

Post Event Coverage Report: Taita Taveta County of Kenya



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Contributors

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Principal Investigator:	Caleb Ombati, Monitoring and Evaluation Manager Helen Keller International combati@hki.org
Co-investigators	Mr. David Doledec, Regional Program Manager, VAS Helen Keller International ddoledec@hki.org Ms. Fridah Mutea, Regional VAS Officer Helen Keller International fmutea@gmail.com Mr. Asa Lelei, National Coordinator Helen Keller International aleleis@hki.org Miss Esther Waithera, Deputy National Coordinator Helen Keller International ewaithera@hki.org Mr. Robinson Mochoni, Program Manager Helen Keller International nmochoni@hki.org Ms. Mercy Mutua, Program Officer Helen Keller International mmutua@hki.org
Period of study:	June 2022-May 2023
Sponsor of the study	Helen Keller International
Coordinating Committee members	Fridah Mutea, Regional VAS Officer Asa Lelei, National Coordinator Esther Waithera, Deputy National Coordinator Caleb Ombati, MEAL M Robinson Mochoni, PM Florence Mugo, MOH Kelvin Mutegi, MOH Lucy Kinyua, MOH Pauline Mugo, CNC, Taita Taveta

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This report was prepared by Helen Keller International.

Contributors

Helen Keller Team: David Doledec, Fridah Mutea, Romance Dissieka, Adou Odilon Gesslet Yapi, Asa Lelei, Esther Njeri, and Caleb Ombati.

Ministry of Health: Florence Mugo and Kevin Mutegi.

Senior Management Teams of Taita Taveta County.

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Helen Keller International

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Please contact
Helen Keller International
Lavington Braeside Gardens
P.O Box 14195-00800
Nairobi, Kenya

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List of Abbreviations

CHV	Community Health Volunteers'
CL	Community Leader
ECDs	Early Childhood Development
EPI	Expanded Programme on Immunization
HW	Health Worker
IEC	Information Education and Communication materials
IU	International Unit
KNBS	Kenya National Bureau of Statistics
MB	Malezi Bora
MoH	Ministry of Health
ODK	Open Data Kit
PECS	Post-Event Coverage Survey
SDGs	Sustainable Development Goals
STH	Soil-Transmitted Helminth
VAD	Vitamin A Deficiency
VAS	Vitamin A Supplementation
WHO	World Health Organization

Executive Summary

Micronutrient deficiencies are associated with malnutrition and predominant in low- and middle-income countries. Vitamin A deficiency decreases resistance to infections, causes stunting and eye conditions that can progress to blindness if left unchecked. The prevalence of VAD and marginal VAD among preschool children in Kenya is estimated at 9.2% and 52.6% respectively¹. Iron deficiency, responsible for anemia, is most often caused by blood-sucking worms and its prevalence in Kenya is estimated at 21.8% in preschool children¹. Vitamin A Deficiency (VAD) is a major contributor to morbidity and mortality of children under five especially in developing countries.

Improving the vitamin A status of deficient children through supplementation enhances their resistance to disease and can reduce mortality from measles by about 50%, diarrhoea by 40%, morbidity from malaria by 30% and overall mortality by up to 24%². Soil-Transmitted Helminth (STH) are among the most common infections in humans, especially those living in poverty, greatly impairing their nutritional status.

The problem's scope has justified the implementation of several strategies including vitamin A supplementation and deworming in Kenya. Among the interventions resulting from these strategies, VAS and deworming have been successfully linked with routine immunization services and bi-annual Malezi Bora and school deworming events. The Ministry of Health outlines three main delivery approaches, which include; routine contact points at health facility, integration into *Malezi Bora Strategy*, and Community Health Unit (CHU), outreaches and Early Childhood Development (ECD) centres³. Helen Keller International is working closely with the Ministry of Health and County government in Taita Taveta to enhance equitable delivery of VAS and deworming.

A post-event coverage survey (PECS) was implemented in July 2022 to estimate the true coverage of VAS and deworming, characterize children that were missed during the Malezi Bora events and determine the effectiveness of activities conducted prior to and during the health week/malezi bora event done in June 2022 in Taita Taveta County. Households living with at least one child aged 6 to 59 months at the time of June 2022 Malezi Bora, health workers, community health volunteers and community leaders who participated in the Malezi Bora event were interviewed. This survey was a cross-sectional study using both quantitative and qualitative approaches.

The study was conducted in Taita Taveta County where 77 clusters sampled using probability proportional to size sampling. The study targeted 852 households but managed to reach 905 households. A total of 47 health workers, 65 Community Health Volunteers (CHVs) and 73 community leaders were interviewed against the target of 77 each. Data was collected using smartphones with the Open Data Kit (ODK) format and the ONA server. Several data quality measures were employed throughout the data collection period. Ethical considerations of confidentiality, informed consent and Covid-19 prevention measures were all observed. Data analysis was done using STATA software version 17.0.

The results from the survey were indicative of a satisfactory Vitamin A coverage in Taita Taveta which was recorded at 90.0% above the national target of 80% while the administrative coverage

¹ The Ministry of Health: The Kenya National Micronutrient Survey 2011: <http://www.nutritionhealth.or.ke/wp-content/uploads/Downloads/The%20Kenya%20National%20Micronutrient%20Survey%202011.pdf>

² WHO, UNICEF. *Guideline: Vitamin A supplementation in infants and children 6–59 months of age*. Geneva, World Health Organization, 2011 (https://apps.who.int/iris/bitstream/handle/10665/44664/9789241501767_eng.pdf, accessed 20 September 2022).

³ Ministry of Health (2014), *Vitamin A Supplementation Multiyear Plan 2013-2017*.

(KHIS) was 119.0%. The VAS routine PECs coverage was 9.5% vs 26.0% administrative, while malezi bora month was 80.5% vs 93.0% administrative. On the other hand, deworming coverage was recorded at 85.8% against the administrative data of 91.0%. the routine PECs deworming coverage was 21.0% vs 23.3% administrative and during malezi bora month it was 64.9% vs 67.8% administrative.

The high achievement is attributed to the acceleration of activities during malezi bora month, that supports the main channels of distribution (door to door, health facilities, ECDEs, outreaches). This gives a skewed picture towards malezi bora month, while the routine supplementation and deworming is not active. There is need to strengthen the routine work through integration of activities, conducting community outreaches, and ensuring commodities are available and proper documentation and reporting done.

I-Background of the Study

Micronutrient deficiencies are associated with malnutrition and predominant in low and middle-income countries. Vitamin A deficiency decreases resistance to infections, causes stunting and causes eye conditions that can progress to blindness if left unchecked. VAD and marginal VAD in Kenya is estimated at 9.2% and 52.6% among children 6-59 months ⁴. Iron deficiency, responsible for anemia, is most often caused by blood-sucking worms and its prevalence in Kenya is estimated at 21.8% among pre-school children ¹. Vitamin A Deficiency (VAD) is considered as one of the major public health problems in developing countries. It has a negative impact on socio-economic development both by the ocular lesions and blindness it causes, and by its direct and indirect effect on morbidity and mortality of children from 0 to 5 years old ⁵. It is estimated that globally about 30% of children under 5 years of age are Vitamin A deficient and about 2% of all deaths are attributable to VAD in this age group ⁶. Soil-Transmitted Helminth (STH) are among the most common infestations in humans, caused by a group of parasites commonly referred to as worms, including roundworms, whipworms and hookworms. Those living in poverty are most vulnerable to infection which can impair nutritional status ⁷.

Malnutrition is prevalent among women of reproductive age globally, where approximately 15% are underweight and 35% are overweight ⁸. In Kenya, analysis of body mass index shows that 9% of women aged 15–49 years are underweight while the proportion of overweight and obese women increased from 25% in 2008–2009 to 33% in 2015. In addition, estimates from the Kenya Ministry of Health show that micronutrient malnutrition is also predominant among women of reproductive age, where 48, 52 and 40% suffer from iron, zinc and vitamin A deficiency, respectively. Macro- and micronutrient deficiencies impose a large health burden in terms of lost productivity, increased susceptibility to diseases, impaired growth and development ⁹.

WHO recommends that all children aged 6-59 months in areas with high prevalence of vitamin A deficiency receive a high dose of Vitamin A supplementation (VAS) every 4-6 months. At present, more than 80 countries worldwide are implementing universal VAS programmes targeted to children 6–59 months of age. Similarly, biannual preventive chemotherapy (deworming) is recommended for children 12-59 months living in areas where the baseline prevalence of any soil-transmitted infection is 20% or more among children, as a public health intervention. Global

⁴ The Ministry of Health: The Kenya National Micronutrient Survey 2011: <http://www.nutritionhealth.or.ke/wp-content/uploads/Downloads/The%20Kenya%20National%20Micronutrient%20Survey%202011.pdf>

⁵ World Health Organization. Global Prevalence of Vitamin A Deficiency in Populations at Risk 1995– 2005; World Health Organization: Geneva, Switzerland, 2009. Available online: http://apps.who.int/iris/bitstream/10665/44110/1/9789241598019_eng.pdf

⁶ Stevens, G.A.; Bennett, J.E.; Hennocq, Q.; Lu, Y.; De-Regil, L.M.; Rogers, L.; Danaei, G.; Li, G.; White, R.A.; Flaxman, S.R.; et al. (2015). Trends and mortality effects of vitamin A deficiency in children in 138 low-income and middle-income countries between 1991 and 2013: A pooled analysis of population-based surveys. *Lancet Glob. Health* 2015, 3, e528–e536

⁷ WHO. (2019). <https://www.who.int/elena/titles/deworming/en/>. Accessed 19 October 2020

⁸ WHO World Health Statistics. Geneva, Switzerland: World Health Organization; 2020.

⁹ Kenya National Bureau of Statistics (KNBS) and ICF Macro Kenya Demographic and Health Survey 2014–2015. Calverton, MD: KNBS and ICF Macro; 2015.

experiences also indicate that achieving consistent coverage over 80% is necessary to achieve the mortality reduction demonstrated by efficacy studies ¹⁰.

In Kenya, the government is addressing the problem by implementing policy and programmatic interventions delivered jointly with partners. The Ministry of Health has a Policy Guideline for Preventive Vitamin A Supplementation for Children 6-59 months that outlines three delivery approaches, namely: (a) Routine contact points at health facility, (b) Integration into *Malezi Bora Strategy*, and (c) Community Health Unit (CHU), outreaches and Early Childhood Development (ECD) centres ¹¹.

Throughout the year, children can receive VAS and deworming when attending health facilities. However, as beyond one-year, healthy children usually do not attend facilities, twice a year catch up events called Malezi Bora are organized using multiple platforms: facilities, outreach points, ECDs, and community door to door distributions. Before and during these events, various social mobilization activities are carried out at the community level to create awareness and mobilize caregivers of eligible children.

II-Statement of the Problem

VAS and deworming contribute to reduction in under-five mortality rates and progress towards achieving the child survival Sustainable Development Goals (SDGs). National VAS and deworming coverage of children 6-59 months and 12-59 months through mass distribution during the child health nutrition weeks (Malezi Bora events and school deworming programs) has accelerated the access to services thus increasing the national coverage. National VAS coverage between 2019 and 2021 for 6-11 months increased from 87.6% to 113.7%, while coverage for the 12-59 months cohort increased from 64.1% to 82.2% and combined cohort of 6-59 months from 66.6% to 86.3%. Deworming coverage at national level for the year 2019 and 2021 for children 6-59 months increased from 30.1% to 53.3% ¹².

The conventional way to estimate VAS and deworming coverage achieved by Malezi Bora and school deworming events is by tally sheets filled by the distributors in the field, which compares records of capsules distributed to estimates of the target population based on projected census data. Tally sheets are simple medium for obtaining data, but are prone to errors due to miscalculations in aggregating data, delayed or incomplete reports and inaccurate population estimates which often results to some counties reporting coverage over 100%, indicating that census projections may be underestimating the actual target population. Despite the challenges in consistency and accuracy of available data, there is consensus that VAS coverage among children 6-59 months remains lower than the WHO recommended 80 percent. This is same for deworming coverage data. The situation has been attributed to a myriad of challenges affecting access, availability and utilization of VAS and deworming including: gaps in provider knowledge and attitudes, inadequate financial resources, poor documentation, reporting and use of data for planning, among others.

¹⁰ Ross DA (2002) Recommendations for vitamin A supplementation. *The Journal of nutrition* 132: 2902S–2906S.

¹¹ Ministry of Health (2014), Vitamin A Supplementation Multiyear Plan 2013-2017.

¹² Kenya Health Information System (KHIS). (2021). <https://hiskenya.org/dhis-web-commons/security/login.action>

Administrative reporting takes up to 2 months to reach national level for official coverage estimates, and the accuracy of the data is questionable. The county under study; Taita Taveta has over time shown an upward trend for VAS coverage in 2019 and 2021: 6-11 months 60.8% and 130.5%, 12-59 months 49.0% and 113.0% and 6-59 months 50.3% and 114.9% respectively, whereas the deworming coverage has risen from as low as 17.5% in 2019 to 89.8% in 2021 upon support by Helen Keller. This is due to different implementation approaches applied to ensure increase in VAS and deworming access. Where counties are receiving supplementary donor funding, the scope of Malezi Bora events have tended to be more intensive as compared to other counties. The experiences and lessons emanating from counties implementing different models is yet to be systematically documented, thus presenting a missed opportunity to inform learning and refinement of national VAS strategy as well as a combination approach for offering both VAS and deworming simultaneously so as to increase coverage for both services as they target similar population. Conducting the post event coverage survey was geared towards validation of the reported coverage from the administrative data against the survey data.

Intake of high diverse diets has been associated with lower rates of malnutrition, hence increasing dietary diversity among women is an important approach to improve their nutritional and health parameters. Moreover, women have increased nutrient needs during pregnancy and lactation, and when these requirements are not met women may suffer from malnutrition, which could negatively influence the developing foetus and the breastfeeding infant. Integration of other modules into PECs to collect additional information from the same target population has been seen advantageous and, in this case, we collected data on minimum dietary diversity for women at the households.

Conducting the PECs in Taita Taveta county, gave us a true reflection of the coverage for Vitamin A Supplementation and deworming against the administrative coverage.

III- Objectives of the survey

III-1 General objective

The primary objective was to determine the coverage of vitamin A supplementation and deworming for semester one of 2022 in Taita Taveta County among children aged 6-59 months.

III-2 Specific objectives

Specifically, this study did the following:

- Assessed the coverage rates of vitamin A supplementation for children from 06 to 59 months for semester one of 2022 in Taita Taveta County;
- Assessed the coverage rates of deworming for children aged 12-59 months for semester one of 2022 in Taita Taveta County;
- Compared the administrative coverages of semester one of 2022 and those obtained during the post-event coverage survey;
- Compared stratified coverages at rural and urban level for Taita Taveta County;
- Identified the promoters and barriers to Vitamin A and deworming uptake in Taita Taveta County;

- Described the caregivers' level of knowledge on the benefit of vitamin A supplementation and deworming;
- Described health workers, community health volunteers' (CHVs) and community leader practices and level of knowledge on vitamin A and deworming;
- Proposed strategies and actions to be undertaken for the improvement of vitamin A supplementation activities and deworming;
- Assessed the minimum dietary diversity for women in Taita Taveta County;

IV- Methodology

IV.1 Organization of the study

This study was a participatory approach involving the Ministry of Health of the County of Taita Taveta through the Kenya National Bureau of Statistics (KNBS), Helen Keller International and other partners in the implementation of vitamin A supplementation and deworming interventions, through a steering committee set up for the occasion. This committee validated the study protocol, was consulted on the major orientations of the survey, validated all the steps of the process and was regularly informed of the survey's progress.

IV.2 Study Setting

The study took place in Taita Taveta County of Kenya, where malezi bora was conducted through the support of Helen Keller International, to deliver Vitamin A supplementation and Deworming for children aged 6-59 months in June 2022. The survey estimated the coverage for both interventions. Taita Taveta County was considered as a stratum:

- Stratum: Taita Taveta

IV.3 Type of study

This survey was a cross-sectional study with the use of both quantitative and qualitative methods:

- ***A quantitative cross-sectional study*** to assess post-intervention coverage of vitamin A supplementation and deworming among mothers/guardians of children 6 -59 months old, the study employed the WHO (2015) two-stage stratified cluster survey. The clusters were drawn randomly within the stratum (Taita Taveta county) according to the estimated probability proportional to size (PPS) method of the population in urban and rural areas. The weight of each area of residence was based on data from the Kenya National Bureau of Statistics on the distribution of the urban and rural population in the county.
- ***A qualitative study*** consisting of individual interviews with actors implementing vitamin A supplementation and deworming activities in the field (health workers and community health volunteers and community leaders).

IV-4 Period of the study

The survey took a period of 5 months from the preparatory phase to final report generation and dissemination. The training and data collection period took 9 days (4 days of training and the field data collection five (5) days and this was conducted within six (6) weeks after completion of malezi bora event.

IV-5 Target population

The target population for this study varied according to the type of information to be collected. It was carried out according to the following two components:

IV-5-1 A household survey

The household survey aimed to evaluate VAS and deworming coverage, assess knowledge, attitudes, and practices of households regarding vitamin A supplementation and deworming and measure the minimum dietary diversity of women in households.

Target: Households with children aged 6-59 months living in Taita Taveta County.

Inclusion criterion: All households in the study area with at least one child aged 6-59 months at the time of the first 2022 round of VAS and deworming delivery.

Non-inclusion criterion: Eligible households where there were no parents/caregivers present at the time of the survey and/or refused to participate in the survey by not giving informed consent.

IV-5-2 A survey of health providers and community stakeholders.

This was to evaluate the quality of the interventions, identify bottlenecks and propose corrective actions for the next interventions:

a) Health Worker Survey

This was conducted in a thorough and exhaustive form with all health workers attached to the sampled clusters.

Target: Health care providers in the health facilities attached to the sampled clusters and involved in VAS and deworming delivery in the June 2022 malezi bora event were surveyed systematically and interviewed one per cluster.

Inclusion criteria: All health providers who participated in VAS and deworming delivery, from June 2022 (eligible) in the study area and were present at the time of collection.

Non-inclusion criterion: Health providers who participated in the June 2022 VAS and deworming delivery (eligible) in the study area who refused to participate in the survey by not giving informed consent.

b) Survey of Community Health Volunteers (CHVs)

The survey was conducted among CHVs attached to the sampled clusters who participated in the VAS and deworming delivery.

Target: CHVs working in the sampled clusters were interviewed, one per cluster and they should have been involved in the VAS and deworming delivery to children aged 6-59 months in the June 2022 malezi bora event.

Inclusion criteria: All CHVs who participated in VAS and deworming delivery, from June 2022 (eligible) in the study area and were present at the time of collection.

Exclusion criterion: CHVs who participated in VAS and deworming delivery from June 2022 (eligible) in the study area who refused to participate in the survey by not giving informed consent.

IV-6 Sampling

IV-6-1 Sampling Design

The sampling frame is constituted of all the total list of enumeration areas in Taita Taveta County based on the 2019 census as conducted by the Kenya National Bureau of Statistics. The enumeration areas were arrived at by the use of the probability proportional to size. This sampling frame results from the division of the entire inhabited national territory into small geographic portions that can contain a population of individuals or households that an agent can cover during a data collection operation. Each enumeration area/cluster was characterized by a map on which the boundaries were clearly indicated, as well as all location elements (County, sub-county, ward, village).

According to WHO guidelines, an enumeration area (EA) or cluster is a geographic area with 800-1200 people in rural areas and 1200-1800 people in urban areas. The average size of a cluster varies around 250 households. In rural areas, a cluster can be a village/locality, part of a village/locality, or several villages/localities (from 2 to 15 villages/localities). In urban areas, a cluster can be an area, part of an area, or several areas. The boundaries of the clusters are generally well identifiable (passable roads, rivers, sector/neighborhood boundaries, lowlands, streets, etc.).

Thus, since this study is a cluster survey and therefore, know the number of clusters to be drawn per stratum, the KNBS sampling frame was used to draw the clusters. This was done by the Kenya National Bureau of Statistics.

IV-6-2 Household survey sampling

To calculate the sample size needed, the following factors were considered:

Table 1: Sampling design

Anticipated vaccination coverage (p)	80% for VAS program
Intraclass correlation coefficient (ICC)	For post-campaign surveys the high value ($1/6 = 0.167$) is the cautious slope.
Confidence level (α)	It is in good standing of 5%. The confidence intervals was $(100-\alpha)$ %, usually 95%.
Confidence interval (CI) half width	The $(100-\alpha)$ % of the CI does not have a width of more than $\pm 5\%$. This measures the precision of a coverage estimate. This value was 5%.
Target number of respondents per cluster (m)	The PECS survey recommends 10 households per cluster, but in this case, it was 12 due to non-response. The WHO guidelines recommend between 5 and 15 households per cluster, which correspond to the number of households that a team of investigators can visit in one day and the total number of respondents expected in a cluster of medium size, if all targeted respondents are interviewed.
Target number of clusters per stratum	The total size of the sample divided by m produces the target number of clusters per stratum. It is determined when selecting the sample size, and clusters are chosen randomly.
Factors related to statistical power and probability of error	These factors are the average number of households to visit to find an eligible child and the inflation factor to consider non-responders.

The calculation method is as described below.

In accordance with the WHO 2015¹³ Handbook, a six-step process for calculating cluster sample size for the purpose of estimating or classifying covers:

1. Calculated the number of strata in which the survey was conducted. Referred to by the letter **A**
2. Calculated the effective sample size (ESS). Referred to as **B** in later calculations;
3. Calculated the design effect (DE). Called **C** in later calculations;
4. Calculated the average number of households to visit to find an eligible child. Called **D**;
5. Calculated an inflation factor to take into account non-responses called **E**;
6. Used the values collected in Steps 1 to 5 to calculate the sample that is important for the planning and budgeting of the survey.

¹³ https://www.who.int/immunization/monitoring_surveillance/Vaccination_coverage_cluster_survey_FR.pdf

Table 2: Sampling design calculation method

A	1	Number of strata.
B	306	80% coverage and 5% accuracy. (Annex 1 see Table 2 in the WHO guide for more details).
C	2.5	Consider that we interviewed on average $m = 10$ respondents per cluster with a correlation coefficient of $1/6$, and therefore a model effect of 2.5 (<i>Appendix 1, Table 3 of the WHO guide for more details</i>).
D	1.193948	Considering that we found a target child in every 10% of households to visit, themselves determined by the estimate of households with children of target age.
E	1.111111	Non-response rate = usually very low, but was associated with input errors, so 10% was safe. Calculated as follows: $100 / (100\% \text{ of eligible households who refuse to answer}) = 100 / (100-10)$.
m	10	Average number of children to investigate per group.

Using the WHO Excel file¹⁴, sample size calculator according to the following formula: $n = A*B*C*D*E$ we get all these parameters combined summarized the sample size as follows:

Table 3: Sampling size summary

1	$A \times B \times C = N_{cs}$ $1*306*2.503 = 765.928$	766	Total completed interviews needed
2	$N_{cs} \times D \times E$ $766*1*1.111111 = 852.1026$	852	Total number of households to visit (total household sample size)
3	$B \times C \times D \times E$ $852/1 = 852$	852	Number of households to visit in each stratum (household sample size per stratum)
4	$B \times C / m$ $(306*2,53)/10 = 76.6$	77	Number of clusters per stratum
5	$D \times E \times m$ $1*1.1111*10 = 11.11$	12	Number of households per cluster
6	Num. clusters per stratum $\times A$ $1*77 = 77$	77	Total number of clusters

¹⁴ Created by Dana Thomson, dana.r.thomson@gmail.com, July 2017. Based on: World Health Organization. Vaccination Coverage Surveys: Reference Manual. Available at: https://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index2.html . Revised by Dale Rhoda, July 2018.

Fleiss JL, Levin B, Paik MC (2003). Statistical methods for rates and proportions. Hoboken, NJ, USA: John Wiley & Sons, Inc.

IV-6-3 The sampling plan

A two-stage sampling was carried out to constitute the final sample of the study.

- First degree: selection of clusters

This survey as early stated had 1 stratum (Taita Taveta) and the clusters were drawn systematically and independently by the KNBS using the sampling frame constituted by all the Enumeration Areas (EAs) of the study area.

The stratum under survey, had 77 clusters selected for the study and 7 replacement/reserve clusters were drawn. This gave a total of 84 clusters (77 normal clusters and 7 replacement/reserve clusters) that were drawn from the one stratum.

For the pilot survey (pre-test) 5 clusters from Taita Taveta, not part of the current PECS survey, were drawn. Thus, for the pilot survey, the clusters were drawn after the actual survey clusters were drawn. The pilot survey was conducted in an area not covered by the actual survey.

- Second degree: selection of households.

Randomly and independently selected 12 households with at least one child aged 6-59 months in each cluster after enumerating all eligible households in the cluster. This step was done in two phases:

➤ Phase 1: Exhaustive enumeration of households in the cluster.

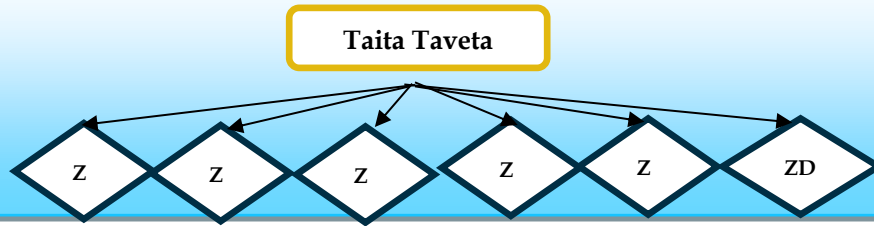
Once the cluster was identified and delimited, we engaged community health volunteers to enumerate all households (eligible and ineligible households) within their area of jurisdiction. During this phase, identifiers were assigned to each eligible household for the draw in Phase 2. This operation updated the list of eligible and ineligible households in the cluster, the number of children aged 06-59 months per household. This updated list of households was used to calculate the weighting coefficient and served as the basis for Phase 2. The enumeration was done by the community health volunteers in their household registers.

➤ Phase 2: Selection of households surveyed

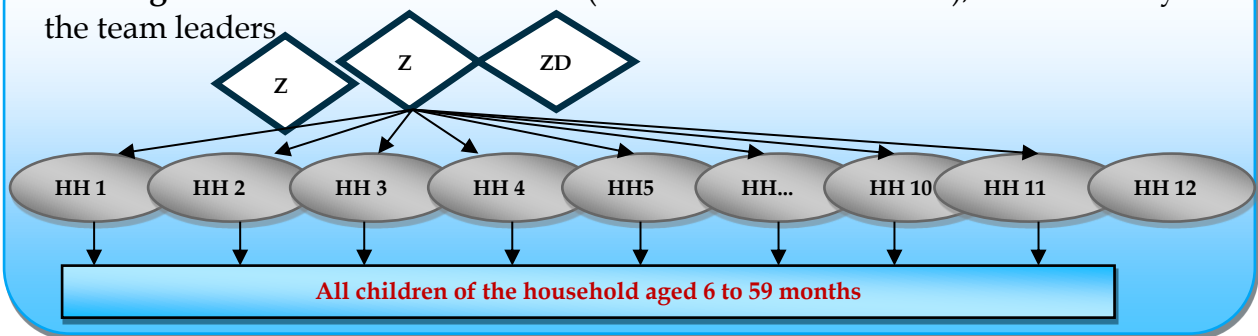
After enumerating and numbering eligible households, the RANDOM NUMBER GENERATOR application was used to select the 12 households to be surveyed in the cluster by each team. This was done by the team leader. Screen captures were taken afterwards for possible verification. The diagram below summarizes the process of drawing clusters and selecting households surveyed.

Diagram of the sampling plan

1st Degree: Selection of clusters (77 clusters per stratum), performed by KNBS



2nd Degree: Selection of households (12 households in clusters), carried out by the team leaders



IV-6-4 survey sampling of other categories of people to be surveyed

In each selected cluster, one health worker, one community health volunteer and one community leader was surveyed according to the number of clusters drawn.

- **Health Providers (Health Workers)**

The selection of the health worker in each cluster was systematic. This was the Expanded Programme on Immunization health providers or his/her deputy or the person in charge of vaccination/vitamin A supplementation or the nutrition focal point persons and should have been involved in the VAS and deworming activities. In the absence of the health worker and his/her deputy, the person surveyed was the one who was most involved in the VAS and deworming campaign activities. If there were 2 or more health centers in the cluster, a random draw was made between the health centers.

- **Community Health Volunteers**

To select the community health volunteers, the health worker were requested to provide a list of community health volunteers in the village/neighborhood or sector. Then using a random number generator, one CHV was selected randomly and the number chosen from the list was the one to be interviewed. If the CHV was not present, the same process was repeated until the one available was interviewed.

Table 4: Sample distribution in cluster or enumeration area

Stratum	Number of clusters	Number of households	Qualitative survey	
			Health workers	CHW
Stratum 1: Taita Taveta	77	852	77	77
Total	77	852	77	77

V- Survey preparation

V-1 Development of data collection tools

Data collection tools were reviewed by a technical team and validated by the coordination committee, technical working groups and ethical review bodies. The tools reviewed were listed below and are annexed at the end:

- 1) Informed consent form;
- 2) Child and Household questionnaire;
- 3) Health worker questionnaire;
- 4) Community health volunteer questionnaire;
- 5) Community leader questionnaire;
- 6) Monitoring and quality control form for supervisors
- 7) Minimum dietary diversity questionnaire

V-2 Pilot or pre-test survey of collection tools

The day after the training of field surveyors, a pre-test was carried out in the 5 (Msambweni, Murrum, Kaloleni Juu, Bomani and Tumaini) clusters from Taita Taveta, not part of the current PECS survey, were drawn. Thus, for the pilot survey, the clusters were drawn after the actual survey clusters were drawn. Each surveyor surveyed at least one eligible household. A debriefing was done at the end of this pre-test and all lessons that were learned were valued in the finalization of the data collection instruments and in the survey organization. Some of the findings included:

- Tested the questionnaire and its ability to meet the objectives of the survey (in which a session after the survey led to minor changes especially the responses in a few questions to fit the context of Taita Taveta county);
- Evaluated the average time of administration of the questionnaire (which was averagely estimated at 23 minutes);
- Evaluated the mastery of the interviewers while using mobile phones for collection (this was noted to be work in progress, some teams were fast in administering the questions where as some were slow but generally a good sign to improve during the actual data collection);
- Tested the effectiveness of the used mobile application and the data transmission to the server (This was effectively done by all the teams);
- Identified all difficulties related to the survey in order to analyze them and provide an adequate response (issues around sampling especially having the list for eligible households, consenting process, and use of maps was highlighted and well-articulated for clarity to all teams and uniformity purposes);
- Finalize collection tools (this was done and printouts provided in line with the questions in Open Data Kit).

VI - Data Collection and Data Treatment

VI-1 Data collection

At Data collection was carried out by 26 teams of 2 interviewers each. One team leader was responsible for 1 team and there were 5 supervisors in total. The actual data collection took place in 5 days. Data was collected using Open Data Kit and submitted to ONA server.

VI-2 Data cleaning and statistical analysis

At the end of the collection, the data received on ONA was checked and extracted for analysis. The first step was to clean up the file and adjust the data. This consisted of identifying inconsistencies, missing data and errors related to data entry on the tablets. This operation applied to all parameters and all files. The STATA software checked each parameter and record and resolved inconsistencies before merging the data and analyzing it.

All changes were made on STATA without changing the values in the original database. This practice made the changes reproducible and reversible if necessary. Comments and parameters in the do.files were included allowing to understand the reasons for the value change. The results were presented according to the place of residence. The main statistics used to present the data were the proportions with a 95% confidence interval.

VI-3 Weighting

Data was weighted according to the inverse of the double probability of first selecting clusters and selecting the household among households surveyed. The formulas below indicate the steps followed for weighting:

- Probability that the cluster was selected (A) = number of clusters selected in the stratum/total number of clusters in the stratum.
- Probability that the household was selected (B) = number of eligible households selected in the cluster/total number of eligible households in the cluster.
- Weighting = 1/(AxB).

Table 5: Weighting of enumeration areas and households

Stratum	Area of residence	Number of cluster	Number of clusters surveyed	Number of households eligible	Number of households surveyed	Probability of household selection	Probability of EA selection
Taita Taveta	Urban	147	26	310	373	0.3282108	0.1768707
	Rural	288	51	598	715	0.3358613	0.1770833
	Total	435	77	908	1,088		

VI-3 Study Limitations

- **Recall bias** especially where respondents were asked about events that occurred several weeks or months ago i.e if a child received vitamin A or deworming anytime apart from malezi bora week.
- **Social desirability bias** whereby respondents could over-report the good or under-report the bad especially on the behavioral variables.

VI-4 Ethical considerations

- Approval of the county government of Taita Taveta was obtained in 2nd June, 2022.
- Validation of the protocol by Nutrition Information Technical Working Group.
- Ethical approval from National Commission For Science, Technology & Innovation and Maseno University Research and Ethics Committee.
- Confidentiality: The confidentiality of information provided by respondents was protected.
- Informed consent: Informed consent from the target population was sought.
- Benefit of the study for the population: This was well explained to the study participants.
- All the safety precautions and measures in line with Covid-19 for social distancing, sanitizing/washing hands and wearing protective gear were observed during the training and actual data collection.

VI- Findings and Discussions

All the 77 sampled clusters were surveyed. Of the projected 852 households planned to be surveyed, 27.7% more households were surveyed due to the inclusion of the non-response aspect. The health workers non-response rate was 39.0%, which is associated with some of the clusters not having health facilities, similarly the 15.6% of the CHVs not reached was due CHVs unavailable or no CHV working in that cluster.

Table 6: Summary of the sample

Variable	Planned	Surveyed	Proportion (%)
Number of clusters	77	77	100.0
Number of eligible households	852	908	106.7
Number of children		1,088	-
Number of HW	77	47	61.0
Number of CHV	77	65	84.4
Number of Community leaders	77	73	94.8

VI – A. Household Caregiver Results

VI-1. Socio-demographic characteristics of population surveyed

Households surveyed

In total, 908 households were surveyed, 65.9% located in the rural area, whereas the other 34.1% in the urban area. This therefore, indicates that 7 in 10 respondents came from the rural areas.

Table 7: Households surveyed

Sub-County	Mwatate	Taita	Taveta	Voi	Total
Rural	200 (93.9)	132 (84.6)	149 (72.3)	117 (35.1)	598 (65.9)
Urban	13 (6.1)	24 (15.4)	57 (27.7)	216 (64.9)	310 (34.1)
Total	213 (100.0)	156(100.0)	206(100.0)	333(100.0)	908(100.0)

Demographic Characteristics of the Respondents

The results indicate that 9 out of 10 respondents were female 93.8% [95% CI: 91.6-95.5] which are the majority. On the relationship of the respondents with the children, majority were mothers 79.4% [95% CI: 76.9-81.7], while grandmothers came in second at 10.8% [95% CI: 9.1-12.8]. The respondents' ages were characterized into various age groups and majority of them were in the age cohort of 30-44 years 45% [95% CI: 45.4-50.4] followed by 19-29 years 37.8% [95% CI: 35.5-39.2].

On the level of education, majority of the respondents had completed primary and secondary education 36.3% [95% CI: 33.5-39.2] and 24.2% [95% CI: 21.7-26.8], while only 3.5% [95% CI: 2.6-4.8]) of respondents in Taita Taveta county did not have any education. The rest of the respondent at least had acquired a certain level of education, from the basic primary to tertiary level.

Further the respondents were asked to indicate what they do for a living and majority of them were involved in four main activities; farming 23% [95% CI: 20.6-25.6] business 25.2% [95% CI: 22.7-27.8], housewives/housekeepers 22.8% [95% CI: 11.3-15.3], casual laborers 13.1% [95% CI: 11.3-15.3] and jobless/unemployed 8.7% [95% CI: 7.2-10.6].

Table 8: Characteristics of the Respondents

	Category	Freq.	Percent	95% CI
Relationship with the child	Father	42	4.8	[3.7-6.2]
	Mother	717	79.4	[76.9-81.7]
	Uncle	3	0.3	[0.1-0.9]
	Aunt	18	1.9	[1.3-2.9]
	Guardian	7	0.9	[0.5-1.7]
	Grandfather	15	1.7	[1.0-2.6]
	Grandmother	103	10.8	[9.1-12.8]
	Other (Specify)	3	0.3	[0.1-0.9]
	Total	908	100	
	Sex	Male	59	6.2
Female		849	93.8	[91.6-95.5]
Total		908	100	
Age	Under 18 years old	10	1.1	[0.6-1.9]
	19-29 years old	329	37.8	[35.5-39.2]
	30-44 years	425	47	[45.4-50.4]
	45-59 years	92	10.2	[7.9-11.5]
	60 years and over	35	3.9	[2.7-5.0]
	Total	904	100	
Highest level of education	None	30	3.5	[2.6-4.8]
	Did not complete primary school	142	15.6	[13.6-17.9]
	Completed primary school	335	36.3	[33.5-39.2]
	Did not complete secondary school	90	10	[8.4-12.0]
	Completed secondary school	218	24.2	[21.7-26.8]
	Did not complete tertiary education	8	0.8	[0.4-1.6]
	Completed tertiary education	85	9.6	[7.9-11.5]
What you do for a living	Total	908	100	
	Public sector worker	34	3.7	[2.7-5.0]
	Private sector worker	10	1.1	[0.6-1.9]
	Farmer	216	23	[20.6-25.6]
	Business lady/man	228	25.2	[22.7-27.8]
	Mining	1	0.1	[0.0-0.6]
	Housewife (housekeeper)	204	22.8	[20.4-25.4]
	Casual laborers	117	13.1	[11.3-15.3]
	Unemployed	76	8.7	[7.2-10.6]
	Fishing	1	0.1	[0.0-0.7]
	Pupil/Student	8	0.7	[0.4-1.5]
	Other (Specify)	13	1.5	[0.9-2.4]
	Total	908	100	

Wealth quintile

A wealth index was developed based on the characteristics of household, notably the main materials for the walls, floors and roofs of houses, the main source of drink supply, the availability of toilets, energy sources used for cooking and finally the possession of a certain number of functional material goods (radio, bicycle, etc.). The computation of the poverty index in the rural areas is inclined towards the 2nd and 1st quintiles 31% [95% CI: 27.7-34.5] and 28% [95% CI: 24.8-31.5], while on the other hand, households in the urban areas are considered to be on the 4th and 5th quintile 33.5% [95% CI: 8.9-38.5] and 45% [95% CI: 40.1-50.1] (Figure 1).

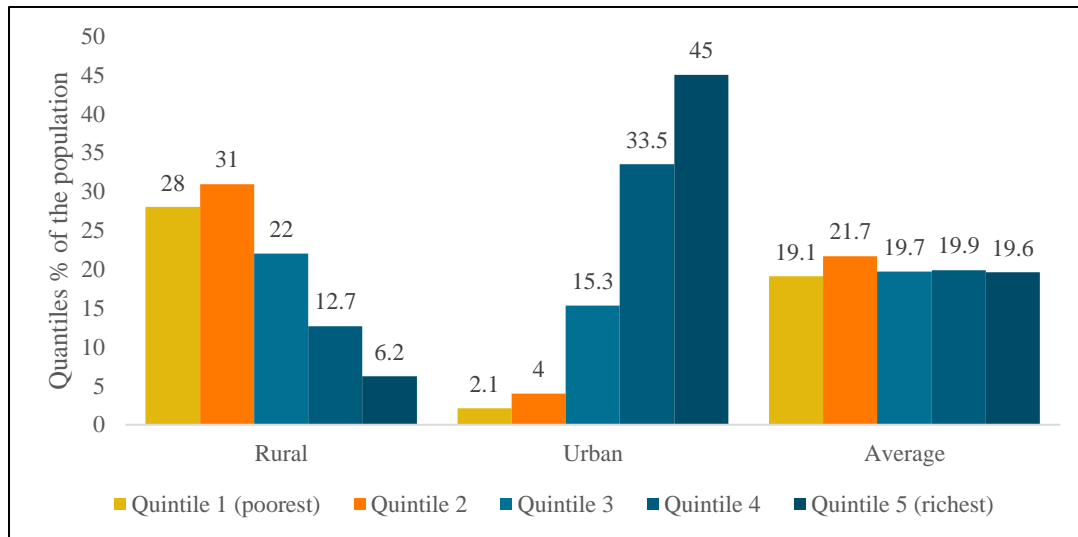


Figure 1: Household standard of living

VI-2 Access to Health Services

Access to Health Services

The survey indicates that in the last two weeks of the survey, 52.5% of the children were sick and majorly suffered from cough (53.3%) and acute respiratory infections (29.1%).

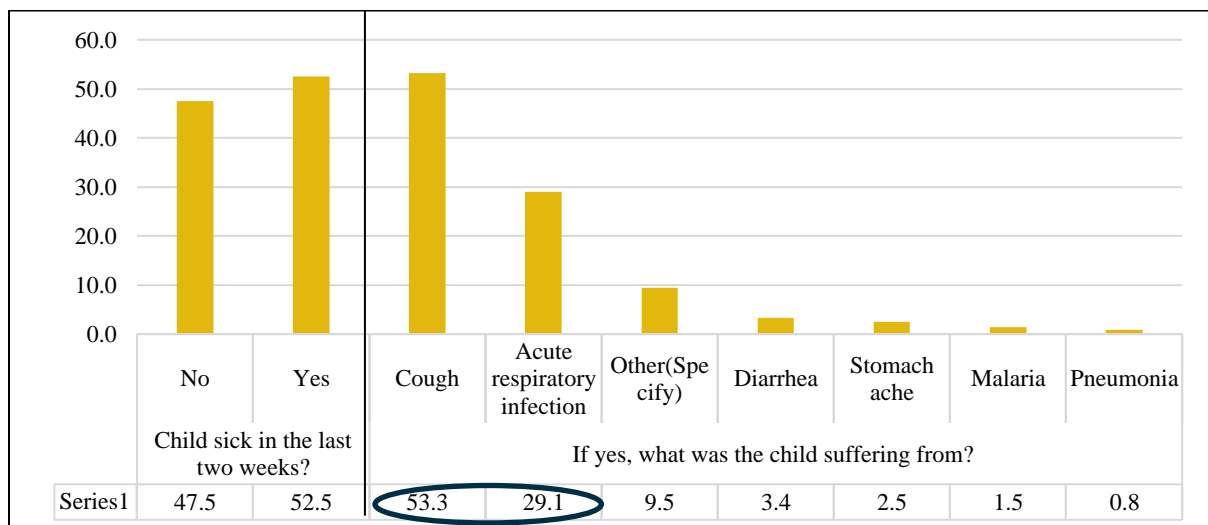


Figure 2: Access to Health Services

Seeking for Medical Attention

On seeking medical attention for those whose children were ill, 80.2% did so and majorly went to a public health facility (75.9%) for medical services.

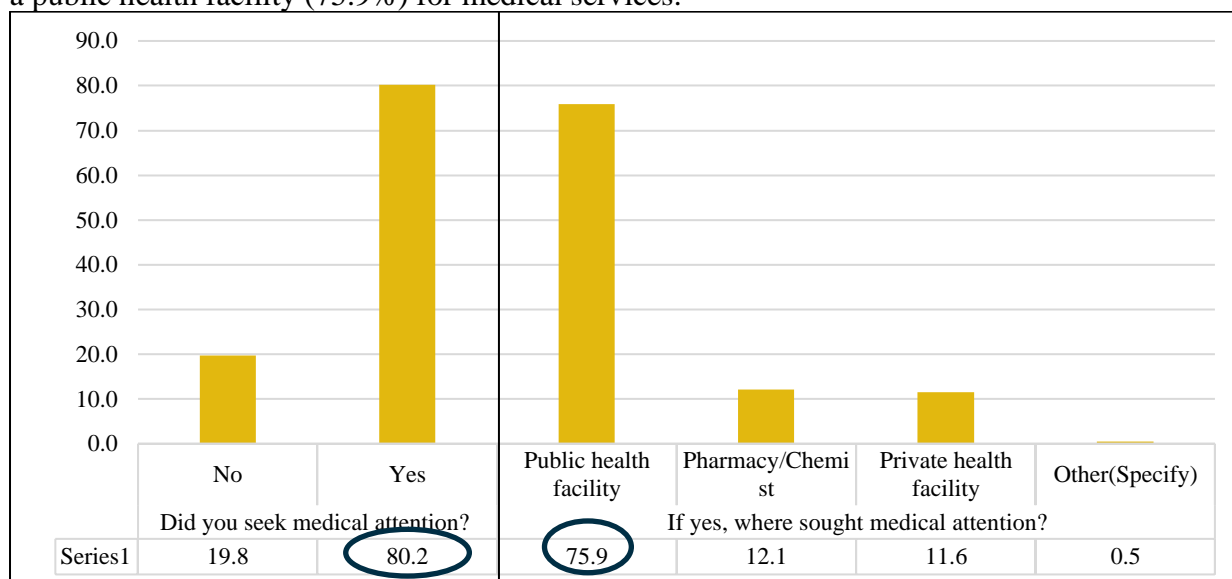


Figure 3: Seeking for Medical Attention

VI-3 Communication Strategy

Communication on Malezi Bora Event

Communication on holding of malezi bora event reached 51.9% of respondents, while the rest 48.1% indicated they were not informed, which is a significant number of caregivers not informed. For those informed, it was majorly through the community health volunteer (49.4%), health workers (15.7%) and the public address system (microphones, amplifiers, loudspeakers) (14.3%). This is critical as it identifies the main areas to focus on and invest during the malezi bora event on reaching the caregivers. Based on the findings, the community health volunteers, community leaders, health workers and use of public address system have various impacts on the population in terms of communication and mobilization. Therefore, combination of all these approaches will have a greater impact to coverage.

Table 9: Communication about Malezi Bora Event

Variable	Category	Freq.	Percent
Informed on holding Malezi bora event	No	435	48.1
	Yes	470	51.9
How were you informed about the malezi bora event	Public address system	67	14.3
	Health worker	74	15.7
	Community health volunteer	232	49.4
	Another person in the household	5	1.1
	Neighbor	23	4.9
	Radio	11	2.3
	Television	8	1.7
	Religious leaders	91	19.4
	School/teacher	13	2.8
	Others specify	22	4.7
Posters	0	0.0	

VI-4 Caregiver Knowledge of VAS and Deworming

The study showed that a better proportion of caregivers (88.8%) were able to identify Vitamin A capsules, while (90.7%) identified deworming drug. On the benefits of both products, the respondents listed a number of benefits as per table 10, although to note is the 49.1% and 14.1% who said they did not know for vitamin A and deworming respectively.

In regards to the age at which a child should first receive Vitamin A, only 30.4% indicated the correct answer which is at 6 months (3 in 10 respondents), while 38.1% percent indicated the correct answer for deworming which is at 12 months (4 in 10 respondents).

On the frequency at which Vitamin A and deworming should be administered, only 22.8% indicated the correct response (twice a year) for vitamin A and 19.7% indicated the correct response (twice a year) for deworming. This represents 2 in 10 respondents in both cases who knew the correct dosage/frequency of administration. The rest stated wrong responses or did not know. The main source of information for both vitamin A and deworming are health workers and community health volunteers taking over 80% and on others, community/religious leaders were also instrumental.

During the home visits, 61.0% of the community health volunteers did not provide information on Vitamin A while 50.6% on deworming. This is majorly a lost opportunity to at least pass one or two messages regarding the two products.

Table 10: Caregiver Knowledge of Vitamin A and Deworming

Variable	Category	Freq.	Percent
Knowledge on Vit A	No	101	11.2
	Yes	804	88.8
Benefits of Vitamin A	Prevents blindness / helps with vision (see well)	45	5.6
	Fosters growth	70	8.7
	Protects against illnesses	196	24.4
	Boosts appetite	34	37.6
	Protects against anemia	4	0.5
	Reduce death risk	3	0.4
	Improve children's health	206	25.6
	Does not know	395	49.1
	Others specify	20	6.7
Age of Vit A first dose	Less than 6 months	96	10.6
	At six months	275	30.4
	Over 6 months	71	7.9
	Does not know	350	38.7
	Other (Specify)	113	12.5
Frequency of Vit A	Once	58	6.4
	Twice	206	22.8
	3 times	128	14.1
	Does not know	473	52.3
	Other (Specify)	40	4.4
Where get knowledge about vitamin A	Health workers	595	65.8
	CHV	207	22.9
	Radio	5	0.6

	TV	10	1.1
	Other (Specify)	173	19.1
Knowledge of deworming drug	No	84	9.3
	Yes	821	90.7
Benefits of deworming drug	Treatment of intestinal worms	690	76.2
	Reduce Stomach pain	81	9.0
	Protects against illnesses	49	5.4
	Protects against anemia	3	0.3
	Improve children's health	103	11.4
	Does not know	128	14.1
	Other (Specify)	86	9.5
Age of receiving deworming a first time	Less than 6 months	28	3.1
	At six months	119	13.2
	At 12 months	345	38.1
	Does not know	297	32.8
	Other (Specify)	116	12.8
Frequency of receiving deworming drug	Once	61	6.7
	Twice	178	19.7
	3 times	244	27.0
	Does not know	300	33.2
	Other (Specify)	122	13.5
Importance of vitamin A from the health agent	Protects eyesight	59	6.5
	Promotes Growth	77	8.5
	It improves health	217	24.0
	Didn't say anything	552	61.0
	Other (Specify)	103	11.4
Importance of deworming drug from the health agent	Eliminates worms	327	36.1
	Controls anemia	18	2.0
	Improves health	82	9.1
	Did not say anything	458	50.6
	Others (Specify)	99	10.9

VI – B. Household Child Results

Demographic Characteristics of the children

In total 1,088 children were surveyed. The ratio of male to female children was at 1:1, as female were 47.7% [95% CI: 47.3-53.2] and male were 50.3% [95% CI: 46.8-52.7]. The children aged 6-11 months were 11.3% [95% CI: 9.5-13.4] and the 12-59 months were 88.7% [95% CI: 86.6-90.5]. The main source of date of birth information was the mother child booklet 76.9% [95% CI: 72.3-81.3].

“The other source of information also form a significant percentage, 15.8% [95% CI: 13.5-17.4]. These were majorly word of mouth information dependent on the memory/recall of the caregivers, and birth notification card.”

Table 11: Characteristics of the children

Variable	Category	Freq.	Percent	95% CI
Sex	Male	547	50.3	[47.3-53.2]
	Female	541	47.7	[46.8-52.7]
	Total	1,088	100	
Age	6-11 months	120	11.3	[9.5-13.4]
	12-59 months	968	88.7	[86.6-90.5]
	Total	1,088	100	
Source of DOB information	Mother child booklet	837	76.93	[72.3-81.3]
	Birth certificate	35	3.22	[1.3-5.2]
	Events calendar	44	4.04	[2.4-6.5]
	Other(Specify)	172	15.81	[13.5-17.4]
	Total	1,088	100	

Average number of children aged 6-59 months per household surveyed

On average there were 1.2 children per household visited and this did not vary across the urban or rural set up of the cluster.

Table 12: Average number of children aged 6-59 months per household surveyed

Sub-county	Mwatate	Taita	Taveta	Voi	Total
No. of children	252	180	253	403	1,088
Mean	1.225352	1.167742	1.218447	1.220544	1.212155
SD	0.440749	0.374848	0.448139	0.463519	0.440317

VI-1 Vitamin A Supplementation Coverage

Coverage

The Vitamin A coverage during the June 2022 Malezi Bora event reached 80.5 % [95% CI: 78.1-82.8] of the children. Routine supplementation (January-May, 2022) accounts to only 9.5% [95% CI: 6.5-12.0], as per PECs while administrative coverage is 26.0%, the difference can be associated with recall bias. Therefore, the semester coverage as per PECs was 90.0% [95% CI: 87.4-95.2] while the semester administrative coverage is 119.0%. The PECs coverage is above the national target of 80%, therefore termed as satisfactory. Nevertheless, it is clear little efforts are put into routine work, with anticipation of acceleration during malezi bora.

Comparison with the administrative data for semester 1 of 2022, Taita Taveta had a coverage of 119.0% against the PECS which was 90.0%.

Coverage Period	PECs	Administrative
Routine (Jan-May)	9.5%	26.0%
MB (June)	80.5%	93.0%
Semester	90.0%	119.0%

Table 13: VAS Coverage

Variable	Category	Col %	95% CI
Received Vit A during MB	No	192 (17.6)	[15.5-20.0]
	Yes	876 (80.5)	[78.1-82.8]
	I don't know	20 (1.8)	[1.2-2.8]
	Total	1,088 (100)	
Any other time apart from MB	No	82 (7.5)	[5.4-9.7]
	Yes	103 (9.5)	[6.5-12.0]
	I don't know	7 (0.6)	[0.1-3.8]
	Total	192 (17.6)	[15.5-20.0]
Received VAS per Age	6-11 months	114 (95.0)	92.0-98.3]
	12-59 months	865 (89.4)	[87.0-90.7]
PECS Semester Coverage		979 (90)	[87.4-95.2]
Administrative Semester Coverage		44,160(119.0)	

VAS Stratified coverages at rural and urban level

Majority 59.9% [95% CI: 56.7-63.3] of the children receiving VAS were from the rural areas where as 30.1% [95% CI: 27.0-34.5] were from urban areas. This is expected since majority of the cluster were from the rural areas.

Table 14: VAS Stratified coverages at rural and urban level

Variable	Rural		Urban		Total	
	Col%	95% CI	Col%	95% CI	Col%	95% CI
Yes	59.9%	[56.7-63.3]	30.1%	[27.0-34.5]	90.0%	[87.4-95.2]
No	4.6%	[3.3-8.9]	2.9%	[1.4-4.2]	7.5%	[5.4-9.7]
I don't know	1.2%	[0.4-3.6]	1.3%	[0.2-3.5]	2.5%	[1.1-4.7]

Where they received VAS and reasons for not receiving Malezi Bora Event

Majority of children received VAS at home (50.0%), a number at ECDE centers and health facility at 27.1% and 18.2% respectively. This is indicative that the three main strategies (door to door, ECDE and Health Facility) adopted for malezi bora are effective at reaching the targeted children.

Some of the main reasons for not receiving VAS during malezi bora event was due to child being absent (12.5%), workers did not visit the home (34.9%), they were not informed (26.0%), others (children had been recently supplemented, caregiver was not present). In order to mitigate some of the reasons for not receiving VAS as stated during the survey, strengthening the already existing communication mechanisms, caregivers will be better informed of the event, be present during the actual event and children ready for supplementation.

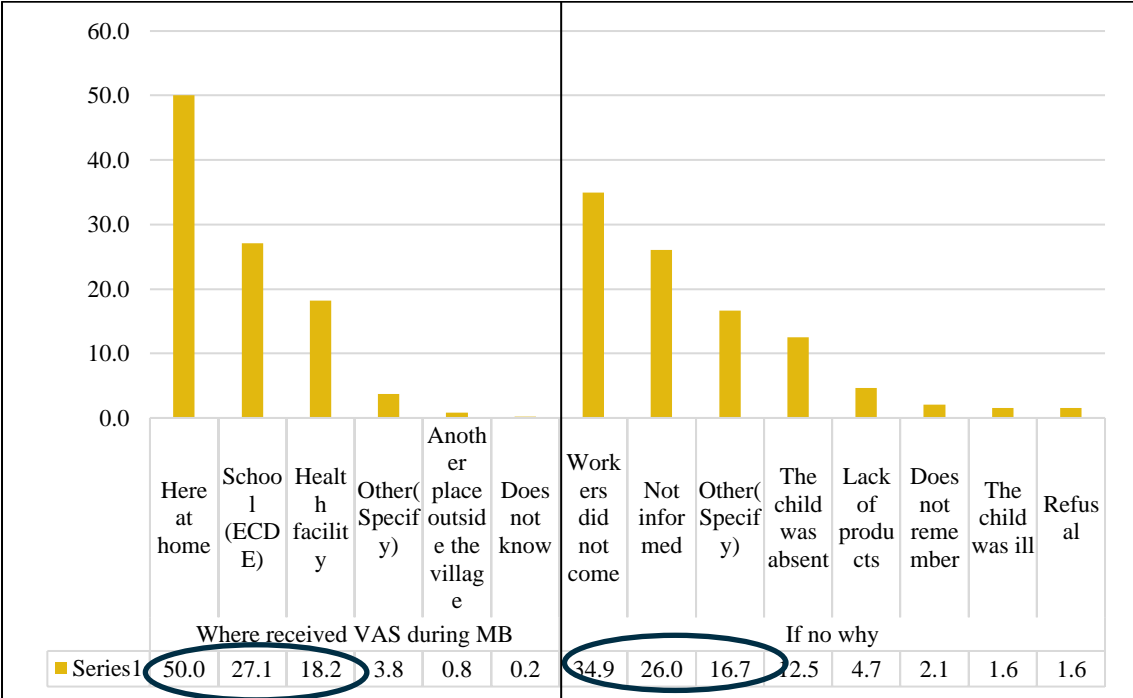


Figure 4: Where they received VAS and reasons for not receiving during Malezi Bora

Where they Received VAS any other Time

The health facility (92.2%) was the main source of vitamin A supplementation any other times apart from malezi bora. Nevertheless, this is just 9.5% of the total coverage, which is an indication that routine work is minimally done at the county at large.

VI-2 Deworming Coverage

Coverage per County

Deworming coverage during the June 2022 Malezi Bora event, for the county was 64.9% and the children who had received deworming drugs any other time were 21.0% bringing the semester coverage to 85.9%.

Table 15: Deworming Coverage

Variable	Category	Col %	95% CI
Received Deworming drug during MB	No	317 (32.7)	[29.3-36.1]
	Yes	628 (64.9)	[60.8-68.6]
	I don't know	23 (2.4)	[1.4-3.5]
	Total	968 (100)	
Any other time apart from MB	No	108 (11.1)	[8.3-14.0]
	Yes	203 (21.0)	[18.9-24.8]
	I don't know	6 (0.6)	[0.0-0.9]
	Total	317 (32.7)	[28.3-35.1]
Semester Coverage		831(85.9)	[81.3-90.1]
Administrative Semester Coverage		29,510 (91.0)	

In comparison with the administrative data for semester 1 of 2022, Taita Taveta had a coverage of 91.0% against the PECS which was 85.8%.

Coverage	PECS	Administrative
Routine (Jan-May)	21.0%	23.2%
MB (June)	64.9%	67.8%
Semester	85.9%	91.0%

Deworming Stratified coverages at rural and urban level

Similar to VAS, majority 57.5% [95% CI: 54.1-62.7] of the children receiving deworming were from the rural areas, where as 28.4% [95% CI: 23.9-31.4] were from urban areas.

Table 16: Deworming Stratified coverages at rural and urban level

Variable	Rural		Urban		Total	
	Col%	95% CI	Col%	95% CI	Col%	95% CI
Yes	57.5%	[54.1-62.7]	28.4%	[23.9-31.4]	85.9%	[81.3-89.4]
No	5.7%	[3.3-8.9]	5.5%	[3.2-8.7]	11.2%	[8.3-14.7]
I don't know	1.5%	[0.7-3.8]	1.4%	[0.5-3.3]	2.9%	[1.2-5.0]

Where they Received Deworming and reasons for not receiving during Malezi Bora Event

Deworming drugs were majorly given at home (39.5%), health facility (22.3%) and ECDE centers (32.5%). For those who did not receive, the main reason was due to not being informed (21.7%), doesn't remember if the child was given (23.1%), refusal (16.5%) and others said they had recently been given deworming. This is important to building better and applicable strategies for community mobilization prior the activity to overcome such challenges.

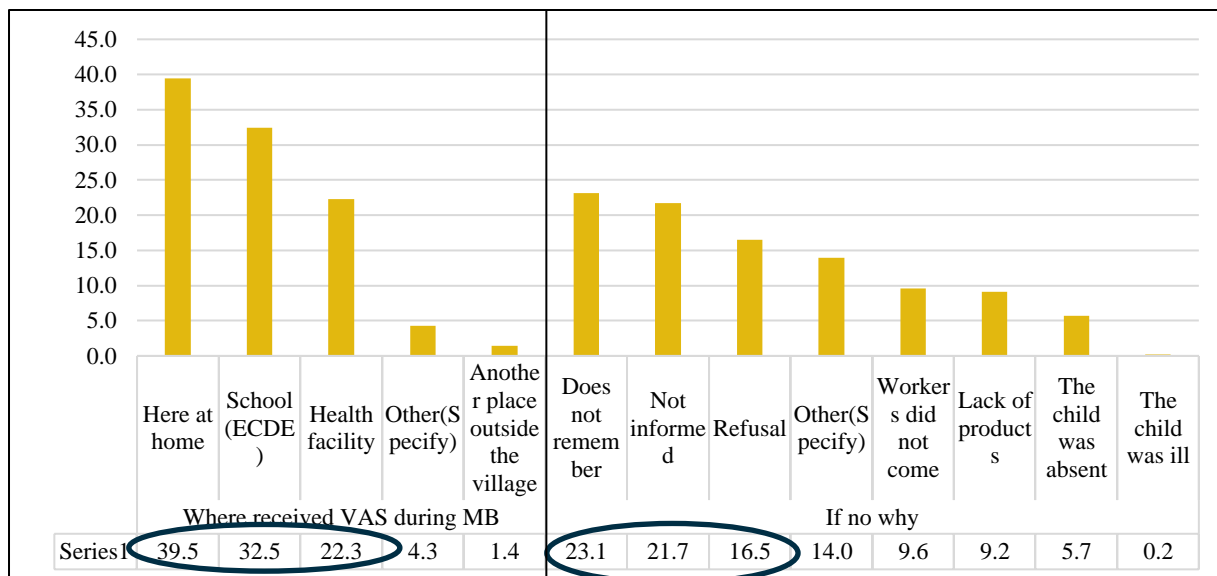


Figure 5: Where they received Deworming and reasons for not receiving during Malezi Bora

Where Children Receiving Deworming any other time

The survey results indicate that majority of the children received deworming drugs mainly from the health facility (54.2%) and at home (33.5%). Similar to Vitamin A supplementation, it is just a small proportion -21.0% receiving the intervention any other time and majority during malezi bora event.

Note: For both vitamin A supplementation and deworming, the strategies for distribution adopted during malezi bora which include (door to door, schools -ECDEs, community outreaches as well as routine health facility services) have stood out to be very effective and reach a higher coverage during the malezi bora event. The only ask is what can be done to improve the routine delivery of VAS and deworming drugs.

VI-3 Multivariate Analysis

The findings indicated a significant association ($p=0.020$) between area and receiving vitamin A, this is expected as all the children are supposed to received the interventions despite where they come from. There was no significant association ($p=0.700$) between highest level of education and receiving VAS. A significant association existed between what one does for a living and knowledge on vitamin A and receiving the commodity ($p=0.095, 0.098$ respectively). This is linked to the caregivers having knowledge on the commodity and being able to find time and take the children to receive the interventions.

Table 17: Multivariate Analysis on Vitamin A Supplement

Variable	Category	Received Vitamin A			Chi ²
		Yes	No	I don't know	
Area	Rural	588	119	8	Pearson Chi2(2) = 7.8306 Pr = 0.020
	Urban	288	73	12	
	Total	876	192	20	
Highest level of education	None	30	8	0	Pearson chi2(12) = 9.0315 Pr = 0.700
	Did not complete prim	140	24	6	
	Completed primary sch	323	65	7	
	Did not complete secondary	86	22	1	
	Completed secondary school	209	51	3	
	Did not complete tertiary	8	1	0	
	Completed tertiary education	80	21	2	
Total	876	192	20		
What you do for a living	Public sector worker	33	4	3	Pearson chi2 (20) = 28.6495 Pr = 0.095
	Private sector worker	9	3	0	
	Farmer	200	48	2	
	Business lady/man	218	49	7	
	Mining	1	0	0	
	Housewife (housekeeper)	200	43	5	
	Casual laborers	126	14	3	
	Unemployed	69	26	0	
	Fishing	1	0	0	
	Pupil/Student	5	3	0	
Other (Specify)	14	2	0		
Total	876	192	20		
Knowledge on Vit A	Yes	85	28	1	Pearson chi2(2) = 4.6503 Pr = 0.098
	No	791	164	19	
	Total	876	192	20	

VII- Community Results

The post event coverage survey aimed at assessing the level of knowledge of health workers (HWs), community health volunteers (CHVs) and community leaders (CLs) on vitamin A supplementation and deworming in Taita Taveta County. In addition, it aimed to assess the quality of the VAS and Deworming activities as conducted by the three sets of groups and then propose strategies and actions to be undertaken for the improvement of the next events.

VII-1 Description of the Sample

The interviews took place with 47 health workers, 65 community health volunteers and 73 community leaders. The health workers, 4 out of 10 respondents were community health extension workers or community health assistants (44.7%), while nurses were 2 out of 10 respondents (21.3%). Other health workers interviewed included, nutritionist, public health officers, health record officers, county and sub-county health management teams. Of the 73 community leaders interviewed, 8 out of 10 were village leaders (83.6%), forming majority of respondents, while other leaders reached were chiefs, assistant chiefs, religions leaders and wazee wa nyumba kumi under ‘others’.

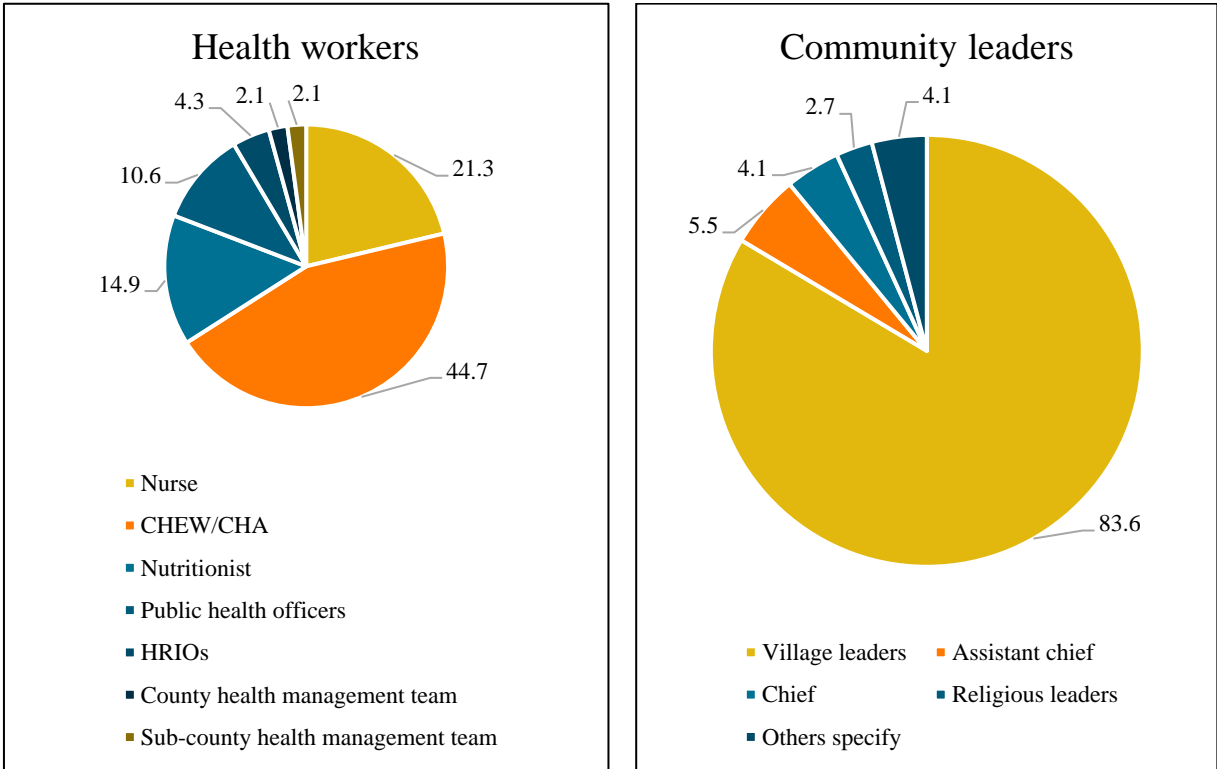


Figure 6: Description of the Sample

VII-2 General Characteristics of the Health workers, CHVs & Community leaders

The survey results indicate that the majority of the health workers (72.3%), and community health volunteers (81.5%) respondents were female, but more male community leaders' respondents (65.8%).

On the highest level of education attained, 91.5% of health workers had completed tertiary education, while 8.5% had not completed. CHVs, 15.4 had not completed primary, while 40.0% had completed primary education. Similarly, for the community leaders, 24.75 had not completed primary education, while 23.3% had completed.

The average number of years of experience for health workers in their role was 6.5 years, while for CHVs, was 9.6 years, and for the community leaders, 8.8 years.

Table 18: General characteristics of Health workers, CHVs & Community leaders

Variable	Category	Health Worker	CHVs	Community Leader
		Freq.	Freq.	Freq.
Sample representation per sub-county	Mwatate	10 (21.3)	18 (27.7)	18 (24.7)
	Taita	12 (25.5)	12(18.5)	12 (16.4)
	Taveta	11 (23.4)	17(26.2)	16 (21.9)
	Voi	14 (29.8)	18(27.7)	27 (37.0)
	Total	47 (100)	65(100)	73 (100)
Sex	Male	13 (27.7)	12 (18.5)	48 (65.8)
	Female	34 (72.3)	53 (81.5)	25 (34.3)
	Total	47 (100)	65 (100)	73 (100)
Highest level of education	None	0 (0)	0 (0)	0 (0)
	Did not complete primary school	0 (0)	10 (15.4)	18 (24.7)
	Completed primary school	0 (0)	26 (40.0)	17 (23.3)
	Did not complete secondary school	0 (0)	9 (13.9)	9 (12.3)
	Completed secondary school	0 (0)	16 (24.6)	16 (21.9)
	Did not complete tertiary education	4 (8.5)	2 (3.1)	1 (1.4)
	Completed tertiary education	43 (91.5)	2 (3.1)	12 (16.4)
Total	47 (100)	65 (100)	73 (100)	
Years of experience	1 year and below	1 (2.1)	3 (4.6)	7 (9.6)
	2-5 years	20 (42.6)	14 (21.5)	34 (46.6)
	6-10 years	19 (40.4)	22 (33.9)	8 (11)
	Above 10 years	7(14.9)	26 (40.0)	24 (32.9)
	Total	47 (100)	65 (100)	73 (100)
Average years of experience in their role				
	Mean	Std. err.	[95% conf. interval]	
Health workers	6.468085	0.650803	5.158087 -7.778083	
CHVs	9.584615	0.718871	8.148506-11.02072	
Community leaders	8.821918	0.898024	7.03174-10.6121	

VII-3 Index knowledge of health workers on vitamin A and deworming

Source of information and training on vitamin A and deworming

The main source of information for the health workers was the Ministry of Health (MoH) documents (74.5%), continuous training (72.3%) and IEC materials (59.6%). For the community health volunteers, it was mainly through the continuous training (78.5%) and for the community leaders, they obtained information from CHV, barazas, and health worker.

Majority of the health workers and the CHVs had received a training or sensitization at 70.2% and 86.1% respectively. On the contrary, majority (82.2%) of the community leaders had not received any training on vitamin A. majority of the health workers and CHVs had received a training/sensitization in less than three months period (81.8% and 76.8% respectively), which majority lasted for a day or half a day.

Table 19: Source of information and training for Health workers, CHVs & Community leaders

Variable	Category	Health Worker		CHVs		Community Leader	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
Source of information Vitamin A	MoH documents	35	74.5	20	30.8	15	20.6
	Continuing training	34	72.3	51	78.5	16	21.9
	TV	3	6.4	4	6.2	7	9.6
	Radio	2	4.3	5	7.7	11	15.1
	Newspapers	0	0	0	0.0	2	2.7
	IEC Materials (Poster, leaflet, data sheet)	28	59.6	19	29.2	7	9.6
	Colleagues	15	31.9	6	9.2	13	17.8
	Does not know	0	0	0	0.0	2	4.11
Other, specify	8	17	12	18.5	35	48	
Training on Vit A	Yes	33	70.2	56.0	86.1	13	17.8
	No	14	29.8	9.0	13.9	60	82.2
	Total	47	100	65	100.0	73	100
How long has it been since you received the last Vitamin A training/sensitization?	Less than 3 months	27	81.8	43	76.8	7	53.9
	3 to 6 months	1	3	2	3.6	0	0
	7 to 12 months	2	6.1	5	8.9	6	46.2
	More than 1 year	3	9.1	6	10.7	0	0
	Total	33	100	56	100	13	100
How long did the training/sensitization on Vitamin A last?	Less than half day	0	0	15	26.8	4	30.8
	Half a day	17	51.5	17	30.4	5	38.5
	A day	14	42.4	11	19.6	3	23.1
	Two days	2	6.1	4	7.1	0	0
	Others, specify	0	0	9	16.1	1	7.7
	Total	33	100	56	100	13	100

VII-4 Knowledge on Vitamin A

The knowledge of health workers, community health volunteers and community leaders were assessed in line with vitamin A and the main benefits stated by the three groups were; prevents illness, foster /promotes growth, prevent blindness/foster vision and improve health/immunity.

On the correct age of receiving vitamin A for the first time, 95.7% of the health workers selected the correct response (at 6 months). 89.2 of the community health volunteers selected the right age but for the community leaders, 34.3% selected the right age of first administration.

On the frequency of administration, 95.7% of the health workers selected the correct response which is twice a year, while 76.9% of community health volunteers selected the correct response and 28.8% of community leaders selected the correct response.

The dosage given to children at 6-11 months (One blue capsule 100.000 IU or Half of the red capsule 200.000 IU) and 12-59 months (One red capsule 200.000 IU or 2 blue capsules 100.000 IU) was also correctly answered by all health workers. While for community health volunteers, 92.3% answered correctly and 31.5% of community leaders gave the correct response, leaving a huge percentage giving the wrong response or said they did not know the correct dose.

On having any IEC material that inform about Vitamin A, 83.0% of the health workers had them and only 32.3% of the CHVs had them, thus creating a huge gap on the materials need and usage during malezi bora event.

Table 20: Knowledge on vitamin A Health workers, CHVs & Community leaders

Variable	Category	Health Worker		CHVs		Community Leader	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
Benefits of vitamin A	Prevent illness	27	57.5	31	47.7	30	41.1
	Foster /promotes growth	27	57.5	34	52.3	20	27.4
	Prevent blindness/foster vision	34	72.3	26	40	10	13.7
	Improve health/immunity	40	85.1	49	75.4	41	56.2
	Reduce death risk	6	12.8	2	3.1	2	2.7
	Prevent anemia	7	14.9	2	3.1	2	2.7
	Increase appetite	1	2.1	8	12.3	8	11
	Does not know, does not remember	1	2.1	0	0	11	15.1
	Other, specify	4	8.5	0	0	6	8.2
Age for first Vitamin A dose administration	At birth	0	0	1	1.5	5	6.9
	At 6 months	45	95.7	58	89.2	25	34.3
	At 1 year	1	2.1	0	0	4	5.5
	Does not know	1	2.1	0	0	29	39.7
	Other, specify	0	0	6	9.2	10	13.7
Frequency of VAS	During events (malezi bora, outreaches)	0	0	1	1.5	2	2.7
	Quarterly	0	0	6	9.2	5	6.9
	Twice a year	45	95.7	50	76.9	21	28.8
	Yearly	1	2.1	3	4.6	8	11
	I don't know	1	2.1	0	0	34	46.6

	Other, specify	0	0	5	7.7	3	4.1
	Total	47	100	65	100	73	100
Vitamin A dose for children 6-11 months old?	One blue capsule 100.000 IU	46	97.9	60	92.3	23	31.5
	One red capsule 200.000 IU	0	0	5	7.7	5	6.9
	Half of the blue capsule 100.000 IU	0	0	0	0	0	0
	Half of the red capsule 200.000 IU	1	2.1	0	0	0	0
	I don't know	0	0	0	0	43	58.9
Vitamin A dose for children 12-59 months old?	One blue capsule 100.000 IU	1	2.1	7	10.8	1	1.4
	One red capsule 200.000 IU	45	95.7	57	87.7	27	37
	2 blue capsules 100.000 IU	0	0	0	0	0	0
	2 red capsules 200.000 IU	1	2.1	0	0	0	0
	I don't know	0	0	1	1.5	42	57.53
Do you have any IEC material that informs about Vitamin A?	No	8	17.0	44	67.7		
	Yes	39	83.0	21	32.3		
	Total	47	100	65	100		
Which of the IEC materials did you use during the just ended Malezi bora event?	Flip charts/counseling cards	30	76.9	14	66.7		
	Training module	5	12.8	0	0		
	Poster on vitamin A	13	33.3	8	38.1		
	Vitamin A Policy	21	53.9	1	4.8		
	Other, specify	2	5.1	3	14.3		

VII-5 Knowledge on Deworming

The main sources of information for health workers and community health volunteers on deworming was MoH documents and continuous training as stated by more than 60% of the respondents, but for community leaders, it was under the classification of others (health workers, community health workers and during barazas) that they got to receive or get informed. On training or sensitization received, 68.1% of the health workers and 95.5% of the CHVs had been trained/sensitized. Whereas 76.7% of the community leaders had not received any of the training/sensitization, yet they are a key component in this community strategy. Despite the lack of training for community leaders, over 75% knew at least one main benefit of deworming (treatment of intestinal parasites).

On the correct age that a child should receive the first dose of deworming (at 1 year), almost all the health workers (95.7%), stated the correct age, while 66.2% of community health volunteers indicated the correct response whereas only 26.0% of community leaders responded correctly. Of concern are the health workers and community health volunteers who indicated wrong responses, yet they are key in implementing VAS and deworming activities.

On the frequency of deworming dosage (biannually), 68.1% of the health workers and 30.8% of the community health volunteers gave the correct response. Majority of the community leaders said they did not know the frequency of deworming dosage (32.9%) and only 16.4% responded correctly. Wrong responses emanating from health workers, CHVs and community leaders, is alarming since these are the key persons that deliver the information about deworming, this therefore indicates potential risk of misinforming the caregivers.

Table 21: Knowledge on Deworming Health workers, CHVs & Community leaders

Variable	Category	Health Worker		Community Health Volunteer		Community Leader	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
Sources of information on deworming	MoH documents	30	63.8	19	29.2	15	20.6
	Continuing training	33	70.2	47	72.3	12	16.4
	TV	2	4.3	3	4.6	8	11
	Radio	2	4.3	7	10.8	1	1.4
	Newspapers	0	0	0	0	0	0
	IEC Materials (Poster, leaflet, data sheet)	24	51.1	17	26.2	7	9.6
	Colleagues	14	29.8	5	7.7	12	16.4
	Does not know	0	0	0	0	3	4.1
	Other, specify	5	10.6	10	15.4	38	52.1
Received any training on deworming	Yes	32	68.1	62	95.5	17	23.3
	No	15	31.9	3	4.5	56	76.7
How long since you received the last training/sensitization on deworming?	less than 3 months	27	84.3	44	67.7	7	41.2
	3 to 6 months	1	3.1	5	7.7	1	5.9
	7 to 12 months	2	6.3	4	6.2	0	0
	More than 1 year	2	6.3	9	13.9	9	52.9
Benefits of deworming	Treatment of intestinal parasites	47	100	54	83.1	55	75.3
	Reduces Stomach pains	5	10.6	6	9.2	3	4.1
	Protects against illnesses	21	44.7	15	23.1	19	26
	Protects from anemia	18	38.3	6	9.2	3	4.1
	Improve children's health	25	53.2	26	40	27	37
	Does not know	0	0	0	0	4	5.5
At what age should children receive the deworming drugs for the first time?	At 6 months	2	4.3	8	12.3	11	15.1
	At 1 year	45	95.7	43	66.2	19	26
	More than 1 year	0	0	11	16.9	3	4.1
	I don't know	0	0	1	1.5	34	46.6
	Other, specify	0	0	2	3.1	6	8.2
How often should children receive deworming drugs?	During events	0	0	0	0	3	4.1
	Quarterly	14	29.8	28	43.1	25	34.3
	Twice a Year	32	68.1	20	30.8	12	16.4
	Yearly	1	2.1	9	13.9	8	11
	I don't know	0	0	3	4.5	24	32.9
	Other, specify	0	0	5	7.7	1	1.4
Do you have any IEC material that informs about deworming?	Yes	25	53.2	19	29.2		
	No	22	46.8	46	70.8		
Which of the IEC materials did you use during the just	We don't have it	4	16	0	0		
	Flip charts/counseling cards	15	60	10	52.6		
	Training module	4	16	4	21.1		

ended malezi bora event?	Poster on deworming	8	32	12	63.2	
	Deworming policy	4	16	0	0	
	Other, specify	1	4	2	10.5	

The findings above therefore, raises the issues around how trainings are done, who is invited, how frequent, the quality of the trainings, the levels of mobilization and consistency in sustainability of all these activities.

VII-6 Quality of implementation of VAS+D Activities

The quality of implementing the Vitamin A supplementation and deworming activities was assessed and, the average number of days' health workers, community health volunteers and community leaders participated during the malezi bora event were 2.7, 2.4 and 1.4 respectively. The average number of hours spent by all the 3 groups interviewed on the malezi bora event per day were 4.0, 3.6 and 3.3 hours for health workers, community health volunteers and community leaders respectively.

Table 22a: Quality of implementation of VAS & D Activities

Variable	Category	Health Worker		Community Health Volunteer		Community Leader	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
On average how many hours a day did you participate in the just ended malezi bora event?	1 hour or less	0	0	0	0	15	20.6
	2-3 hours	1	2.1	4	6.2	10	13.7
	Half a day	5	10.6	21	32.3	12	16.4
	The whole day	46	76.6	34	52.3	8	11
	Other	5	10.6	6	9.2	28	38.4

Table 22b: Quality of implementation of VAS & D Activities

How many days did you participate in the just ended malezi bora event in your County?	Category	Mean	Std. err.	[95% conf. interval]	Number of obs
	Health workers	2.744681	0.33244	2.075514 - 3.413848	47
	CHVs	2.353846	0.12866	2.096819 - 2.610873	65
	Community leaders	1.424658	0.244356	0.9375423 - 1.911773	73
Average number of hours spent in MB	Category	Mean	Std. err.	[95% conf. interval]	Number of obs
	Health workers	3.957447	0.080225	3.795961 - 4.118932	47
	CHVs	3.615385	0.102122	3.411372 - 3.819398	65
	Community leaders	3.328767	0.18614	2.957705 - 3.69983	73

Vitamin A supply, deworming drug supply issues

The main challenges highlighted especially from the health workers; transportation of VACs to the county, at times stock outs are faced, facilitation for supervision is limited and delay in provision other noted gaps during the event were the few days supported for the event, amount paid to CHVs is little, and few CHVs involved.

The resolution of the challenges as stated, some are done immediately (yes-16.0%), (partially-28.0%) and (not solved at all-84.0%). This is indicative of the locally available mechanisms to solve issues as well as the challenges that are beyond the county teams to solve, which take a bit of time to address.

Table 23: Vitamin A supply, deworming drug supply issues: Health workers, CHVs & Community leaders

Variable	Category	Health Worker		CHVs		Community Leader	
		Freq.	Percent	Freq.	Percent	Freq.	Percent
What role did you play during the just ended malezi bora event?	Social mobilization	20	42.6	33	50.8	49	67.1
	Vit A and Deworming distribution	25	53.2	55	83.6	4	5.5
	Record	13	27.7	26	40	1	1.4
	Supervisor	26	55.3	0	0	0	0
	Data compilation	22	46.8	7	10.8	0	0
	Malnutrition screening	3	6.4	4	6.2	0	0
	Logistician	5	10.6	0	0	0	0
	Others	14	29.8	3	4.6	23	31.5
Challenges for VAS during the MB	Yes	25	53.2	25	38.5	13	17.8
	No	22	46.8	40	61.5	60	82.2
If yes what are the challenges?	Stock outs	2	8.0	7	28.0	4	30.8
	Transport facilitation	14	56.0	7	28.0	5	38.5
	Delay of supplies	3	12.0	3	12.0	0	0
	Facilitation for supervision	5	20.0	1	4.0	4	30.8
	Provision of documentation materials	1	4.0	1	4.0	2	15.4
	Others, specify	15	60.0	13	52.0	0	0
If YES, have these challenges been solved?	Yes	4	16	10	40	1	7.7
	Partially	0	0	7	28	2	15.4
	No	21	84	8	32	9	69.2
	Does not know	0	0	0	0	1	7.7
Challenges for deworming during the MB	Yes	21	44.7	28	43.1	12	16.4
	No	26	55.3	37	56.9	61	83.6
If YES, have these challenges been solved?	Yes	5	23.8	8	28.6	1	8.3
	Partially	0	0	6	21.4	1	8.3
	No	16	76.2	14	50	9	75
	Does not know	0	0	0	0	1	8.3

VII-7 Promoters and Barriers to Vit A and Deworming Uptake

The components that promotes, furthers, or encourages the uptake of vitamin A and deworming, as well as the barriers that prevent or bar uptake are listed below as per the study finding:

Table 24: Promoters and Barriers to Vit A and Deworming Uptake

#	Promoters	Barriers
1.	Early planning, that is all inclusive of all relevant stakeholders: Health sector, education and community.	Not all sectors are fully and actively involved such as community leaders and ECDE teachers in planning phases.
2.	Sensitization: This includes the pre-malezi bora sensitization health workers and CHVs, who also sensitize the caregivers during mobilization.	Lack of sensitization of key stakeholders like the teachers and community, leading to poor mobilization and thus missed opportunities.
3.	Good coordination between health workers and community health volunteers.	Poor coordination between health workers and ECDEs.
4.	Availability of commodities: Vit A Capsules, deworming drugs, and tools.	Delays in transportation of VACs from national warehouse and at times stockouts are experienced for both VACs and deworming.
5.	Existing knowledge on VAS&D among the health workforce.	Insufficient or lack of training on VAS &D to key players: health workers, CHVs, ECDE teachers and community.
6.	Availability of county nutrition action plan.	Inconsistent resource mobilization to support VAS&D activities.
7.	Existence and active Community Health Strategy.	Dropping CHVs who weaken the community units.

Ways to Improve VAS and Deworming Activities

A number of suggestions were given by all the three groups on how the activities of vitamin A supplementation and deworming could be improved and this can be summarized as below;

Table 25: Ways to Improve VAS and Deworming Activities

How do you think vitamin A supplementation and deworming could be improved in your area?	Increase mass-media campaigns
	Households heads sensitization
	Better coordination between community and health staff
	Ensure Vit A is sufficient and prompt supply
	A regular training of workers
	Health workers' motivation
	CHV/ community leader motivation
	Others suggestions: Better mobilization, provide IEC materials, avoid delays in payment, increase number of CHVs their payment and days, involve more health workers, early provision of commodities

VIII- Supervisor Monitoring and Quality Control

Supervisors went back to 10% of the households surveyed to verify the information. The results indicate that the main sources of information for child age is similar in both cases (mother child booklet, birth certificate, events calendar and mothers recall), the proportion of those receiving Vitamin A during malezi bora is at 81.9 vs. 80.5% for supervision and actual data collection respectively. Similar case applies to those receiving deworming drugs during malezi bora at 66.1% vs. 64.9% for supervision and actual data collection respectively. The places for receipt of either commodity as assessed by supervisors and compared to actual data collection, is similar across as it focus on the 3 main strategies for door to door, health centers and school (ECDE).

Table 26: Supervisor monitoring and quality control

Variable	Category	Supervision		Actual Data collection	
		Freq.	Percent	Freq.	Percent
Sampled children per sub-county	Mwatate	18	25	252	23.2
	Taita	15	20.8	180	16.5
	Taveta	15	20.8	253	23.3
	Voi	24	33.3	403	37
	Total	72	100	1088	100
Sex	Male	27	37.5	547	50.3
	Female	45	62.5	541	47.7
Age	6-11 months	13	18.1	120	11.3
	12-59 months	59	81.9	968	88.7
Source of age	Mother child booklet	53	73.6	837	76.93
	Birth certificate	7	9.7	35	3.22
	Events calendar	2	2.8	44	4.04
	Other to specify	10	13.9	172	15.81
Received Vit A during MB	No	13	18.1	192	17.6
	Yes	59	81.9	876	80.5
Received Deworming drug during MB	No	20	33.9	317	32.7
	Yes	39	66.1	628	64.9
Received VAS per Age	6-11 months	13	76.9	114	95
	12-59 months	59	83.1	865	89.4
Where received VAS	Here at home	26	44.07	438	50.0
	Health center	8	13.56	159	18.2
	School (ECDE)	18	30.51	237	27.1
	Other, specify	7	11.86	33	3.8
If not why	The child was absent	1	7.69	24	12.5
	Workers didn't come	5	38.46	67	34.9
	Not informed	2	15.38	50	26.0
	Other, specify	5	38.46	32	16.7
Where received deworming	Here at home	14	35.9	248	39.5
	Health center	4	10.26	140	22.3
	School (ECDE)	16	41.03	204	32.5
	Other, specify	5	12.82	27	4.3

IX- Minimum Dietary Diversity (24-Hour Recall)-Women

IX-1 Minimum Dietary Diversity

Women of reproductive age (WRA) are usually nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Sub-optimal intake of nutrients before and after pregnancy and lactation can affect both women and infants. Yet in many resource poor environments, diet quality for WRA is very poor and there are gaps between intakes and requirements for a range of micronutrients. In assessing the nutritional quality of food consumed by the women of reproductive age, a 24-hour recall period dietary diversity questionnaire was administered to women at the households. The survey had 849 (93.8%) females but those who responded to the MDD-W questions were 846 (N). The maternal nutrition practices, the survey results showed that the majority of the women consumed the starchy foods (97.8%), pulses-beans, peas and lentils (40.6%), dark green leafy vegetables (67.2%), other vegetables (78.6%) and other fruits (46.7%) as summarized in the graph below.

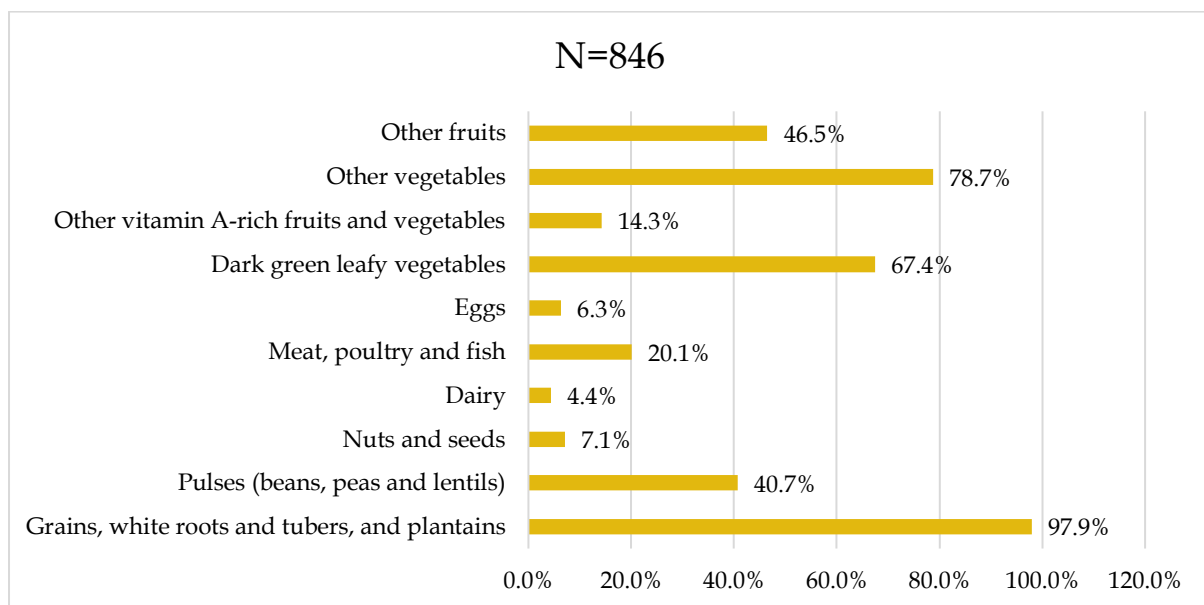


Figure 7: Minimum Dietary Diversity

IX-1 Minimum Dietary Diversity for Women

Minimum Dietary Diversity for Women (MDD-W) is a dichotomous indicator of whether or not women or reproductive age have consumed at least five of ten defined food groups the previous day or night. The proportion of WRA who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy and an important dimension of diet quality. This indicator constitutes an important step in filling the need for indicators for use in national and subnational assessments. Based on the findings from this study, only 28.7% met the minimum dietary diversity. The MDD-W is attributed to the effects of high food prices and low purchasing power of the community, knowledge gap on dietary diversity and culture of the population consuming starchy based foods and less of proteins.

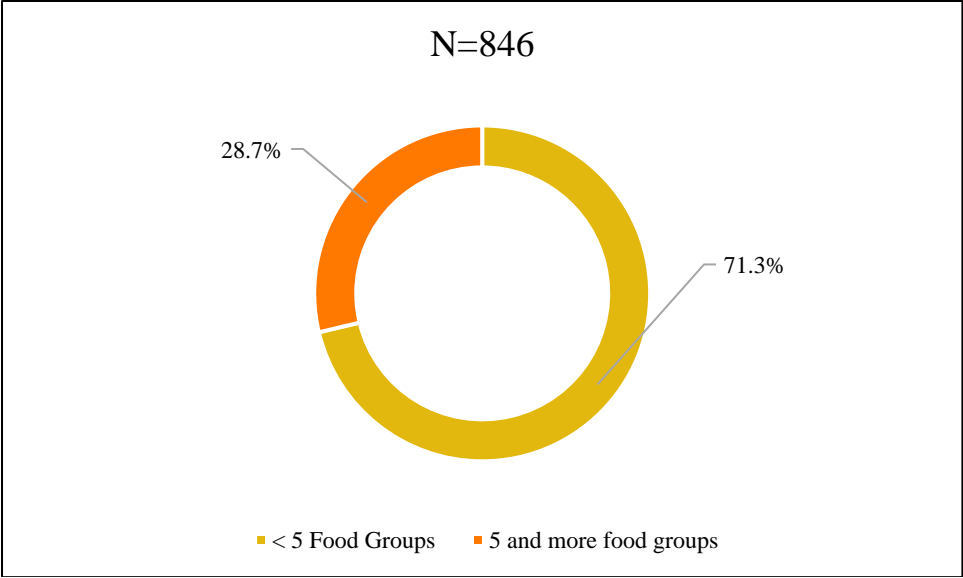


Figure 8: Minimum Dietary Diversity for Women

X- Conclusion and Recommendations

X-1 Conclusion

The results from the survey on Vitamin A coverage (90.0%) is above the national target of 80%, which is satisfactory, but on comparison with the administrative data (KHIS-119.0%), a gap exists in which it calls for action on WHY the administrative data is over 100%. The reasons stated such as poor target setting, documentation errors and double supplementation require immediate address at all levels so as to have the coverage always between 80%-100%. Additionally, strategies for distribution adopted during malezi bora such as door to door, schools -ECDEs, community outreaches as well as routine health facility services, were successfully implemented in Taita Taveta and resulted to good coverage for both VAS and Deworming.

Communication strategy needs a strategic approach, basing on more involvement of more community health volunteers and religious and community leaders, who are the community liaison persons able to effectively reach more than 80% of the caregivers with the malezi bora events' messaging. Therefore, their involvement plays a critical role in mobilization to create a better impact.

A well planned out capacity building assessment of the healthcare workers, CHVs and community leaders, has a greater impact of having a trickle-down effect to the end beneficiary in line with the importance and why vitamin A and Deworming are critical for the child. Well trained and sensitized personnel, well-coordinated activities, efficient supply of commodities and enhanced motivation will create a lasting and sustained impact on the vitamin A supplementation and deworming activities at Taita Taveta county and at long run the high coverages.

X-2 Malezi Bora Challenges

- Commodity stockout and delay: This include vitamin A capsules, deworming drugs, documentation tools, and other accessories needed during the activity, which delay in arrival or not sufficient for use during malezi bora event as stated by the key informants.
- Insufficient mobilization: This does not happen at all or when it does, it is rushed and not every targeted household is reached with the message of malezi bora event, few personnel are involved thus affecting the transmission of message, leading to missed opportunities during the actual activity.
- Inadequate knowledge on VAS and deworming: As much as sensitization occur days to the actual supplementation, this is not sufficient to cover for the existing knowledge gaps. Proper training on VAS and deworming should be done regularly to bridge the knowledge gap that was identified from the survey among caregivers, community leaders and some CHVs.
- Reporting gaps: More reporting is done to KHIS (100+%), than the target for the administrative data, siting issues around poor documentation, poor targeting and double supplementation.

- Resource mobilization: Malezi bora is a resource intensive event that requires much investment and due to insufficient funding, this has seen reduced engagement of personnel and number of days, cutting down on supervision, thus affecting the quality of the activity and the anticipated impact.
- There is poor dietary diversity among women in Taita Taveta County, with a high consumption of low nutrient foods.

X-3 Recommendations

To the County government of Taita Taveta

- Commodity stockout and delay: This can be addressed with a proper and clear plan and forecast. in terms of the needs and when they are needed helps clearing out any anticipated delays such as for drug collection, tools delivery which can be done jointly with the usual county collection/delivery systems the national warehouse.
- Mobilization: Proper mapping of households by CHVs using Global Positioning System (GPS) and develop a mobilization plan that is well outlined on who, what is needed, when, where and what their impact is in terms of reaching the beneficiaries is key to delivery of malezi bora message to all the relevant targeted population, no matter the location.
- Knowledge on VAS and deworming: Having regular capacity building sessions to the healthcare workers, CHVs, community leaders and caregivers will have a positive impact on improving the knowledge of the people on vitamin A and deworming and thus bridge the knowledge gap.
- Conducting of data reviews and data cleaning on a monthly basis before submitting data to KHIS will address the issues around poor documentation, double supplementation and poorly set targets, thus cubing the 100+% reporting.
- Resource mobilization: The county should have a resource mobilization strategy, so as to be strategic in advocating for Vitamin A and deworming activities, receive fund and integrate activities for more impact and reach. Also invest more in routine services and reduce the accelerated mob-up tendency during malezi bora that is not cost effective.
- There is need for the county government to promote kitchen gardens in all forms, dietary formulation and cooking demonstration. Additionally, intensify health education to the community members on dietary diversity and preparation of quality diets focusing on women.

IX- Work plan and chronogram

IX-1 Activities matrix

Step	Activities	Source of verification	Speakers	Durati on (day)
Preparatory phase				
1	Development of the study protocol and its validation Adaptation of collection tools	- Validated protocol - National Ethics Committee Agreement - validated questionnaires - Surveyor's guide validated - Sampling carried out - Pilot survey carried out	- M&E - M&E - M&E - PECs Committee	10
2	Recruitment and training of collection agents and pilot survey	-Teams deployment plan - Training report -Pilot survey report	- County and Helen Keller team	10
Collection phase				
3	Field data collection	- Collection database - Collection report	- Enumerators - County team - Helen Keller team	9
	Supervision of the collection			
	Follow-up of the collection			
Analysis phase				
4	Data processing and clearance	- Raw database - Cleared database	- Helen Keller team	5
5	Data analysis	- Study results	- Helen Keller team	5
6	Preparation of the preliminary report of the study	- Prepare draft report	- Helen Keller team	5
7	Report validation workshop	- Presentation of the results of the study on PowerPoint	- Helen Keller team	2
8	Report finalization	- Study final report	- Helen Keller team	4
Total number of days				50

X- Budget

The budget for this study is:

No.	Cost Description	Unit	Unit cost (Ksh)	No. of Units	Frequency	Total (Ksh)
1	Workshops					2,458,500
1.1	Training of enumerators- conference package	Person	2,500	85	4	850,000
1.2	Accommodation/Per diem for staff	Person	9,000	10	9	810,000
1.3	Flights to and fro	Person	15,000	5	1	75,000
1.5	Transport reimbursement- for training MoH team leaders	Person	1,500	15	3	67,500
1.6	Transport reimbursement- for training enumerators	Person	1,000	78	4	312,000
	Dissemination of results					
1.7	Dissemination of findings - conference package	Person	2,500	40	1	100,000
1.8	Transport reimbursement- dissemination workshop	Person	1,000	40	1	40,000
1.9	Accommodation/Per diem for staff	Person	9,000	4	4	144,000
1.1	Flights to and fro	Person	15,000	4	1	60,000
2	Field data collection					3,078,950
2.1	Supervisors	Days	4,000	4	5	80,000
2.2	Team leaders' allowance	Days	3,500	26	5	455,000
2.3	Research Assistants allowance	Days	3,000	52	5	780,000
2.4	Community guides lunch and transport	Days	1,000	77	1	77,000
2.5	Communication for enumerators	Days	100	52	5	26,000
2.5	Communication for team leaders	Days	200	26	5	26,000
2.6	Communication for supervisors & staff	Days	500	14	5	35,000
2.7	Vehicle hire	Vehicle	12,000	26	5	1,560,000
2.8	Masks	Person	30	85	9	22,950
2.9	Sanitizers 50ml bottle	Person	100	85	2	17,000
3	Equipment					150,000
3.1	Buying of Smart phones	Piece	15000	10	1	150,000
4	Others					160,000
4.1	Printing & photocopying	Lumpsum	40,000	1	1	40,000
4.2	ERB Approval		100,000	1	1	100,000
4.3	NACOSTI		20,000	1	1	20,000
	Total					5,847,450

XI- Study team

XI-1 Composition of the team

The team was composed of:

S No.	Position	Number
1	Country Director	1
2	National Coordinator	1
3	VAS Program Manager	2
4	Monitoring and Evaluation	1
5	Program Officers	2
6	Finance Officer	1
7	Procurement Officer	1
8	MOH representatives	3
9	KNBS representative	1
	Total	13

XI-2 Tasks of each member of the team

Position	Tasks	Time of job
Coordinating Committee and or Consultant, Principal Investigator	<ul style="list-style-type: none"> - Led and coordinated all activities of the study - Recruited field agents - Managed the study logistics - Put at the disposition of the team all the necessary means for the good execution of the mission - Managed human resources - Activities monitoring - Determined the survey plan - Performed sampling work - Designed the collection tools -Fieldwork - Supervisors and surveyors' training - Presentation of the methodology and results of the study - Field mission - Supervision and monitoring of the collection - Developed the questionnaire and the surveyor's guide; - Cleaned data - Produced tables - Did comparative analyzes and charts 	Country director, National Coordinator, M&E, Programs, Finance, Procurement/ logistics, MOH, KNBS

	<ul style="list-style-type: none"> - Wrote the final report - Presented the results of the study and integrate participants' inputs 	
Supervisor	<ul style="list-style-type: none"> -Obtained lists of the selected clusters and the cartography of the sites of own's area; - Verified that each surveyor had the necessary equipment for his/her activities; - Set up a monitoring system for data collection teams - Provided the consultant with summary sheets showing, for each site, the details of the completed interviews, the lack of response, etc. - Organized the movements of the data collection teams - Supervised data collection - Led surveyors' teams - Informed the consultant of the evolution of data collection - Provided information - Briefed surveyors daily on key points and ensured that each surveyor was comfortable with the questionnaire and interview techniques - Performed any other task necessary for the proper conduct of the survey 	Helen Keller, County Representatives
Surveyor	<ul style="list-style-type: none"> - Go to the website - Greet politely and informed the target of the purpose of the survey - Identified all eligible households in the cluster - Surveyed only selected households - Obtained the consent of the participants - Conducted the interviews and saved the results in the collection form via the mobile phone - Made a first check of the questionnaire - Politely concluded the interview - Checked all completed forms - Told the supervisor about any possible difficulties encountered 	Qualified from the study counties

XII- Annexes

XII-1. Consent Form

Good morning/afternoon Madam /Sir,

My name is _____ and, I have come on behalf of the Ministry of Health to talk about the health of children in your community. With the support of Helen Keller International and other partners, the government has been supplementing vitamin A and providing deworming drugs for children last month. We come to see how that happened. We would like to ask you some questions about those health services.

These questions should only take a short time (15-20 minutes). By participating, you will provide valuable information on how to improve health services in your area. You are free to choose to participate or not, you are also free to refuse to answer any of the questions. However, your opinion is very important in this study. Your answers will remain confidential. We do not collect any information that could identify you such as your name, address or phone number. Do you want to participate?

YES (continue) No → END

XII-2. Questionnaire



Questionnaire.docx

XII-3. Action and Way Forward

Area	Discussion	Action Point/Recommendation	Person responsible
Knowledge gap for CHVs	There was noted knowledge gap on deworming frequency among CHVs. CHVs have not been trained on some modules and are not receiving stipends.	<ul style="list-style-type: none"> Disseminate the VAS +D policy and guideline which guides that deworming should be done twice yearly. 	MoH, County & Partner
CHU services data	Uptake of CHU services data	<ul style="list-style-type: none"> CHUs data to be reported at the link facility to be reported as routine work. 	County
Mobilization	Teachers as agents of information sharing was very low, the ECDE coordinators are involved in that stakeholders planning meetings. Communication to ECDEs in private schools is not done universally. Timing of the mobilization when they coincide with other County activities may yield low rewards, e.g. during malezi bora time.	<ul style="list-style-type: none"> The information sharing to be improved so that all school get the information prior for those who need parents' consent especially in private schools. Identify private schools have a forum and share that information in the forum. Include sensitization to the teachers directly like in deworming program. Invite staff from health to attend meetings organized for teachers. Increased collaborations with other departments. Time the mobilization and activities appropriately based on community activities. Early communication from CHMT to schools prior to Malezi Bora. 	County
Who to supplement	At the school level, who should supplement the children. CHVs supplement under supervision of health workers.	<ul style="list-style-type: none"> CHVs to continue supplementing under supervision of health workers. 	County
Strengthening routine	The County has a good network of health facilities, this will improve on data and reporting and targeting of the correct age cohorts. For immunization there is an active defaulter tracing which does not involve VAS+D. Documentation of VAS is not well done. It may be documented in some tools and not all.	<ul style="list-style-type: none"> Focus on reaching the caregivers and sharing on importance of Vitamin A, this can be done at schools during Parents' Day, social gatherings using case studies (one child supplemented and one who was not and the notable differences) Include VAS+D and other child health services as part of the key indicators during defaulter tracing. Identify health facilities that have challenges on documentation for follow up and mentoring. The County HRIO developed a tool to support CHVs on documentation and targeting the correct cohort of children. (The health facilities have requested for support in printing the tool.) SCHMTs to follow up on utilization of the tool, Lobby partners for the printing of the tool. Lobby for more strengthening activities for RDQAs, OJTs, Mentorship. 	County & partner

XII-4. Maseno University Ethics Review Committee Approval



MASENO UNIVERSITY SCIENTIFIC AND ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

REF: MSU/DRPI/MUSERC/01091/22

Date: 4th July, 2022

TO: Caleb Momanyi Ombati
Hellen Keller International
Methodist Ministries Centre
Block B, Second Floor
P.O. Box 13904-00800, Nairobi

Dear Sir,

RE: Post Event Coverage Survey to Assess the Coverage of Vitamin-A Supplementation and Deworming for Children Aged 6-59 Months in Taita Taveta County of Kenya

This is to inform you that **Maseno University Scientific and Ethics Review Committee (MUSERC)** has reviewed and approved your above research proposal. Your application approval number is MUSERC/01091/22. The approval period is 4th July, 2022 – 3rd July, 2023.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by Maseno University Scientific and Ethics Review Committee (MUSERC).
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Maseno University Scientific and Ethics Review Committee (MUSERC) within 24 hours of notification.
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Maseno University Scientific and Ethics Review Committee (MUSERC) within 24 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to Maseno University Scientific and Ethics Review Committee (MUSERC).

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely


Prof. Philip O. Owuor, PhD, FAAS, FKNAS
Chairman, MUSERC



MASENO UNIVERSITY IS ISO 9001 CERTIFIED



XII-5. National Commission for Science, Technology and Innovation Approval


REPUBLIC OF KENYA


NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Date of Issue: 18/July/2022

RESEARCH LICENSE




This is to Certify that Mr. CALEB MOMANYI OMBATI of Helen Keller International, has been licensed to conduct research in Taita-Taveta on the topic: Assessment of Coverage of Vitamin A Supplementation and Deworming for Children Aged 6-59 months in Taita Taveta County of Kenya for the period ending : 18/July/2023.

License No: NACOSTI/P/22/18222

Applicant Identification Number
651510


 Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

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4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies
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National Commission for Science, Technology and Innovation
off Waiyaki Way, Upper Kabete,
P. O. Box 30623, 00100 Nairobi, KENYA
Land line: 020 4007000, 020 2241349, 020 3310571, 020 8001077
Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke