ATHROPOMETRIC AND MORTALITY SURVEY

TAITA-TAVETA COUNTY (VOI, MWATATE, WUNDANYI AND TAVETA DISTRITCS)

KENYA

Draft report

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EXECUTIVE SUMMARY

Taita Taveta County is in Coast Province and is situated to the southwest. It borders Tana River, Kitui and Makueni Districts to the north, Kwale and Kilifi Districts to the east, Kajiado District to the northwest and the Republic of Tanzania to the south and southwest. The County lies between 2° 46' South and 4° 10' south and longitudes 37° 36' east and 30°14' east. However, the County has recently been divided into Voi, Wundanyi, Taita, and Taveta districts

Taita Taveta is classified as a semi arid district. Out of the total area of 17,128.3 Km^2 covered by the district, 10,680.7 km^2 or 62 per cent is occupied by Tsavo East and West National parks, 4,100.7 km^2 or 24 per cent is range land suitable for ranching and dry land farming, while only 2,055.4 km2 or 12 per cent is available for rain-fed agriculture. Of the 2,055.4 km2 arable land, 1,774.5 km^2 or 74 per cent is low potential agriculture land, receiving an annual mean rainfall of 650mm.

It is estimated that in the larger Taita Taveta County has a population size of 284,657. The area experiences extreme food shortages which have contributed to high malnutrition rates, including acute malnutrition among children. In the recently conducted Short Rains Assessments, Taita Taveta has been classified as borderline food insecure and currently one of the districts under watch following the La Nina phenomenon. The district is predominantly agro pastoralist and marginal mixed livelihood zones and thus highly vulnerable to food insecurity during the drought seasons.

In order to guide programming in the district, a nutrition survey is in need. The survey will provide not only nutrition information, but also those related to WASH, health and food security.

SURVEY OBJECTIVES

The specific objectives of this survey were to:-

1. Assess the prevalence of acute and chronic malnutrition in children aged 6-59 months.
2. Assess the prevalence of malnutrition in pregnant women and mothers
3. Assess Infant and young feeding practices.
4. Estimate coverage for SFP, OTP, measles and DPT 3 vaccination and vitamin A.
5. Estimate morbidity rates in children 6-59 months
6. Estimate crude and under five mortality rate.
7. Assess Household food security levels/situation

Methodology

Standardized Method for Relief and Transition (SMART) was used for planning, training and data collection for the nutrition survey. The Survey enumerators were trained for 4 days, standardization test was done to select the data recorders and pilot was done to make sure that enumerators are equipped with the necessary skills for data collection.

Using prevalence of 7 %, precision of 3 and design effect of 2, a sample size of 556 children was obtained. In the mortality session, an estimated prevalence of 0.2, a desired precision of 0.2 and a design effect of 2 resulted in a sample size 3,312 with a recall period of 112 days. A total of 828 households were sampled for the survey and a total of 40 clusters were selected for the survey.

At the second stage, a selection of the households to be visited within each cluster was done. Simple random method was used to select the households, the village elders gave the list of the households in a given village, using table of random numbers the households were selected. In cases where the villages had huge number of households, segmentation was done; the population was subdivided in to equal segments and one segment was selected using table of random numbers, the household were then listed, and the required households selected from the list by simple random method.

In each selected household, all children aged 6-59 months were included. If there was more than one wife (care taker) in the household[1], each wife was considered separately regardless of whether they were cooking together. If there were no children in a household, the house remained a part of the "sample" that contributed zero children to the nutritional part of the survey. The household was recorded on the nutritional data sheet as having no eligible children.

Nutrition, mortality and vaccination coverage, IYCF and Water and Sanitation results

A total of 561children were measured, one records were excluded from anthropometric data analysis.

Table 1: Summary results

Anthropometric and Mortality data results		
Child Nutrition Status W/H (WHO)- Z scores (561)	Global Acute Malnutrition (GAM) (<-2 z-score and/or oedema)	5.5% [3.7- 8.1]
	Severe Acute Malnutrition (SAM) (<-3 z-score and/or oedema)	0.9% [0.3- 2.5]
Child Nutrition status W/H (NCHS)- Z-scores(561)	Global Acute Malnutrition (GAM) (<-2 z-score and/or oedema)	5.3% [3.6- 7.9]
	Severe Acute Malnutrition (SAM) (<-3 z-score and/or oedema)	0.5% [0.1- 2.3]
Child Nutrition status W/H (NCHS)- percentage of the median (561)	Prevalence of global acute malnutrition (<80% and/or oedema)	2.5 % [1.4 – 4.6]
	Prevalence of severe acute malnutrition (<70% and/or oedema)	0.2 %[0.0 – 1.3]
Child Nutrition Status H/A (WHO)- Z scores (561)	Prevalence of stunting (<-2 z-score)	27.8% [23.9-32.1]
	Prevalence of severe stunting (<-3 z-score)	6.6% [4.7-9.2]
Child Nutrition Status H/A (NCHS)- Z scores (561)	Prevalence of stunting (<-2 z-score)	21.7% [18.2-25.8]
	Prevalence of severe stunting (<-3 z-score)	3.2% [2.0-5.2]
Child Nutrition Status W/A (WHO)- Z scores (561)	Prevalence of underweight (<-2 z-score)	12.8% [10.1-16.2]
	Prevalence of severe underweight (<-3 z-score)	1.6% [0.8- 3.2]
Child Nutrition Status W/A (NCHS)- Z scores (561)	Prevalence of underweight (<-2 z-score)	20.0% [16.1-24.5]

[1] A household refers to a caretaker and his/her children

	Prevalence of severe underweight (<-3 z-score)	2.0% [1.0- 3.9]
Mortality	Crude Death rate/10,000/day	0.27[0.16-0.45]
	0-5 Death rate/10,000/day	0.30[0.07-1.20]
Child MUAC (598)	SAM (<115 mm) GAM (<125mm) At risk (>125-<134 mm)	0.4% 2.2% 10.5%
Maternal nutrition status (lactating and pregnant mothers)	Malnourished < 21.0 cm	0.7%
Vaccination coverage, Vitamin A and Iron supplementation		
Measles coverage ≥ 9 months (538)	Card According to mother Not Immunized	81.0% 16.4% 2.4%
DPT3 (560)	Card According to mother Not immunized	83.6% 15.7% 0.7%
Vitamin A coverage (last 6 months) (560)	Received Not received	64.1% 35.9%
Vitamin A coverage (6-11) Last 6 months (58)	Received Not received	65.5% 34.5%
Vitamin A coverage (12-59) Last 6 months (502)	Received Not received	63.9% 36.1%
Mother Iron supplementation (last pregnancy)	Yes No Don't Know	84.9% 13.7% 1.4%
Morbidity for the last 2 weeks		
Child Illness in the last 2 weeks	Yes No	53.0% 47.0%
Type of Illness	Fever Cough Watery Diarrhoea Blood Diarrhoea Others (vomiting, skin infection, eye problem, wound, stomach ache, ring worms)	 31.0% 54.8% 6.2% 1.6% 6.5%
De-Worming	Yes No Don't Know	51.4% 47.5% 1.1%
Treatment Sought for diarrhoea	ORS Homemade sugar salt solution Another homemade liquid Zinc Other drugs nothing	46.7% 13.3% 6.7% 6.7% 13.3% 13.3%
Child Slept under mosquito net last night	Yes No	87.0% 13.0%

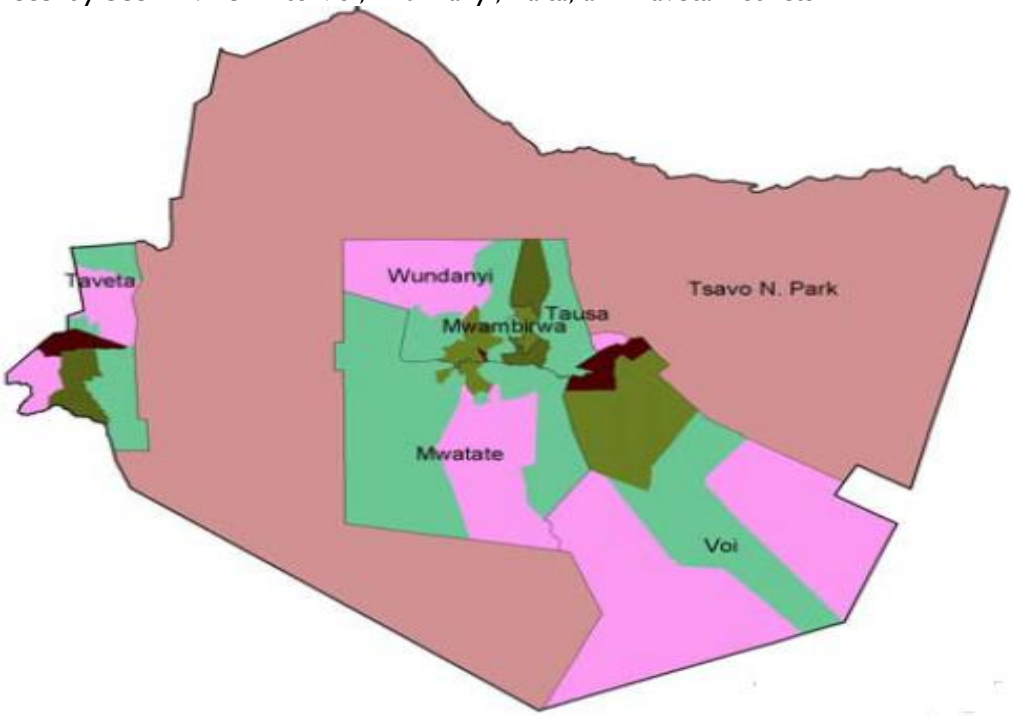
Infant and young child feeding practice[2]		
Given colostrums	0-23 Months (n=278)	75.9%
Exclusive breastfeeding	0-5 Months (n=90)	51.1%
Early Initiation of breast feeding	0- 23 Months(n=278)	67.6%
Continued breastfeeding at 1year	12-15 Months (n=42)	85.7%
Introduction of solid, semi-solid or soft foods	6-8 Months (n=26)	92.6%
Minimum diet diversity	6-23 Months (n=188)	2.7%
Minimum meal frequency	6-23 Months (n=188)	93.1%
Minimum Acceptable diet	6-23 Months (n=188)	2.7%
Child ever breastfed	0-23 months (n=278)	94.2%
Continued breastfeeding at 2years	20-23 months (n=37)	48.6%
Water and Sanitation		
Main water source	Bore hole River Protected shallow well Household connection Unprotected shallow well Open shallow well	5.8% 14.4% 1.1% 75.3% 2.9% 0.4%
Length from Water Source	<30 minutes >=30 minutes	72.4% 27.6%
House hold water	Minimum Maximum Average	7 litres 200 litre 59.2 litres
Water Treatment	Nothing Boiling Chlorination	60.4% 19.2% 20.5%
Toilet Use	Latrine Hole Designated Open Area Undesignated Area	96.4% 1.6% 0.4% 1.6%

[2] As per Indicators for assessing infant and young child feeding practices Part 3 Country profiles

House hold food consumption		
Main Source of food consumed in the Household	Own Production Purchases Gifts Food Aid Borrowed	18.0% 79.0% 0.2% 2.5% 0.2%
Number of meals normally eaten per day	One meal Two meals Three meals and above	0.2% 12.6% 87.1%
Number of meals eaten the day preceding the survey	One meal Two meals Three meals and above	0.7% 14.5% 84.8%
Household dietary diversity score	Average HDDS	6.4

2.0 INTRODUCTION

Taita Taveta County is in Coast Province and is situated to the southwest. It borders Tana River, Kitui and Makueni Districts to the north, Kwale and Kilifi Districts to the east, Kajiado District to the northwest and the Republic of Tanzania to th e south and southwest. The County lies between 2° 46' South and 4° 10' south and longitudes 37° 36' east and 30°14' east. However, the County has recently been divided into Voi, Wundanyi, Taita, and Taveta districts



Map 1: Taita-Taveta County.

Taita Taveta is classified as a semi arid district. Out of the total area of 17,128.3 Km² covered by the district, 10,680.7 km² or 62 per cent is occupied by Tsavo East and West National parks, 4,100.7 km² or 24 per cent is range land suitable for ranching and dry land farming, while only 2,055.4 km2 or 12 per cent is available for rain-fed agriculture. Of the 2,055.4 km2 arable land, 1,774.5 km² or 74 per cent is low potential agriculture land, receiving an annual mean rainfall of 650mm.

The altitude of the County varies between 481m above sea level in the lowlands to 2,200m above sea level for highlands, giving two distinct climatic characteristics, with the hills experiencing lower temperatures (as low as 18.20C) compared to the lower zones with an average temperature of 24.60C. The average temperature in the district is 230 C. The district is divided into three major topographical zones. These are the upper zone, lower zone and volcanic foothills. The upper zone is suitable for horticultural farming. Precious gemstones are found and mined in the lower plain, while the volcanic foothills, covering Taveta Division have potential for underground water and springs emanating from the Taita hills and Mt. Kilimanjaro.

The major rivers in the County are Tsavo, Voi and Lumi. Small springs and streams in the district include Njuguini, Sainte, Njoro kubwa Kitobo, Maji Wadeni, Humas Springs and Lemonya Springs. There are two lakes, Jipe and Challa both found in Taita Taveta Division. Lake Challa is a crater lake with little economic exploitation, while Lake Jipe is slightly exploited through small-scale irrigation and fishing. Both lakes are served by springs emanating from Mt. Kilimanjaro.

The district is dry, except for high catchment areas in the hills. The effect of the south – easterly winds influences the climate of the district. The hilly areas have ideal conditions for condensation of moisture, which results in relief rainfall.

2.1 FOOD SECURITY

The district experiences two rain seasons the long rains between the months of March and May and the short rains between November and December. The rainfall distribution is uneven in the district, with the highlands receiving higher rainfall than the lowland areas. This, coupled with cooler temperatures, makes the highlands have more potential for the production of horticultural crops, maize and beans.

The lowland areas, which are mainly ASAL, are only suitable for planting crops with short maturing period like sorghum, cowpeas, green grams, cashew nuts, sunflower, millet and dry land hybrid maize varieties. Also these areas are suitable for a variety of ASAL activities such as ranching and sisal growing. Tsavo East and Tsavo West national Parks, home to various types of wild animals, occupy a large portion of the lowlands. The presence of these National Parks has improved the welfare of the people, particularly those engaged in tourism activities.

The County is permanently food deficient and mainly relies on imports of foods from Tanzania and up county Counties. The county is not able to produce enough food as a result of erratic rainfall and animal human conflict that affect agricultural activities. As a result of poor food security ARIDLANDS has programs that help the communities in the region such as:

- Early warning systems for livestock and human through collection of data through 15 sentinel sites established in the county.
- Introduction of income generation activities (IGA) such as Mushroom and macadamia production
- Food/ Cash for Asset programs
- Enhancement of biodiversity by planting trees
- Water harvesting, provision of piped water especially in Sangalla and solar electric fencing to protect irrigation schemes from wild animals.

World Vision Kenya has also an elaborate food security program in the county mainly focusing on the following:-

- Encouragement of drought resistant crops
- On farm water harvesting
- Promotion of farming of crops such as mushrooms
- Environmental conservation through planting of indigenous crops
- Livestock, though introduction of the Gala goats that are more productive in Milk and meat
- Improvement indigenous poultry through cross breads with exotic poultry
- Promotion of ox- ploughing
- Cash/food for asset.

2.3 HEALTH AND NUTRITION

The county has two DHMTS based in Voi and Taveta covering all the 4 districts in the county. The common ailments include upper respiratory infection, Malaria, Pneumonia and malaria. The communities are well versed with health service and most of the communities are assessable to health faculties as a result of CDF, which has increased the access to health facilities. The

Ministry of Public health and health partners have launched the community health strategy with the establishment of community units with 12 functioning community units in the county. The community Units have improved information on deliveries, toilet awareness, immunizations, nutrition activities such as growth monitoring and referrals.

In order to manage malnourished children in the county the Ministries of health and partners have collaborated in establishing nutrition treatment programs in the county that include:

- Stabilization centres to treat severally malnourished children with medical complications
- OTP- to manage severally malnourished children without medical complications
- SFP- to manage moderately malnourished children.

Those nutrition treatment programs are not available in all health facilities in the county.

3.1 METHODOLOGY

3.1 Type of Survey and Sample Size

A two-stage cluster sampling method was used. The anthropometric surveys target children aged between 6 and 59 months utilizing SMART methodology, which ensures accuracy and precision of data collected. Selection of accessible villages was done with the help of village elders. Information on population figures for was collected thorough the 2009 census results and the village elders a list of selected villages for the survey are at the annex.

The geographical units and their respective population were then inputted into the ENA for SMART software November 2008 for planning the survey.

At the first stage, the sample size was determined by inputting necessary information into the ENA for SMART both anthropometric and mortality surveys. The information included estimated population sizes, expected prevalence rates of mortality and malnutrition, the desired precision and the design effect.

3.2 Sample Size Calculation

Using prevalence of 7 %, precision of 3 and design effect of 2, a sample size of 556 children was obtained. In the mortality section, an estimated prevalence of 0.2, a desired precision of 0.2 and a design effect of 2 resulted in a sample size 3,312 with a recall period of 112 days.

At the second stage, a selection of the households to be visited within each cluster was done. Simple random method was used to select the households, the village elders gave the list of the households in a given village, using table of random numbers the households were selected. In cases where the villages had huge number of households, segmentation was done; the population was subdivided in to equal segments and one segment was selected using table of random numbers, the household were then listed, and the required households selected from the list by simple random method.

In each selected household, all children aged 6-59 months were included. If there was more than one wife (care taker) in the household[3], each wife was considered separately regardless of whether they were cooking together. If there were no children in a household, the house remained a part of the "sample" that contributed zero children to the nutritional part of the survey. The household was recorded on the nutritional data sheet as having no eligible children.

The mortality questionnaire was only administered in households that were included in the anthropometric questionnaire and numbered correspondingly.

3.3 Data Collection

For each selected child, information was collected during the anthropometric survey. The information included

- → **Age:** recorded with the help child health cards/mother and health booklet and a local calendar of events
- → **Gender:** male or female
- → **Weight:** children were weighed without clothes, with a SALTER balance of 25kg (precision of 100g).
- → **Height:** children were measured on a measuring board (precision of 0.1cm). Children less than 87cm were measured lying down, while those greater than or equal to 87cm were measured standing up.
- → **Mid-Upper Arm Circumference:** MUAC was measured at mid-point of left upper arm for measured children (precision of 0.1cm).
- → **Bilateral Oedemas:** assessed by the application of normal thumb pressure for at least 3 seconds to both feet.
- → **Measles vaccination:** assessed by checking for measles vaccination on EPI cards or by asking caretakers.
- → **DPT 3:** assessed by checking for measles vaccination on EPI cards or by asking caretakers.
- → **Vitamin A:** Asked the mother/caretaker whether the child received Vitamin A in the last 6 months

3.4 Indicators, Guidelines, and Formula's Used

3.4. 1 Acute Malnutrition

- ↳ **Weight for Height Index**

Acute malnutrition rates are estimated from the weight for height (WFH) index values combined with the presence of Oedemas. The WFH indices are expressed in both Z-scores and percentage of the median, according to both NCHS[4] and WHO references[5]. The complete analysis is done with the WHO reference.

[3] A household refers to a caretaker and his/her children

[4] NCHS: National Center for Health Statistics (1977) NCHS growth curves for children birth-18 years. United States. Vital Health Statistics. 165, 11-74.

[5] WHO reference, 2005

The expression in Z-scores has mainly statistical meaning, and allows inter-study comparison. The percentage of the median, on the other hand, is used for the identification criteria of acute malnutrition in nutrition programs.

Guidelines for the results expressed in Z-score:

- Severe malnutrition is defined by WFH < -3 SD and/or existing bilateral Oedemas on the lower limbs Moderate malnutrition is defined by WFH < -2 SD and ≥ -3 SD and no Oedemas.
- Global acute malnutrition is defined by WFH < -2 SD and/or existing bilateral Oedemas.

Guidelines for the results expressed in percentage of median:

- Severe malnutrition is defined by WFH < 70 % and/or existing bilateral Oedemas on the lower limbs
- Moderate malnutrition is defined by WFH < 80 % and ≥ 70 % and no Oedemas.
- Global acute malnutrition is defined by WFH <80% and/or existing bilateral Oedemas

- **Children's Mid-Upper Arm Circumference (MUAC)**

The weight for height index is the most appropriate index to quantify wasting in a population in emergency situations where acute forms of malnutrition are the predominant pattern. However the mid-upper arm circumference (MUAC) is a useful tool for rapid screening of children at a higher risk of mortality. MUAC measurements are significant for children with age of one year and above. The guidelines are as follows:

MUAC < 115 mm	Severe malnutrition and high risk of mortality
MUAC ≥ 115 mm and <125 mm	Moderate malnutrition and moderate risk of mortality
MUAC ≥ 125 mm and <135 mm	At risk of malnutrition
MUAC ≥ 135 mm	Good nutritional statuses

3.4.2 Stunting

- **Height for Age index**

Stunting rates are estimated from the height for age (HFA) index values. The HFA indices are expressed in Z-scores according to both NCHS and WHO references. The complete analysis is done with the WHO reference.

Guidelines for the results expressed in Z-score:

- Severe stunting is defined by HFA < -3 SD
- Global stunting is defined by HFA< -2 SD.

3.4.3 Underweight

- **Weight for Age index**

Underweight rates are estimated from the Weight for age (WFA) index values. The WFA indices are expressed in Z-scores according to both NCHS and WHO references. The complete analysis is done with the WHO reference.

Guidelines for the results expressed in Z-score:

- Severe underweight is defined by WFA < -3 SD
- Global underweight is defined by WFA< -2 SD.

3.4.4 Mortality

Mortality data was collected using Standardized Monitoring and Assessment of Relief. The crude mortality rate (CMR) is determined for the entire population surveyed for a given period. The CMR is calculated using ENA for SMART.

The formula below is applied:

Crude Mortality Rate (CMR) = 10,000/a*f/ (b+f/2-e/2+d/2-c/2),

Where:

a = Number of recall days (95)

b = Number of current household residents

c = Number of people who joined household

d = Number of people who left household

e = Number of births during recall

f = Number of deaths during recall period

The result is expressed per 10,000-people / day. The thresholds are defined as follows[6]:

Total CMR:

Alert level:	1/10,000 people/day
Emergency level:	2/10,000 people/day

Under five CMR:

Alert level:	2/10,000 people/day
Emergency level:	4/10,000 people/day

[6] Health and nutrition information systems among refugees and displaced persons, Workshop report on refugee's nutrition, ACC / SCN, Nov 95.

3.4.5 IYC Indicators[7]

1. **Early initiation of breastfeeding:** Proportion of children born in the last 23 months who were put to the breast within one hour of birth.

$$\frac{\text{Children born in the last 23 months who were put to the breast within one hour of birth}}{\text{Children born in the last 23 months}}$$

2. **Exclusive breastfeeding under 6 months:** Proportion of infants 0–5 months of age who are fed exclusively with breast milk.

$$\frac{\text{Infants 0–5 months of age who received only breast milk during the previous day}}{\text{Infants 0–5 months of } \textbf{age}}$$

3. **Continued breastfeeding at 1 year:** Proportion of children 12–15 months of age who are fed breast milk.

$$\frac{\text{Children 12–15 months of age who received breast milk during the previous day}}{\text{Children 12–15 months of age}}$$

4. **Introduction of solid, semi-solid or soft foods:** Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.

$$\frac{\text{Infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day}}{\text{Infants 6–8 months of age}}$$

5. **Minimum dietary diversity:** Proportion of children 6–23 months of age who receive foods from 4 or more food groups.

$$\frac{\text{Children 6–23 months of age who received foods from } \geq 4 \text{ food groups during the previous day}}{\text{Children 6–23 months of age}}$$

6. **Minimum meal frequency:** Proportion of breastfed 6–23 months of age, who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.

$$\frac{\text{Breastfed children 6–23 months of age who received solid, semi-solid or soft foods the minimum number of times or more during the previous day}}{\text{Breastfed children 6–23 months of age}}$$

7. **Minimum acceptable diet:** Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk).:

$$\frac{\text{Breastfed children 6–23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day}}{\text{Breastfed children 6–23 months of age}}$$

[7] WHO, 2010. **Indicators for assessing infant and young child feeding practices. Part 3 country profiles**

8. **Children ever breastfed:** Proportion of children born in the last 24 months who were ever breastfed.

$$\frac{\text{Children born in the last 23 months who were ever breastfed}}{\text{Children born in the last 24 months}}$$

9. **Continued breastfeeding at 2 years:** Proportion of children 20–23 months of age who are fed breast milk.

$$\frac{\text{Children 20–23 months of age who received breast milk during the previous day}}{\text{Children 20–23 months of age}}$$

3.4.5 Health, food security and water and sanitation data

Health, food security and water and sanitation data were collected from same households the where anthropometry data was collected. The questionnaire was administered to the head of the household and/or to the spouse. The Questionnaires were in English language, surveyors competent in reading English were chosen to administer the questionnaires.

3.5 Data quality control assurance

The use of an anthropometric standardization test for the survey team, thorough enumerator training, close supervision during the actual survey for consistency, completeness and clarity of the questionnaires ensured that data collected was of good quality. Common historical events listed in the seasonal calendar were used to clarify the dates of childbirth in cases where the mother or the caretakers were not certain about the information.

3.6 Field Work

The surveys were carried out by six teams, each team comprising five members: 1 team leader, 2 data collectors and 2 measurers. All teams received 4 day intensive training in Voi Town prior the start of the survey. This training provided the theoretical background for team leaders, data collectors and the measurers. All team members did a pilot survey for one day before actual start of data collection. This train included the standardization test. All teams were closely supervised during their field work throughout the whole survey time by the consultant, MOH and WVK staff.

3.7 Data Analysis

Data processing and analysis for both anthropometric and mortality were carried out using ENA for SMART November 2008 version using both NCHS and WHO references. Excel was used to carry out analyses on MUAC, measles immunization coverage, household composition. Health, food security, water and sanitation data was analysed using SPSS version 16.

3.8 Challenges faced during survey

The survey faced the limitation below.

- Community mobilization of the chiefs and village elders was quite a challenge as the survey covered a wide area and it was impossible to reach all of them before the start of the survey.

4.0 RESULTS AND DISCUSSION

This section provides results and discussions from the data collected on nutrition/ anthropometrics, mortality as well as immediate and underlying causes of malnutrition such as morbidity, water and sanitation and food security. The topics are discussed in the following sections under the respective headings and sub-headings. Quantitative results are presented in tables, graphs and charts as applicable.

4.1 Health and nutrition status

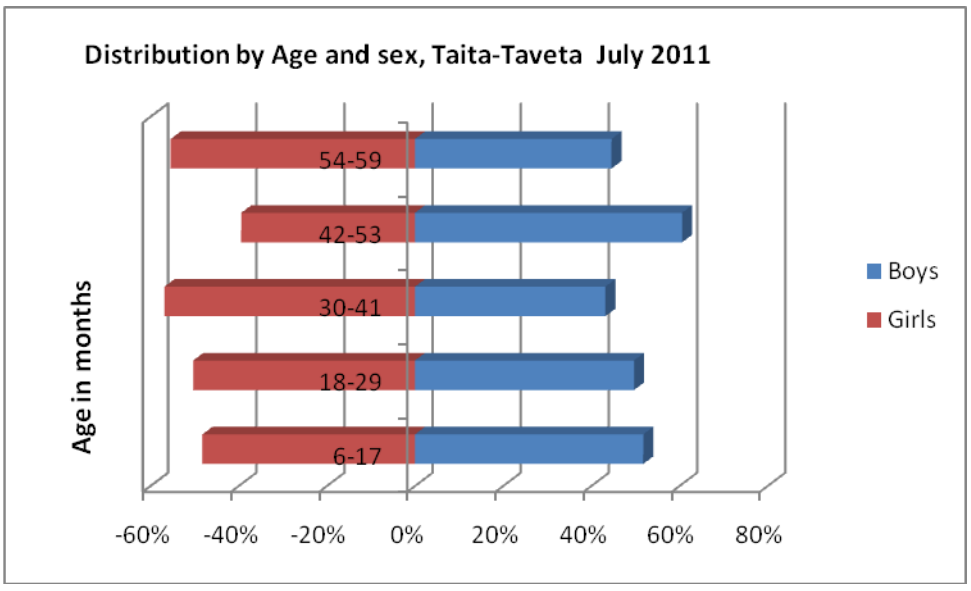
4.1 .1 Distribution by Age and Sex

The distribution of the nutrition survey sample by sex and age group shows that the total boy/girl sex ratio of the survey was within the normal limits (0.8 - 1.2). Similarly, sex ratio within the age groups indicates a normal distribution.

Table 2. Distribution of age and sex Taita-Taveta July 2011

Age group (months)	Boys		Girls		Total		Ratio
	no	%	no	%	no	%	Boy: girl
6-17	58	51.8	54	48.2	112	20.0	1.1
18-29	71	49.7	72	50.3	143	25.5	1.0
30-41	51	43.2	67	56.8	118	21.0	0.8
42-53	80	60.6	52	39.4	132	23.5	1.5
54-59	25	44.6	31	55.4	56	10.0	0.8
Total	285	50.8	276	49.2	561	100.0	1.0

Figure 1: Distribution by Age and sex Taita-Taveta July 2011



4.1.2 Distribution of Acute malnutrition by Z-scores

The global acute malnutrition was 5.5 % while severe acute malnutrition was 0.9% according to WHO standards

Table 3. Weight for height distribution by age Taita-Taveta in Z-scores (WHO reference)

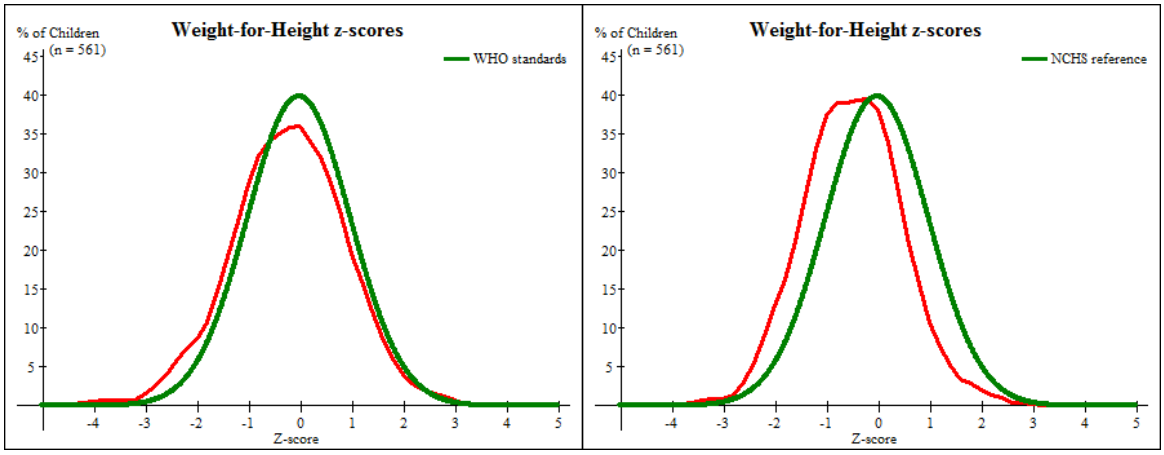
Age (months)	Total no.	Severe wasting (<-3 z-score)		Moderate wasting (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	112	0	0.0	7	6.3	105	93.8	0	0.0
18-29	143	0	0.0	2	1.4	141	98.6	0	0.0
30-41	118	2	1.7	10	8.5	106	89.8	0	0.0
42-53	132	2	1.5	1	0.8	129	97.7	0	0.0
54-59	56	1	1.8	6	10.7	49	87.5	0	0.0
Total	561	5	0.9	26	4.6	530	94.5	0	0.0

Table 4. Weight for height versus Oedema Taita-Taveta in Z scores (WHO reference)

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0(0.0 %)	Kwashiorkor No. 0(0.0 %)
Oedema absent	Marasmic No. 5 (0.9 %)	Not severely malnourished No. 679 (99.1%)

No child was found with bilateral oedema.

Figure 2: Weight for height distribution Taita-Taveta July 2011



The slight displacement of the sample curve to the left side of the reference curve indicates a few malnourished children detected in the surveyed population. The mean Z-Scores of the sample is -0.22 and the Standard Deviation is 1.08 (WHO reference). The SD is within the interval 0.80 -1.20, which shows that the sample is representative of the population.

Table 5 Global and Severe Acute Malnutrition in Z score Taita-Taveta, July 2011

	NCHS Reference	**WHO Reference**
Global Acute Malnutrition	5.3% [3.6-7.9]	5.5% [3.7-8.1]
Severe Acute Malnutrition	0.5% [0.1-2.3]	0.9 [0.3-2.5]

4.1.3 Distribution of acute malnutrition in percentage of median

According to percentage of the Median GAM was 2.5% while SAM was 0.2%

Table 6: Distribution of Weight/Height by age in percentage of median (NCHS)

Age (Months)	**Total no.**	**Severe wasting (<70% median)**		**Moderate wasting (>=70% and <80% median)**		**Normal (> =80% median)**		**Oedema**	
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
6-17	112	0	0.0	3	2.7	109	97.3	0	0.0
18-29	143	0	0.0	0	0.0	143	100.0	0	0.0
30-41	118	0	0.0	5	4.2	113	95.8	0	0.0
42-53	132	1	0.8	2	1.5	129	97.7	0	0.0
54-59	56	0	0.0	3	5.4	53	94.6	0	0.0
Total	561	1	0.2	13	2.3	547	97.5	0	0.0

Table 7: Global and Severe Acute Malnutrition in percentage of Medium Taita-Taveta July 2011

	NCHS Reference
Global Acute Malnutrition	2.5%[1.4-4.6]
Severe Acute Malnutrition	0.2[0.0-1.3]

4.1.4. Distribution of Underweight in Z scores Taita-Taveta July 2011 (WHO reference

The global underweight was 12.8% while severe underweight was 1.6%

Table 8: Prevalence of underweight based on Weight-for age Z scores

Age (months)	Total no.	Severe underweight (<-3 z-score)		Moderate underweight (>= -3 and <-2 z-score)		Normal (> = -2 z score)		Oedema	
		No.	%	No.	%	No.	%	No.	%
6-17	112	1	0.9	6	5.4	105	93.8	0	0.0
18-29	143	1	0.7	12	8.4	130	90.9	0	0.0
30-41	118	6	5.1	17	14.4	95	80.5	0	0.0
42-53	132	1	0.8	20	15.2	111	84.1	0	0.0
54-59	56	0	0.0	8	14.3	48	85.7	0	0.0
Total	561	9	1.6	63	11.2	489	87.2	0	0.0

4.1.5 Distribution of stunting in Z scores Tiatia -Taveta (WHO reference)

The prevalence of stunting was **27.8%** while severe stunting was **6.6%**

Table 9: Prevalence of stunting by age based on height-for-age Z scores

Age (months)	Total no.	Severe stunting (<-3 z-score)		Moderate stunting (>= -3 and <-2 z-score)		Normal (> = -2 z score)	
		No.	%	No.	%	No.	%
6-17	112	2	1.8	14	12.5	96	85.7
18-29	143	12	8.4	41	28.7	90	62.9
30-41	118	12	10.2	29	24.6	77	65.3
42-53	132	9	6.8	27	20.5	96	72.7
54-59	56	2	3.6	8	14.3	46	82.1
Total	561	37	6.6	119	21.2	405	72.2

4.1.6 Risk of mortality: children MUAC and mothers/care takers MUAC

All children measured were included in the MUAC analysis. As shown in the following table, the rates of acute malnutrition according to the MUAC status of the children were 0.4 % and 2.2% severe and global malnutrition respectively, 10.5 % were at risk of malnutrition.

Table 10: Child MUAC distribution Taita-Taveta , July 2011

Nutrition status N=507	N	%
<115	2	0.4%
>=110-<125	10	1.8%
>125-<135	59	10.5%
>135	490	87.3%

4.1.7 Vaccination coverage and Vitamin A supplementation

- **Measles Vaccination Coverage Taita-Taveta, July 2011**

Table below presents the measles vaccination coverage among the surveyed population. The source of Information on immunization was either the child's health card or the mother's recall. A child was considered fully vaccinated if he/she had received the last dose of the EPI programme (from 9 months of age).

Table 11: Measles vaccination coverage Taita-Taveta, July 2011

Population ≥ 9 months= 538	N	%
Immunized with Card	436	81.0%
Immunized without card	88	16.4%
Not immunized	14	2.6%

- **Vitamin A coverage**

Vitamin A coverage was established for the three surveys as shown by table below. Caretakers were asked if their child had received a vitamin A supplementation in the six months. The rates of supplementation appeared to be at a very low level.

Table 12 Vitamin A coverage

	6-11		12-59		6-59	
Population =560	N	%	N	%	N	%
Received	38	65.5%	321	63.9%	359	64.1%
Not received	20	34.5%	181	36.1%	201	35.9%

- **DPT 3 Coverage**

The children who had received the complete three doses of DPT3 were 83.6% according to card and 15.7% according to caretaker as shown in table below

Table 13: DPT 3 coverage

Population =560	N	%
Card	468	83.6%
Mother	88	15.7%
Not immunized	4	0.7%

4.19 Mortality

The retrospective death rate was calculated based on the data collected on the 112 days recall. The recall date was March 1st.

Table 14: Mortality results

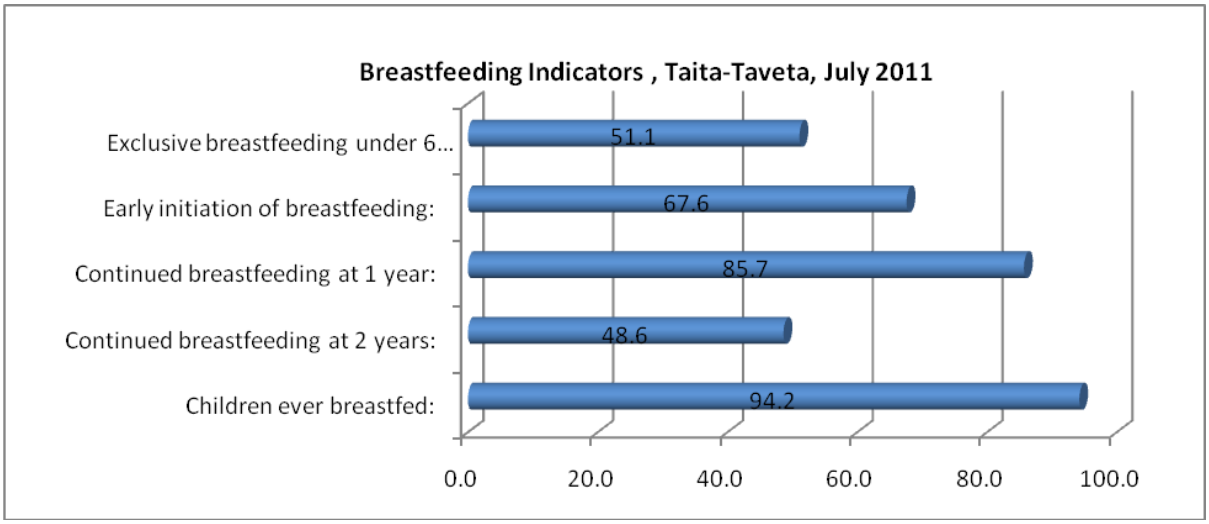
Demographic data	Taita-Taveta July 2011
Number of current HH residents	3529
Number of people who joined HH	103
Number of births during recall	46
Number of death during recall	11
Number of 0-5	708
Number of 0-5 who joined HH	595
Number of deaths 0-5 during recall	2
Crude Death rate	0.27[0.16-0.45]
0-5 death rate	0.30[0.07-1.20]

The mortality rates remained below WHO emergency thresholds.

4.1.8 Breastfeeding and complementary feeding

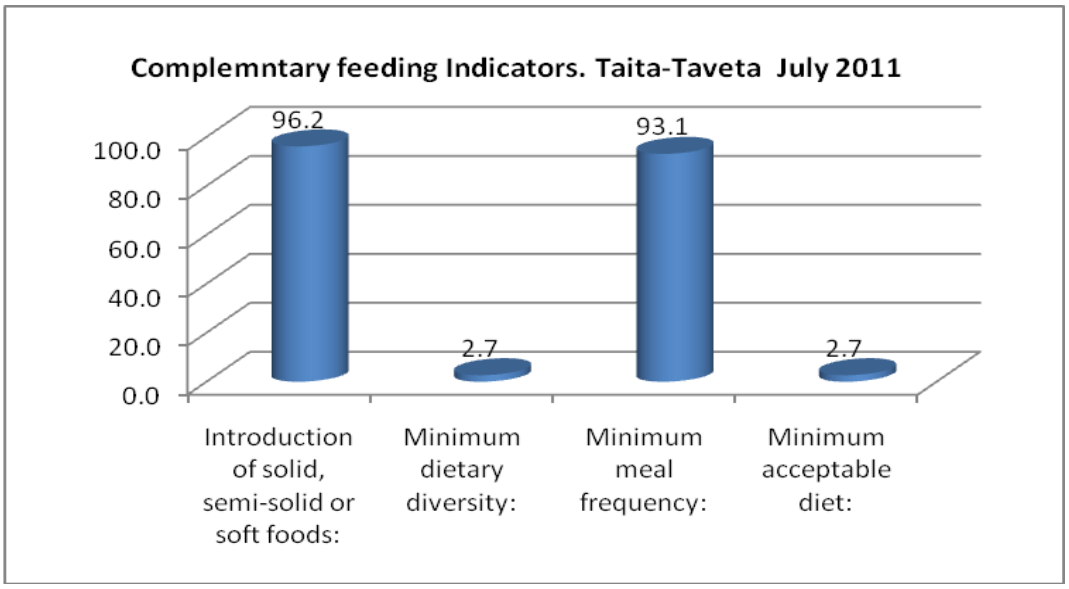
Mothers were asked when they do start breastfeeding their new born baby and when they introduce complementary food.

Figure 3: Breastfeeding indicators, Taita-Taveta, July 2011



The initiation of breastfeeding, continued breastfeeding at 1 year, continued breastfeeding at 2 years were good as shown by the figure above. Most of the children 94.2% were ever breast fed. Exclusive breastfeeding (0-5 months) was 51.1% is good is recommended by UNICEF and WHO children less than six months should breastfed exclusively or their optimum growth.

Figure 4: Introduction of complementary foods in Taita-Taveta July 2011



Introduction of semisolid, solid and soft foods was good at 96.2% while the minimum meal frequency was also good at 93.1%; the minimum diet diversity and minimum acceptable diet scored very poor 2.7%. That is appalling as good nutrition and with required diversity is crucial for the growth of the children during the process of introducing of complementary foods

4.1.9 Child morbidity and treatment seeking

In the survey 53.0% of the children had sickness in the last 2 weeks, out of them 31% had fever, 54.8% had cough 6.2% had watery diarrhoea as shown in table below.

Table 15: Disease patterns in the last two weeks before the survey

Disease	Percentage
Fever	31%
Cough	54.8%
Watery Diarrhoea	6.2%
Blood Diarrhoea	1.6%
Others (skin infection, eye problem)	6.5%

Among the mothers who had sick children 84.9 % of them sought treatment for their sick children, in hospitals and health centers.

4.1.10 Mosquito net coverage

Malaria remains a leading cause of morbidity and mortality for children and pregnant mothers in Kenya. Pregnant women and young children are at particular risk of malaria infection. Thus Ministry of Health in collaboration with implementing partners has made advance efforts in promoting malaria preventive measures in the region. This survey gathered information on the number of households that owned insecticide treated mosquito nets and the number of household members that slept under the mosquito nets. Nearly 87% of children surveyed had mosquito nets in their homes, while the rest did not sleep on mosquito nets exposing them to the risk of malaria.

4.2 Water and Sanitation

4.2.1 Water source and use

There were several sources of water for household use reported by the survey respondents. From the survey responses, 73.3% were using drinking water from safe sources like household connection while the rest were using drinking water from unsafe sources river (14.4%). This means that unsafe source of water resulting into water borne diseases is one of the major underlying causes of malnutrition in the region.

4.2.2 Hand washing practice and Latrine ownership.

97.5% of the mothers washed their hands before handling food, while 85.4% washed their hands after defecation 82.0% washed their hands with water and soap while 17.8%% used water only washing their hands.

Out of the households covered by the survey, impressive 96.4% had access to a toilet facility, 1.6% used a hole; 0.4% used an open designated area while 1.6% used undesignated area.

4.3 Food security

During the time of assessment it was evident that the community is primarily agro-pastoralist. They may also sell them to buy food and therefore ameliorate effects of poor crop performance. The survey revealed that the community mainly grew, Maize, and beans and to a lesser extent vegetables as observed in some households. The short rains were poor and most of the households especially in Voi, Mwatate aand parts of Wundanyi who relies mainly on rain water their crops had dried up as shown in the picture below.

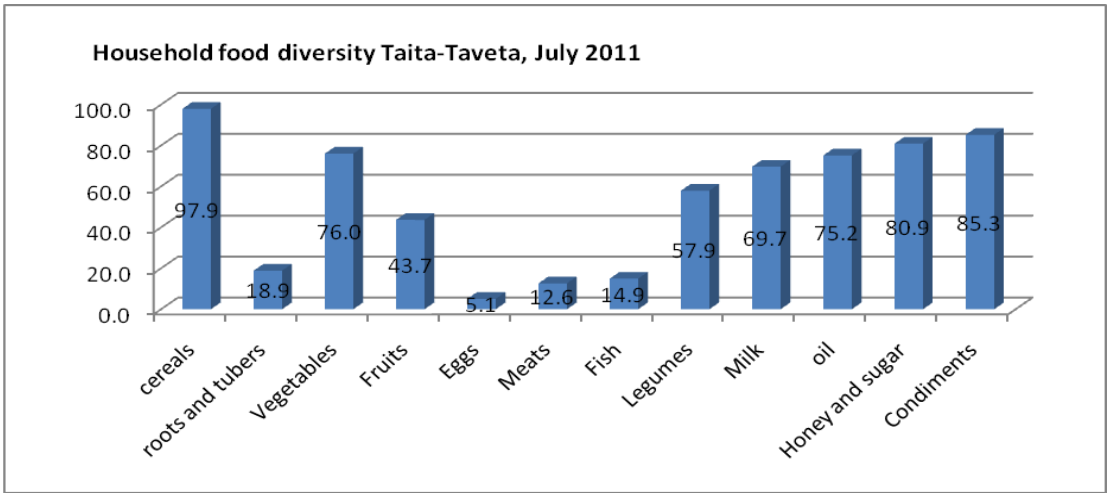
Picture 1: Maize in Kishushe location, Wundanyi July 2011

In Taveta most of the communities do irrigation from the rivers originating from Mt. Kilimanjaro, some of the farms downstream where not farmed as the water levels where low due to poor rains, completion of eater upstream by many farmers and also the river silting.

Though the community's try a lot in difficult situations to farm, their efforts are hampered by wild animal's human conflict as the region has national parks and occasionally animals destroy the crops they usually plant.

As a result of poor climatical conditions 79% of the households got their daily food from purchases while 18% from own production. The household diversity score was average at 6.4. The figure below shows the specific food items consumed by the community.

Figure 5. House hold food diversity Taita-Taveta, July 2011



5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Health and Nutrition

More than half (67.6%) of the mothers introduced breast feeding immediately within one of birth and continued breastfeeding was relatively good; impressive 51.1% had exclusively breast feed their children. Exclusive breastfeeding is the most critical intervention for child nutrition as it gives infants the best nutrition and protection against many infectious diseases and helps preventing chronic diseases later in life[8]. Many (96.2%) of the children were introduced to complementary foods well though minimum dietary diversity and minimum acceptable diet was quite poor. Breastfeeding and weaning practices are important determinants of growth and development not only in infancy but also later in life. Poor infant-feeding practices can lead to stunted growth, delayed motor and mental development, immune incompetence, and increased risk of infectious diseases such as diarrhoea. The benefits of breastfeeding, especially exclusive breastfeeding, are well established, particularly in poorer environments, where the early introduction of other milk is of particular concern because of the risk of pathogen contamination and over dilution of milk, which leads to increased risks of morbidity and under nutrition. Complementary feeding, (i.e., the introduction of solid food and its gradual replacement of milk as the main source of nutrition), should commence by 6 months of age. With improver breastfeeding and introduction of complementary foods could contribute significantly to the current nutrition status.

More than half of the children (53.0%) were sick 2 weeks before the survey is a great concern as disease has synergistic relationship with malnutrition. The major childhood illnesses were fever and watery diarrhoea. The above childhood diseases compromise the heath status of the child and if not managed well children could become malnourished, though mothers sought medical attention when

[8] REACH (2009). Acting at scale: Intervention guide, Breastfeeding and complementary feeding

their children were sick some mothers/caretakers had preference on health facilities available in the county.

Vaccination coverage (measles (97.4%) and DPT (99.3) Measles and whooping cough (pertussis) are diseases that can have an extremely negative effect on the nutrition status and the survival of young children. Vitamin A coverage was 64.1%, efforts needs to be done to attain higher coverage to better health status of the children. Vitamin A plays an important role in strengthening the body's resistance to infection. Vitamin A deficiency affects the immune systems of about 40% of the developing world's under-fives and causes death of about 1 million young children every year[9]. Those children who are vitamin A deficient suffer an increased risk of death and illness, particularly from measles and diarrhoea[10]. Early childhood immunizations especially for Measles and DPT are key for child growth, they prevent the child from dangerous diseases hence reducing mortality. Most of these early childhood diseases are completely prevented by vaccinations.

5.2 Water and Sanitation

The main water source was household connection (73/3%), with more three quarters 72.4% taking less than 30 minutes to their water source, though tap water is generally clean and portable for human consumption poor storage could introduce contamination; 60.4% did not treat their water before drinking. Though mothers washed their hand during different household chores, most of them 82.0% used soap for washing hands. Latrine use was quite high with only 96.43.4% having latrine. Poor water and hygienic practices could be a precursor to water borne diseases; having 6.2% children having being sick of watery diarrhoea and1.6% bloody diarrhoea in the last 2 weeks before the survey are a clear indication that the hygienic practices were not up to date.

Hygiene and sanitation is very important in maintaining the health status of the community. From the survey is clear that hygiene and sanitation in the community is wanting, these could exacerbate the health status of the community by introducing disease causing vermin's that could introduce sickness to the vulnerable groups and the rest of the community.

5.3 Food Security

Food security situation in the district is appalling, as a result of expected poor harvest and due to the lack of enough rains in the county especially, Voi, parts if Wundanyi, and mwatate area. Taveta could have fair food harvest as a result of irrigation. There is need for the introduction of drought resistant crops in the County, the government and partners are already doing that but more need to be done for the community to be self reliance on food.

In order to improve the nutritional status of the population in general and children under five years old in particular, the following recommendations are drawn from the survey findings.

Short Term recommendations

1. Continue treatment of the severely malnourished and moderate malnourished children

[9] Micronutrient Initiative . Micronutrient in emergencies. Combating Vitamin A and mineral deficiency: New approaches

[10] Micronutrient initiative. Vitamin A in Child Health weeks: A Tool kit for planning, Implementing and Monitoring

2. Improve on Vitamin A coverage
3. Promote improved access to safe water especially Kishushe , Tausa and Marugu.
4. Initiate IYCF trainings to improve breastfeeding and Infant feeding especially
5. Strengthening of hygiene practices to reduce the incidence of diarrhoeal diseases associated with insufficient water in the household
6. Continue with FFA or CFA in the lowland divisions to cushion them from food insecurity due to crop failure
7. Initiate nutrition education in the communities to improve diet diversity.
8. Initiate mechanisms to solve the animal and people conflict rampant in the County.
9. Continue Advocacy for drought resistant crops for the communities

Long Term Recommendations

1. Establish community units to cover the entire Taita –Taveta district this will enhance
    a. Quick and timely referrals for malnourished and sick children
    b. Access to health services
    c. Vaccination coverage and micro nutrient supplementation.
    d. Positively towards hygiene and sanitation practices
2. (MOPHS and other Health partners)
3. Introduce and advocate for drought resistance crops in the district. WVK, ARLMP, MOA
4. Provide long lasting solution for water problems in dry areas like Kisushe, Tausa and Marungu boreholes and Dams (WVK, ARLMP,MOW.

6.0 ANNEXES

Annex 1: Assignment of clusters Taita-Taveta County

District	Division	Locaton	Sublocation	Population size	Cluster
			MWATATE	6369	1
			MODAMBOGHO	5380	RC, 2
		MWATATE	SEMBE	2789	3
			WUMARI/SECHU	3974	
			MWACHABO	5711	
		MWACHABO	MRURU/MANGANGA	2578	
			KISHAMBA	1849	
			KAYA ILOLE	2156	
			MENGO	1946	4
		KISHAMBA	MWACHAWAZA	1547	
			WUSI	3881	
		CHAWIA	CHAWIA	1814	
		KIDAYA/NGERENYI	KIDAYA/NGERENYI	3849	
			MRUGHUA	2282	
			ILOLE	1634	
			NYOLO	3288	
			SAGHAIGHU	1247	
		BURA	MNAMU	1508	
			MLUGHI/MWASHUMA	1633	
			GODOMA	2700	
MWATATE	**MWATATE**	**MWAKITAU**	MWAKITAU	2593	
			WUNDANYI	4835	
			SHIGHARO	2765	
			SUNGULULU	2922	
		WUNDANYI	MTENI	3917	RC
			NJAWULI	1791	
		MWANDA	KISHAMBA	2034	
			KISHUSHE	3617	5, 6
		KISHUSHE	PARANGA	1713	
			MGANGE NYIKA	2489	7, 8
			MGANGE DAWIDA	3461	9
			LUSHANGONYI	1982	
		MGANGE	MWAROKO	1565	
			MGAMBONYI	2030	
			NYACHE	3008	RC
			MWARUNGU	1779	
		WUMINGU	WUMINGU	2208	
			MLONDO	1485	
WUNDANYI	**WUNDANYI**	**WERUGHA**	WERUGHA	3524	

			MARUMANGE	1100	10, 11
			SHAGHASA	2567	12
			MBALE CENTRAL	1495	
			CHOKE	1168	
			MLECHI	1206	
		MBALE	MOGHO	1360	
			RONGE JUU	3543	
			NDEMBONYI/ BAGHAU	835	
			KIRONGE/MWALERI	1418	13, 14
		MWAMBIRWA	KISHAU/KIWETO	1290	
			CHUMVINI	2880	
			NJUKINI	4770	15
		NJUKINI	LUMI	2443	
			MAHANDAKINI	2966	16
			CHALLA	5006	17
	CHALLA	**CHALLA**	NAKRUTO	1261	
			MSENGONI	1149	
		TIMBILA	NDILIDAU	954	
			MATA	4549	
	JIPE	**JIPE**	KIMALA	3608	18
			MALUKILORITI	1538	19
		BOMANI	MAHOO	3196	
			MBOGHONI	8382	20, 21
		BOMENI	NJORO	2400	
			MJINI	8982	22, 23, 24, 25, 26
		NGARASHI	LESESIA	1155	
			KITOBO	3801	
		KITOBO	MRABANI	2203	
			KIMORIGO	1939	
TAVETA	**BOMENI**	**KIMORIGO**	ELDORO	4323	27
			RUKANGA	3965	28, 29
			MAKWASINYI	2847	30
		KASIGAU	BUGHUTA	6874	31, 32
			MAUNGU	7608	33, 34, 35
	NYANGALA	MARUNGU	MIASENYI	1499	
			TERI	2517	
			KISHAMBA	2959	36
			TALIO	2267	
		SAGALLA	NDARA	3073	37
VOI	VOI	VOI	KALOLENI	20418	38, 39, 40

			MWANGEA	17354	41, RC, RC, 42
			MSAU-RAHAI	1171	
			RONGE NYIKA	2105	
		RONGE JUU	KIGHOMBO	2040	
			MRARU	5806	43, 44
		MBOLOLO	TAUSA	2831	45
			WONGONYI	1956	
		NGOLIA	NDOME	2846	
	TAUSA	GHAZI	GHAZI	3073	

Annex 2: Anthropometric and Health survey data form

(To be conducted in EVERY HH with children 6-59)

Team No:…….. Date:……../……../……..… Cluster No:/….. District:……. Division……. ……. Location:……..……. sub location……. ……. Village……

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Child No.	HH ref' No.	Sex (M,F)	Age in months	Weght in Kg ±0.1kg	Heig ht in cm ±0.1 cm	Billateral Oedema (N,Y)	MUAC in cm	Enrolled in feeding program in the last 3 months 0 = No 1 = SFP 2 = TFP 3= FBP 4 = SF	Currently in feeding program? **0** = No **1** = SFP **2** = TFP 3= FBP 4= SF	Vit. A in last 6 mths **0** = No **1** =Yes	Measles Vaccine **0** = No **1** =Yes with EPI card **2** =Yes recall	DTP3 **0** = No **1** =Yes with EPI card **2** =Yes recall	Has the child taken any drug for intestinal worms in the last six months? 0= No 1 = yes 2= Don't know	Illness in past 2 weeks **0** = No **1** =Yes (If no skip to Question 17)	Type of Illness **0** = No **1** = Fever **2** = Cough/flu/ cold **3** =Watery Diarrhea **4** = Bloody diarrhea **5** = Others(Specify)	If diarrhea is yes ,Was he/she given any of the following to drink at any time since he/she started having the diarrhea? 1. A fluid made from a special packet called Oralite or ORS? 2. A home-made sugar-salt solution? 3. Another home-made liquid such as porridge, soup, yoghurt, coconut water, fresh fruit juice, tea, milk, or rice water? 4. Zinc 5. Others (specify	Treatment **0** = None sought **1** =Hospital **2** = GOVT heath facility **3**= FBO heath facility **4** = Mobile/outreach clinic **5**=Village health care worker **6**=Private physician **7**=Relative/friend **8**=Shop **9**=Traditional practitioner **10**=Pharmacy **11**=Others(Specify)	Did the child sleep under a mosquito net(LLITN) last night? 1= Yes 2= No 3= Yes not LLITN	Female caetakers MUAC in cm	Physiological state of the female caretaker 1= Pregnant 2= lactating 3= Pregnant and Lactating 4= Not lactating nor pregnant	In your last pregnancy, did you take iron pills, sprinkles with iron, or iron syrup? 1= yes 2 = No 3= Don't know
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3																					
4			`																		
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Annex 3: Calendar of events

Seasons	2006	2007	2008	2009	2010
New year, start of first term, start of dry spell, start of harvesting of maize		53	41 post election violence	29	17
Harvesting of maize, havesting of zambarau		52	40 formation of coalition government	28	16
Preparation of land and planting. Start of long rains		51	39	27	15
Close of schools, easter holiday, w eeding		50	38	26	14 Start of registration of voters
Opening of schools for second term, Malezi bora		49	37	25	13
Start of cold season,harvesting of beans, matting season of elephants and dogs, madaraka day		48	36	24	12 End of registration of voters
cold season	59	47	35	23 drought and famile	11
Close of schools, preparing land, mombasa show , circmcission	58	46	34	22 census	10 referendum on constitution
Opening of schools for third term, planting in highlands, start of dry spell	57	45	33	21	9
Start of KCSE exams, start of short rains	56	44	32	20	8
Close of schools, w eeding, Start of KCPE, Malezi bora	55	43	31	19	7 Protest in voi tow n coz of poor roads
Christmas, w eddings, Jamuhuri,	54	42 Elections , start of post election violence	30	18	6

Annex 4: Household mortality form

(To be conducted in EVERY HH from the random starting point until a total of 18 HHs are completed)

Team No:…..Date:../…../…… Cluster N0:/….. District:…….Division…….. Location:……sub location…….. Village……

1	2	3	4	5	6	7	8	9
		Joined HH		Left HH				
HH ref' No.	TOTAL people in the HH (now)	Of the total, how many are children <5 years	TOTAL people who have joined HH since the 1st April 2011 and are present now	Of the total, how many are <5s	TOTAL people who have left HH since the Ist April 2011	Of the total, how many are <5s	No. of births since the April 1st	TOTAL No. of dealths in the family since April 1st	Of these deaths how many were children <5 who died since the April 1st
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26									

Name Team Leader…… Signature……

Annex 5. Infant and young Child feeding questionnaire

INFANT AND YOUNG CHILD FEEDING QUESTIONNAIRE

(To be conducted in every HH with children 0-24 months)

Team No:…….. Date:…...../…..…/……... Cluster No:/…….. District:……. Division…….. Location:…… sublocation……. Village……

		21	22	23	24	25	26	27	28	29
Child No.	HH Ref No.	Age in Months	Has this child ever been breastfed? 1 = Yes 2 = No	How do you manage the first milk after birth (ndanga, kiswana) 1= Breast fed the child 2= expressed out that milk 3= not expressed but not breastfeed for days	Is this child still breastfeeding now? 1 = Yes 2 = No	How long after birth did you first put the child to the breast? **1** = Immediately in 1st hour **2** = More than 1 hour **3** = After first day	When did you start giving water to the child? Indicate month, weeks, days or 0= Not yet	At what age did you begin to feed this child daily with any food/fluids other than breastmilk? Indicate month, weeks, days or 0= Not yet	What different types of food were given to the child yesterday during the day and night? **1** =Grains/cereal s/tubers **2** = Meat/Fish/Poultry/Organ meats **3** = Legumes/ Nuts **4** = Dairy products **5** = Fruits/vegetables 6**=** Vitamin A rich fruits & Vegetables **7** = Eggs	Since this time yesterday, how many times was this child given solid,semi solid and soft foods? (put number)
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Name Team Leader…… Signiture……

Annex 6: Water and Sanitation questionnaire

(To be conducted in every HH visited for the anthropometric questionnaire)

Team No:……...Date:…../……../…… Cluster N0:/…… District:……..Division…….. Location:……sublocation…….
Village……

	30	31	32	33	34	35	36	37
HH Ref No.	What is the household's **main** drinking water source? --- **1**=Borehole **2**= Protected Shallow well **3**=HH connection / Stand pipe /Tanker **4**=Protected spring **5**=Dam / Pond **6**= River /Stream **7**= Open shallow well **8**= rain water roof harvesting **9=**other (specify)	How long does it take to collect HH water (including travel to and from and waiting)? --- **1** = ≤30 mins **2** = ≤1hr **3** = ≤ 2hrs **4** = ≤ 4hrs **5** = >4hrs	How many litres (jerrycans) of water did the HH use yesterday in total (excluding water for clothes washing)? (define how many litres in a jerrycan if the popn all use the same)	What is done to the water before households members drink it? **1.** Nothing **2**.Boiling **3.**Filtering with a cloth **4.** Letting it settle **5.** Chlorination **6.** Tree leaves **7.**Others(Specify)	Do you Wash Hands? 1= Yes 2= No	If yes, when do you usually wash your hands ? (more than one if appropriate - do not promt) --- 1. After defecation/visiting toilet 2. Before handling food 3. After eating 4. Before feeding the child 5. After cleaning children's bottom. 6. None of the above 7. Others specify	What do you use to wash hands? --- **1** = water only **2** = water + soap **3** = water + ash 4 = Water and Sand 5=Other (specify)	Where does the household usually go to dispose human waste? (include more than one if necessary)? --- **1** = Latrine **2** = Hole **3** = Designated open area **4** = Undesignated open area **5** = Flush Toilet **6**= Other (specify)

Name Team Leader…… Signature……

Annex 7: Food security questionnaire

(To be conducted in every HH visited for the anthropometric questionnaire)

Team No:…….. Date:.../...../…… Cluster N0:/….. District:……. Division…….. Location:…… sublocation……. Village……

	38	39	40	41	42	43	44	45	46	47	48
HH Ref No.	Who is the head of the household? 1. Adult Male 2. Adult Female 3. Child Male 4. Child Female	Main Occupation of the household head (enter code from list) 1. Livestock herding 2. Own farm labour 3. Employed(salaried) 4. Daily Labour 5. Small business/Petty trade 6. Unemployed 7. Retired 8. Housewife 9. Domestic help 10. Firewood/charcoal 11. Weaving/basketry 12. Fishing 13. Others (specify)	Highest educational status of the household head 1. None 2. Non formal 3. Primary Level 4. Secondary Level 5. Above secondary 6. Youth polytechniques 7. Other (Specify) ____	Highest educational status of the Spouse 1. None 2. Non formal 3. Primary Level 4. Secondary Level 5. Above secondary 6= Youth polytechniques 7. Other (Specify) ____	Does the household currently own livestock? 1. Yes 2. No 3. custodian of someelse cattle (If no skip to question 46)	If yes, which ones do you have? 1. Cattle 2. Goats 3. Sheep 4. Poutry 5. Donkey 6. Camels 7. Pigs 8. Rabbits	Did household milk any animal yesterday? 1. Yes 2. No	If yes what was the total amount milk produced? (ask in cups and convert it into litres)	Is the household currently engaged in crop farming? 1. Yes 2. No	If YES, type of crops have you planated in the current season? 1. Maize 21. Bananas 2. Sorghum 22.Sugarcane 3. Simsim 23. Arrow roots 4. Beans 24. French beans 5. Tomatoes 25. Green grams 6. Onion 26. Rice 7. Pawpaw 27. Cabbage 8. Mango 28. Sunflowers 9. Watermelon 29. capscicm (hoho) 10. Orange 30. Mashrooms 11. Kales/sukuma wiki 31. Others (specify) 12. ground nuts 13. Pumpkins 14. Okra 15. Millet 16. Cowpeas 17. Cassava 18. Sweet potatoes 19. Coconut 20. Pigeon peas	What is the main source of the dominant food item consumed 1=Own production 2= purchases 3=gifts from friends/ family 4= food aid 5= traded or bartered 6=borrowed 7=Gathering /wild 8= Others specify

Name Team Leader…… Signature……

(To be conducted in every HH visited for the anthropometric questionnaire)

Team No:…….. Date:.../...../…… Cluster N0:/….. District:……. Division…….. Location:……
sublocation……. Village……

	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
HH Ref No.	Did the household eat the following yesterday during the day or night?												Including food eaten in the morning, how many meals does your family normally eat per day? (Please indicate the number of meals consumed e.g. 1, 2, 3, 4, 5 ,6)	Including food eaten in the morning, how many meals did your family eat **YESTERDAY?**	Have you received **FOOD AID** (general food distribution) in the last **three (3)** months? (1= yes 2=no)
	1. Any maize meal, pasta, rice, bread, or any food made from maize, sorghum, millet or wheat (1= yes, 0 =no)	2. Any potatoes, yams, beets or other foods from roots or tubers (1= yes, 0 =no)	3. Any vegetables? (1= yes, 0 =no)	4. Any fruits? (1= yes, 0 =no)	5. Any eggs? (1= yes, 0 =no)	6. Any meats (cattle, chicken, poultry/fowl, sheep, lamb, and organ meats (heart, liver, kidney, etc)? (1= yes, 0 =no)	7. Any fish or dried fish? (1= yes, 0 =no)	8. Any foods made from beans, peas, lentils, or nuts? (1= yes, 0 =no)	9. Any milk, yogurt, cheese, or other milk product? (1= yes, 0 =no)	10. Any foods made with oil, fat, ghee, or butter? (1= yes, 0 =no)	11. Any sugar or honey? (1= yes, 0 =1)	12. Any other condiments (coffee, chillies, tea)? (1= yes, 0 =no)			

Name Team Leader……
Signature……

Annex 8: Plausibility checks

Indicator	Survey
Digit preference - weight	5 (good)
Digit preference - height	9(Acceptable
WHZ (Standard Deviation)	1.03 (good)
WHZ (Skewness)	0.01 (good)
WHZ (Kurtosis)	-0.16 (good)
Percent of flags	1.1% (good)
Overall data quality Score	2% (good)
Age distribution (%)	
Group1 6-17 mo	20.0% (good)
Group 2 19-29 mo	25.5% (good)
Group 3 30-41 mo	21.0% (good)
Group 4 42-53 mo	23.3%(good)
Group 5 54-59 mo	10.0% (good)
Age Ratio : G1+G2/G3+G4+G5	100
Sex Ratio	1.0 (Good)