p>

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

1. Knowledge and practices on initiation of breastfeeding were close to 100%, with less than 20% of caregivers reporting use of pre-lacteal feeds despite the strong cultural practices upheld on birth-related ceremonies that must be performed before initiating breastfeeding.
2. The Knowledge, attitude and practices on colostrum feeding was high, over 95%.
3. Exclusive breastfeeding rate was high. This could be attributed to either the 24-hour recall assessment method used as recommended by the World Health Organization or the positive beliefs and attitudes among caregivers and community members on exclusive breastfeeding.
4. Continued breastfeeding at one year (12 to 15 months) and at two years (20 to 23 months) was reportedly low and was attributed to maternal workload, close birth spacing and poor maternal health while knowledge on the benefits of breastfeeding were major boosters of continued breastfeeding.
5. The ideal complementary feeding practices of introduction of solid, semi-solid or soft foods, consumption of iron-rich or iron fortified foods as well as micronutrient powders among children 6-23 months were poor with very low proportion of caregivers reporting them.
6. The knowledge on introduction of solid, semi-solid or soft foods at recommended age, 6-8 months was low in Marsabit County and in all the sub-counties. The poor feeding practices on were also blamed on food insecurity due to prolonged drought which contributes to limited availability of varieties of food in the community and poverty that limits households' ability to purchase food.
7. The dietary diversity pattern among children was poor throughout the sub-counties. In Laisamis and North Horr only 1 in every 10 children consumed a variety of food that met their minimum nutrient needs. In Moyale 1 in every 5 children achieved the minimum dietary diversity while in Saku, child feeding practices were slightly better with 1 in every 3 children feeding on nutritious diets. The consumption of minimum acceptable diet of at least four food groups per day at a minimum number of 2 meals per day for all the breastfed, 6-23 months or 4 meals per day for the non-breastfed children were equally poor in all sub-counties.
8. The prevalence of malnutrition in children 6-23 months was poor in all sub-counties with a global acute malnutrition (GAM) indicator range of 5.0 to 9.9%. Saku and Moyale had the highest prevalence of child malnutrition yet the performance of almost all MIYCN indicators was better than in the other two sub-counties. This was probably due to poor feeding

- practices and the National Nurses Strike which slowed down emergency activities in the sub-counties.
9. The main source of information on MIYCN for the caregivers were grandmothers (least influential in Moyale sub-county) and health workers (least influential in North Horr), but the main decision maker on child feeding remains the mother.
  10. Although more than half of the women had received combined IFAS in their previous pregnancy, only 2.3% actually consumed the IFAS. The IFAS dose was not completed by most of the women due to the side effects of unpleasant, nauseating smell. The IFAS information uptake was however higher in Saku and Moyale than Laisamis and North Horr sub-counties.
  11. The health seeking behaviors for ante-natal and post-natal care were notably poor. Although close to 90% of the women reported to have attended antenatal care clinics (ANC) during their last pregnancy, only one in every three women did so during their first trimester of pregnancy and the recommended four or more visits. For post-natal care (PNC), half of the women received assistance from traditional birth attendants (TBAs). The women who gave birth under the care of a skilled birth attendant at a health facility as well as those who sought PNC within the recommended period of 24 hours after delivery were less than half, with majority being from Saku and Moyale sub-counties.
  12. The prevalence of malnutrition among women of reproductive age was low. However, one in every five women was at risk of getting malnourished and the situation was worse in Laisamis and North Horr where one in every three women was at risk of malnutrition. The poor nutrition status of women was reflected in their food intakes where less than half of them achieved a minimum dietary diversity of consuming nutritious food that met just the minimum of their nutrient needs. The minimum dietary intake was only achieved in Moyale and Saku sub-counties. Whereas drought, high food prices and food taboos limited availability and access to nutritious diets for most women, the level of nutritional knowledge and social support enhanced maternal nutrition in almost all sub-counties.

Recommendations

Table 49: Recommendations by MIYCN indicators and Target

MIYCN KAP Indicator	Recommended action	Target (audience)
Early Initiation to breastfeeding	<p>All mothers should be encouraged to initiate breastfeeding within 1 hour after birth in all sub-counties.</p> <p>Pilot community-based “Baby Friendly Community Initiative” (BFCl) to ensure close to 100% early initiation</p> <p>Further research on breastfeeding initiation practice and cultural practices and timing of the initiation in Marsabit County.</p>	TBAs, Breastfeeding mothers, Grandmothers, Fathers Sub-County Nutrition Officers (SCNO), implementing partners, researchers and religious leaders and key opinion leaders in the community.
Colostrum milk	Health education/ nutrition counseling on health benefits of colostrum to further sustain the current high level of knowledge, attitude and practices among caregivers.	TBAs, Breastfeeding mothers, Grandmothers, Fathers, CHV’s, Sub-county Health Management Team (SCHMT), SCNO, and religious leaders
Exclusive Breastfeeding	<ul style="list-style-type: none"> <li>• In all sub-counties, encourage mothers to exclusively breastfeed for 6 months.</li> <li>• Community-based nutrition counseling on benefits of exclusive breastfeeding to sustain the current high knowledge, attitude and practice</li> </ul>	Pregnant and lactating women (PLW), CHVs, Community Health extension workers (CHEWs), SCNO, Grandmothers, Fathers and TBAs
Continued breastfeeding at 1 year and 2 years	<ul style="list-style-type: none"> <li>• Need for integration of Family Planning programs with MIYCN interventions</li> <li>• The existing widespread knowledge on benefits of breastfeeding should be promoted to protect and enhance continued breastfeeding practices</li> <li>• Behavior change communication strategies that promote and support breastfeeding, for example, through use of local radio stations, local drama festivals, community meetings and prayer meetings.</li> </ul>	Grandmothers, Fathers, SCHMT, SCNOs, County Nutrition Coordinators, Reproductive Health Team, CHVs, religious leaders, County Government of Marsabit and implementing partners
Complementary feeding including dietary	<ul style="list-style-type: none"> <li>• Nutrition education and counseling on nutritious diets for children including community recipe development,</li> </ul>	CHVs, Agricultural Extension Workers, SCHMT, SCNO, Mothers, grandmothers, TBAs

<p>diversity for children</p>	<ul style="list-style-type: none"> <li>• Explore the use of “Trials of improved practices” in food preparation and child feeding to address the low dietary diversity among children.</li> <li>• Pilot community-based “Baby Friendly Community Initiative” (BFCI) to ensure close to 100% early initiation,</li> <li>• Promotion of localized food production mechanisms (e.g. Kitchen gardens),</li> <li>• Enhance social protection program to improve access to food (food distribution, food vouchers)</li> </ul>	<p>, fathers, County Government of Marsabit and implementing partners</p>
<p>Feeding during illness</p>	<p>Support mothers through nutrition education and counseling on the need to feed their children during and after illness</p>	<p>CHVs, SCNO, SCHMT, Fathers and other caregivers including grandmothers</p>
<p>IYCN information</p>	<p>Caregivers should be the primary targets with key messages on infant and young child feeding. Other key messages should be specifically developed for grandmothers, fathers and others</p>	<p>CHVs, Agricultural Extension Workers, SCHMT, SCNO, County Government of Marsabit and implementing partners</p>
<p>Maternal nutrition including IFAS</p>	<ul style="list-style-type: none"> <li>• Nutrition education and counseling on nutritious diets for pregnant and lactating women</li> <li>• Promotion of localized food production mechanisms (e.g Kitchen Vegetable gardens),</li> <li>• Promotion of income generation activities for women to improve their financial resource base.</li> <li>• Enhance social protection program to improve access to food (food distribution, food vouchers);</li> <li>• Nutrition education for women on benefits and adherence of IFAS,</li> <li>• Participatory education theatre during cultural festivals and <i>manyattas</i>.</li> <li>• Use of local radio stations to pass key MIYCN messages to caregivers and the community;</li> <li>• Nutrition interventions should also focus on those who are at risk of malnutrition.</li> </ul>	<p>Women, mother-in-laws, men, County Government of Marsabit, SCNO, SCHMT, CHVs religious leaders and implementing partners and Agricultural Extension Workers,</p>
<p><b>Recommended channels for behavior change communications.</b></p>		

All MIYCN Indicators	Pilot “Participatory Education Theatre” to engage community members through drama to address the cultural practices surrounding MIYCN practices in the community. This can be through the annual cultural festivals, or community gatherings.	County Government of Marsabit and implementing partners
All MIYCN Indicators	Pilot “Baby Friendly Community Initiative” (BFCI) whose key features are community participation, with the key training messages based on locally identified infant and young child feeding knowledge and practices. The BFCI further has the added advantage of promoting multi-sectoral linkages with other sectors to address underlying causes of malnutrition.	SCHMT, SCNO, County Government of Marsabit and implementing partners
All MIYCN Indicators	Support community units to enhance home visits by where home visits by CHVs	SCHMT, SCNO, County Government of Marsabit and implementing partners
All MIYCN Indicators	Use of local radio stations to pass key messages to caregivers and the community to enhance MIYCN practices.	SCHMT, SCNO, County Government of Marsabit and implementing partners
All MIYCN Indicators	Conduct a follow-up survey after two years (in October 2019), to review the status of all the MIYCN indicators that have been assessed in this survey.	County Government of Marsabit and implementing partners

## 5.0 Lessons Learned

- The objectives in the TOR on “knowledge, attitude and practice of health providers on delivery of MIYCN policy, guidelines and protocols” and “the extent to which health workers and community health workers record, report, analyze and use MIYCN information” was not available for this report. They were not part of the KAP Survey Methodology that had been validated by the NITWG.
- Data on care seeking indicators of antenatal and postnatal care were not captured in qualitative data collection tools
- Spelling mistakes on the ODK – e.g. Laisamis/Lesmis/Lasmis all meant for Laisamis
- Brands of fortified food items are too many – what is the purpose of collecting that information in this KAP Survey?
- It is important to share and validate the data collection tools with partners at county level to capture the local context in the tool. For example, “immediately” in initiation of



breastfeeding may not mean soon after birth everywhere because it is a tradition in Marsabit to first give the child animal milk.

- Data collection was mainly based on recall and reporting and some of the information such as initiation of breastfeeding, exclusive breastfeeding and meal frequencies could be biased due to inaccurate reporting. Future KAP studies should consider inclusion of observations.
- Qualitative data analysis on KAP should be best conducted in the field with the field teams immediately after the data collection to save on time on analysis.

## 6.0 REFERENCES

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## 7.0 APPENDICES

### Appendix 1: List of Clusters by Sub-county

Marsabit MIYCN KAP Clusters September/October 2017				
Ward	Sub Location	Geographical unit	Population size	Cluster
<b>Laisamis Sub-county</b>				
loiyangalani/Gatab	Loiyangalani	soweto	185	1
loiyangalani/Gatab	Loiyangalani	kula mawe	890	2
loiyangalani/Gatab	Loiyangalani	achukule	480	3
loiyangalani/Gatab	Gatab	Gatab chini	481	4
loiyangalani/Gatab	Olturot	Banachap	988	5
Kargi/South Horr	Kargi	Mirgichan	580	6
Kargi/South Horr	Kargi	Matacho	210	7
Kargi/South Horr	Kargi	goborre	270	8
Kargi/South Horr	Kurungu	Kurungu	698	9
Laisamis	Laisamis	town centre	155	10
Laisamis	Laisamis	Manyatta barrier	630	11
Laisamis	Laisamis	Manyatta Lorokushu 1	425	12
Laisamis	Lontolio	Lpusi	900	13
Laisamis	Lontolio	losidan	803	14
Laisamis	Merille	Mugur	362	15
Laisamis	Merille	Lkurumbule	168	16
Korr/Ngurnit	Halisurwa	loorora	600	17
Korr/Ngurnit	Buuri Amiya	dubsahay galimogle	734	18
Korr/Ngurnit	Buuri Amiya	rongumo eysimgobanay	560	19
Korr/Ngurnit	Ballah	saale sanget	581	20
Korr/Ngurnit	Ballah	goobore indee	675	21
Korr/Ngurnit	Ballah	nebey ilwaass	700	22
Korr/Ngurnit	Ballah	nahgan galmagahle	674	23
Korr/Ngurnit	Illaut	ongeli	925	24
Korr/Ngurnit	Namarei	loruko	580	25
Korr/Ngurnit	Namarei	lukumai	945	26
Korr/Ngurnit	Ngurnit	Saigor	380	27
Logologo	Kamboe	carlifornia	200	28
Logologo	Logologo	marti	745	29
Logologo	Logologo	lolola/ Ilbarok	620	30
loiyangalani/Gatab	Gatab	Losikiriachi	700	RC
Kargi/South Horr	Kargi	athi	245	RC
Laisamis	Merille	Merille Center 2	510	RC
Korr/Ngurnit	Korr	goobore leybor	171	RC

<b>Moyale Sub-County</b>				
Sololo	Wayegodha	Gadamoji	350	1
Sololo	Ramata	Shamia	510	2
Sololo	Ramata	Gedho Guyo	500	3
Uran	Golole	Chief's	476	4
Uran	Uran	Qiltipe	280	5
Obbu	Sololo Makutano	Sora Guyo	314	6
Obbu	Amballo	Rach Hlakhe	263	7
Butiye	Dadach Lakole	Wario Iya	206	8
Golbo	Odda	Gurach Borbor	230	9
Golbo	Dabel	Shauri Yako	1292	10
Golbo	Dabel	Masjid	618	11
Golbo	Nana	Sororo	1000	12
Golbo	Nana	Dubo	1004	13
Golbo	Yabalo	Yabalo Godha	715	14
Heilu Manyatta	Kinisa	Shuku Edin	360	15
Heilu Manyatta	Lami	Gina Koje	615	16
Heilu Manyatta	Manyatta Burji	Hirbo Woche	651	17
Heilu Manyatta	Heilu	Galgalo Guyo	657	18
Heilu Manyatta	Heilu	Dabaso Chiri	597	19
Heilu Manyatta	Heilu	Mohamed Hassan	716	20
Heilu Manyatta	Heilu	Kulow Abdiraw	413	21
Heilu Manyatta	Mansile	Wako Guyo Jillo	720	22
Township	Township	Araft Diba	1400	23
Township	Township	Adan Mala	1110	24
Township	Township	Mama Adeo	1200	25
Butiye	Goromuda	Mohamed Katelo	409	26
Butiye	Butiye	Abdikadir Ibrahim	461	27
Township	Gurumesa	Gurumesa 2	1425	28
Township	Sesi	Olla Ali Jillo	1000	29
Butiye	Teso	Manyatta	450	30
Uran	Rawana	Kuro Tullo	153	RC
Golbo	Godoma	Watiti	480	RC
Butiye	Butiye	Wako Huqa	494	RC
Butiye	Somare	Manyatta Sora	642	RC
<b>Saku Sub-county</b>				
Marsabit Central	DAKABARICHA	DOYO JATTANI	230	1
Marsabit Central	DAKABARICHA	SHUKRI HUKA	375	2

Marsabit Central	JIRIME	AL-HIDAYA	1805	3
Marsabit Central	JIRIME	LOWER SEGEL	255	4
Marsabit Central	MATA ARBA	HUSSEIN BORE	90	5
Karare	HULAHULA	CENTRE 1	1850	6
Karare	HULAHULA	KARATINA 1	535	7
Karare	KARARE	LMANARIE	230	8
Karare	KARARE	NAMBAA	1685	9
Marsabit Central	TOWNSHIP	HASSAN SHALLE 1	925	10
Marsabit Central	TOWNSHIP	TULICHA/HUSSEIN BERE	535	11
Marsabit Central	WABERA	ADAN TEGO	365	12
Marsabit Central	WABERA	MOLU GURACHA	440	13
Marsabit Central	MAJENGO	AJAA TISA	655	14
Marsabit Central	MAJENGO	DOKATA ALI 1	880	15
Marsabit Central	MAJENGO	GODANA ABDI	575	16
Marsabit Central	MAJENGO	ROB DABASSO	800	17
Marsabit Central	NYAYO ROAD	GALCHA DIDA	2045	18
Marsabit Central	NYAYO ROAD	LOCHE DULA	245	19
Karare	SONGA	LTURUYA 1	580	20
Sagante/Jaldesa	BADASA	TARI ADHI	215	21
Sagante/Jaldesa	JALDESA	ISAKO UMURO IDP	1545	22
Sagante/Jaldesa	DIRIB GOMBO	GALM GALGALLO	300	23
Sagante/Jaldesa	DIRIB GOMBO	ILMAN LIBAN-BADASA	185	24
Sagante/Jaldesa	DIRIB GOMBO	QALICH JATTANI	135	25
Sagante/Jaldesa	DIRIB GOMBO	WARIO DADACHA	115	26
Sagante/Jaldesa	QILTA	JARSO GALGALLO	2015	28
Sagante/Jaldesa	RUKESA QARSA	HUKA ADI	205	29
Sagante/Jaldesa	SAGANTE	ILMAN DAMBI	1820	30
Karare	KARARE	LOILEI	1980	RC
Karare	SONGA	UPPER LEYAI	1545	RC
Sagante/Jaldesa	SAGANTE	GUYO ARERO	190	RC
Sagante/Jaldesa	QILTA	ILMAN HARSAMA	2340	RC, 27
<b>North Horr Sub-county</b>				
MAIKONA	MAIKONA	Luka Dima(mathare)	810	1
MAIKONA	MAIKONA	Basbalesa	375	2
MAIKONA	KALACHA	Rage centre	750	3
MAIKONA	ELGADE	Dakane	340	4
MAIKONA	ELGADE	Elbuka	265	5
MAIKONA	HURRI HILLS	Guba/Darga	600	6
MAIKONA	FOLORE	Qurqur	1000	7
TURBI	TURBI	Mathare	460	8

TURBI	BURGABO	Lag wachu	450	9
TURBI	BUBISA	Maabar	100	10
TURBI	SHURR	Shurr	900	11
ILLERET	ILLERET	Illeret town	5100	12
ILLERET	ILLERET	Baulo	360	13
ILLERET	ILLERET	El-bokoch	1100	14
ILLERET	ILLERET	Telegaye	1065	15
NORTH HERR	MALABOT	Kancharo	550	16
NORTH HERR	GALLAS	Gallas	2025	17
NORTH HERR	GALLAS	Elmudha/ Madho	650	18
NORTH HERR	DARADE CHARI GOLLO	El-besso	2250	19
NORTH HERR	DARADE CHARI GOLLO	Qorqa	2600	20
NORTH HERR	TOWNSHIP	Durte	520	21
NORTH HERR	TOWNSHIP	Fila	810	22
NORTH HERR	TOWNSHIP	Sesa raha	1075	23
DUKANA	DUKANA	Arillo	442	24
DUKANA	DUKANA	Kubi ongolbo	615	25
DUKANA	DUKANA	Yaa algana	687	26
DUKANA	BALESA	kilkile	240	29
DUKANA	ELHADI	Arkol	365	30
DUKANA	DUKANA	Bales saru	6000	27, 28
MAIKONA	KALACHA	Normadic/boji/boqe	400	RC
TURBI	BUBISA	Old Yaa odhola	165	RC
ILLERET	ILLERET	Sieslucho	965	RC
DUKANA	BALESA	Balesa town	480	RC

## Appendix 2: Data collection tools - Quantitative Data Questionnaire



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QUESTIONNAIRE\_Mæ

## Appendix 3: Data collection tools – Qualitative data Checklists/ Discussion Guides



Qualitative data  
collection tools-FGC