
FANSER End of Project Evaluation: Knowledge, Attitudes & Practices Survey

Report

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Acknowledgements

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Declaration:

We have taken care to faithfully reflect the views and perceptions of the study participants and to ensure the accuracy of information used in this report. We, however, take full responsibility for any errors or omissions. The analysis and conclusions in this report are those of the study team.

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ACRONYMS

ANC	Anti-Natal Care
BCC	Behaviour Change Communication
CSO	Central Statistical Office
DFID	Department for International Development
DNCC	District Nutrition Coordinating Committee
EBF	Exclusive Breastfeeding
FGD	Focus Group Discussion
GAIN	Global Alliance for Improved Nutrition
GDP	Gross Domestic Product
GRN	Global Nutrition Report
GRZ	Government of the Republic of Zambia
HF	Health Facility
IDDS-C	Individual Dietary Diversity Score-Children
IDDS-W	Individual Dietary Diversity Score-Women
IEC	Information, Education and Communication
KII	Key Informant Interview
MAD	Minimum Acceptable Diet
MCDP	Most Critical Days Programme
MCDSS	Community Development and Social Services
MLGH	Ministry of Local Government and Housing
MWDSEP	Water Development, Sanitation and Environmental Protection
NGO	Non-Government Organization
NFNC	National Food and Nutrition Commission
ODA	Official Development Assistance
SDGs	Sustainable Development Goals
SIDA	Swedish International Development Agency
SUN	Scaling Up Nutrition
TWG	Technical Working Group
WNCC	Ward Nutrition Coordinating Committee
ZDHS	Zambia Demographic Health Survey
ZNCC	Zonal Nutrition Coordinating Committee

EXECUTIVE SUMMARY

This report presents the findings of an evaluation of the Food and Nutrition Security and Enhanced Resilience (FANSER) project implemented by CARE International in three wards in Katete District of the Eastern province of Zambia. The main objectives of the study were: to describe the nutrition situation among the FANSER target groups in Katete District i.e. assess the IDDS-W, IDDS-C; to assess the nutrition-related behaviours i.e. examine knowledge, attitudes, behaviours and practices related to agriculture, health, nutrition, hygiene and health practices of mothers (15-49 years old) and children (<2 years); and women empowerment; and to document evidence, lessons learned and good practices to inform future nutrition programming. The assessment utilized a mixed methods approach to collect data on project interventions in order to assess the impact of the project.

Using the global Scaling Up Nutrition (SUN) platform, CARE International in Zambia with funding from GIZ under the “One World No Hunger” Initiative of the German Government, implemented various nutrition interventions to building capacity of staff and community volunteers to promote the production, preparation and consumption of diverse foods in Katete District particularly in Chimtende, Vulamkoko and Chimwa wards. This came from the realization that rural areas are more prone and vulnerable to malnutrition and deficiency diseases. The main goal of the project was to ensure that the food and nutrition security and dietary diversity of women of reproductive age and children under the age of two, in Katete district is improved.

In June 2018, CARE in partnership with the German Development Agency (GIZ) conducted a knowledge, attitudes and practices (KAP) survey. A household survey was used to gather information on knowledge, attitudes and practices towards dietary diversity and other project interventions. To complement the quantitative data, qualitative data was also collected through interviews and group discussions with beneficiaries, volunteers and key informants. A total of 627 FANSER beneficiary women living in the project implementation wards participated in the household survey. Qualitatively, a total of 12 FGDs and 6 Key Informant Interviews were also conducted.

Study findings show that overall, crop diversity has improved. At baseline, the crop diversity was low with households growing between two and three crops (mean= 2.7 \pm 1.0, Md=3, Min=1, Max=6). This survey found that households grew four to five different crops (mean= 4.4 \pm 0.1, Md=4.0, Min=1.0, Max=10). Study findings on knowledge, attitude and practices related to Dietary Diversity Scores for children, show that four different food groups were given to children at endline as compared to 3.5 (\pm 1.3) (Md=4, Min=0, Max=7) at baseline. About 99% of women believed that it was good to feed a child different food groups each day. At endline, the majority of women reported to have consumed foods from a minimum of six or more food groups in the 24 hours preceding the assessment as compared to 4.6 groups at baseline (Mean IDDS-W was 4.7; \pm 1.3; Md=5, Min=0, Max=9).

On knowledge, attitudes and practices relating to Agriculture, findings related to food security indicate that 46.1% of households were food secure, which was an absolute percent change of 22.8 from baseline. Only 10.5% of households were classified as severely food insecure (a 5.5 percent decrease from baseline). There was also a reduction in the percentage of households who were classified as mild insecure, accounting for 35.5% at baseline as compared to 27.6% at endline. Households classified as moderately food insecure reduced from 25% at baseline to 15.8% at endline.

Increasing food availability at household level was one of the primary goals of the project. In an effort to accomplish this goal, households were encouraged to keep small livestock (e.g. poultry, rabbits, goats). Chickens were distributed to 1, 370 selected beneficiaries while 120 beneficiaries received goats. In order to extend the benefits and impact of livestock distribution to other needy beneficiary households the

project utilized the pass-on model, which involves each beneficiary who receives livestock through the project passing on the first female offspring to another needy beneficiary household. By July 2018, 905 beneficiary households were additionally supported with chickens while 83 households benefited from goats through the pass-on scheme within the project.

From project inception, 2,652 households received trainings related to food processing and preservation. Findings show that 92% of households were using a food preservation technique; 97% of households surveyed were using a technique that retain nutrients in preserved foods, with the most common method being sun drying.

On knowledge, attitude and practices related to WASH, it was established that almost all women in the project areas were sensitized on WASH. Sensitization messages were mainly received at health facilities (through nurses) during antenatal visits; other sources were community groups such as those that would meet for a training in cooking demonstrations and food preservation training groups. Similarly, the study established that the most common type of toilet owned by households was a pit latrine without a slab (62%) followed by pit latrines with slab (16%). The majority of households gathered water from a borehole (85%). Communities were aware of the importance of having sanitary facilities and have been informed about the key moments for handwashing. Findings from the assessment show that 100% of respondents believed that it was good to wash hands with soap before feeding a child or touching food as compared to 31% at baseline. And 99% of the respondents felt that it was not difficult to wash their hands with soap before feeding a child or touching food.

In an effort to empower women and vulnerable households, the project procured and distributed a total of 62 Treadle pumps to 24 women vegetable production groups (24 pumps in Chimwa, 16 in Chimtende, and 22 in Vulamkoko wards) and a total of 802 households have so far benefited from the use of the treadle pumps in establishing homestead gardens. The proportion of women owning gardens has increased from 38% at baseline to 53% at endline. Other trainings have been conducted in diverse crop production with the focus on promoting nutrient rich foods such as vegetables, legumes, fruits, and orange sweet potatoes and keeping small livestock.

Overall, the Government of the Republic of Zambia, through the Heads of Government departments that interacted with the project strongly felt that the implementation approach that the FANSER project used i.e. through the existing government system was very helpful to their operations. This system enabled them to jointly plan and implement activities together and every sector knew what the other was doing at any particular given time. This presented a great opportunity for government to work as one unit in fighting malnutrition in the district.

1.0. INTRODUCTION

The levels of malnutrition in Zambia are some of the highest in the world; the 2014 DHS found that 40% of children under the age of five are stunted (low height for age).ⁱⁱⁱ “Childhood stunting is an outcome of maternal undernutrition and inadequate infant and young child feeding (IYCF), a correlate of impaired neurocognitive development, and a risk marker for non-communicable diseases and reduced productivity in later life.”ⁱⁱⁱ

In the past decade momentum around nutrition has been building, globally and within Zambia.^{iv} The increased awareness of and focus on the devastating effects of malnutrition has translated into increased action by the Government of the Republic of Zambia (GRZ).ⁱⁱ While progress on stunting reduction has been made nationally, improvements have not been equitable.^v In Zambia’s Eastern Province, the rates of stunting are even higher than the national average (43.3%); almost half of the children under 5 in Eastern province are being robbed of their future health and well-being.ⁱⁱ

Since February 2016, CARE in partnership with the Zambian government and the German Development Agency (GIZ) has worked to improve nutrition outcomes for young children and women through the Food and Nutrition Security and Enhanced Resilience (FANSER) project in three selected wards in Katete district of the Eastern Province of Zambia. This project provided a minimum pack of cost effective and high-impact interventions to households with children under 2, pregnant and lactating women.

The FANSER Project focused on three intervention areas: diversifying food intake at household level to improve the dietary diversity of pregnant and lactating women (PLW) and young children; capacity building for the government extension system to provide appropriate extension services; and developing and strengthening multi-sectoral food and nutrition coordination mechanisms.

1.1. Main Objective

The main objective of the evaluation was to provide the FANSER project with information on the results of project interventions. The study assessed the knowledge, attitudes, and practices surrounding nutrition, childcare, agriculture, and service provision in the project intervention areas.

1.2. Specific Objectives

The specific objectives of the study were the following:

- To describe the nutrition situation among the FANSER target groups in Katete District i.e. assess the IDDS-W and IDDS-C;
- To assess the nutrition-related behaviours i.e. examine knowledge, attitudes, behaviours and practices related to agriculture, health, nutrition, hygiene and health practices of mothers (15-49 years old) and children (<2 years); and women empowerment; and
- To document evidence, lessons learned and good practices to inform future nutrition programming.

2.0. EVALUATION METHODOLOGY

2.1. Study Design

The evaluation employed a mixed methods approach of data collection; using primary and secondary data sources and combining both qualitative and quantitative data elements. Data collection involved desk reviews of FANSER internal and external relevant documents and collection of primary data. The assessment adopted a cross-sectional pre-post study design. A pre-post study design is an experimental study design where the researcher intervenes at some point throughout the study. It is aimed at measuring the occurrence of an outcome before, and again after a particular intervention has been implemented. In perspective therefore, the FANSER project operated in specific selected wards and communities of Katete district of Eastern province. Interventions undertaken through the FANSER project were non-invasive in nature, and therefore, this assessment likewise involved non-invasive procedures. Methodically, and using the baseline assessment as a reference, the assessment gathered both qualitative and quantitative data elements. Quantitative data were collected through a structured household schedule (questionnaire) while qualitative data were collected through Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs).

2.2. Study Population

The study population included FANSER Project beneficiaries i.e. women aged (15-49 years) with a biological child aged less than two years and were permanent residents in households of Chimtende, Vulamkoko and Chimwa wards of Katete district. The evaluation targeted the mother or guardian to the infant child.

Other target populations for the evaluation were key informants (KIs) such as district nutritionists, district agricultural officers, agricultural extension officers, community volunteers (CHVs), environmental health technologists (EHTs) as well as FANSER project staff. Information collected from these individuals helped in providing data to harness understanding of the project's interventions, participation and effectiveness.

2.3. Sampling frame

The sampling frame was constructed using ward catchment Area population data within Katete districts. In the meantime, three wards Catchment areas with a total project beneficiaries of 2,653 formed the frame for this assessment.

2.4. Sample size and sampling methods

The study used both probability and non-probability sampling methods. Probability sampling was used to select households with women who have a child aged 2 years and below. Non-probability sampling was used to sample stakeholders for KIIs and other women for the focus group discussions.

The study through a semi-structured household questionnaire, conducted interviews with 627 women respondents of reproductive age group and those with children below the age of 2, randomly selected from the project database. Focus Group Discussions (12 FGDs) using a guide, were also conducted with

women, men and women combined for community volunteer groups, respectively and Key Informant Interviews (KIIs) using a KII interview guide.

The Key Informants (KIs) interviewed were purposively drawn from health, agriculture, fisheries and livestock, water and sanitation sectors. Among the KIs interviewed were: the District Commissioner, District nutritionist, district agricultural officers, environmental health technologists (EHTs), agricultural extension officers and health centre in charges. A total of 6 KIs were interviewed of whom 2 were female and 4 were male. These interviews aimed at helping to gauge the involvement of other sectors in fighting malnutrition in the district.

This Knowledge, Attitudes and Practice evaluation surveyed selected segments of the population and collected quantitative and qualitative data on selected project interventions including agriculture, feeding infants, feeding young children, nutrition of women, hygiene and sanitation, food security, women’s economic empowerment and service provision.

Table 1: Sample Size Calculation

Name of Ward	Number of Project Participants	Proportion of total project participants	Total sample size updated
Chimtende	1,346	0.51	320
Vulamkoko	812	0.31	194
Chimwa	464	0.18	113
Total	2,622	1.0	627

The survey was conducted in three wards of Katete District: Chimtende, Vulamkoko, and Chimwa where the FANSER project was implemented. Sample size was calculated using the probability proportional to size (PPS) method, refer to Table 1.

2.5. Analysis and Documentation Process

All data collected from secondary (document reviews) and primary sources such as household survey, FGDs and KIIs were compiled appropriately. Quantitative data (entered at data collection stage using the ODK Android Platform) was transferred to Excel; after thorough cleaning and programming, it was then transferred again to SPSS software for analysis. Descriptive statistics were produced from structured interviews. Data collected through FGDs and KIIs was analyzed by theme assignments. Verbatim from FGDs and KIIs were also incorporated into the evaluation report to contextualize quantitative findings.

2.6. Ethics Considerations

Training: The Research Team at CARE International recruited local Research Assistants with experience in data collection. However, a five days training was conducted for the field team and included: a session on research ethics, identifying and selecting potential respondents, obtaining informed and ongoing consent for household interviews, ensuring privacy and protection of identity of interviewees and avoiding negative blow back to interviewees. In addition, RAs were educated on ensuring that interviews were conducted in a safe and secure environment, i.e. ensuring physical safety of interviewees and FGD participants as well as data safety.

Participant’s information: A comprehensive participant’s information sheet was clearly read to all potential participants informing them about all facets of the study including risks and benefits. Participants were informed about the objectives of the evaluation and reasons for their selection to participate in the

study. Potential participants were made aware of the voluntary nature of taking part in the evaluation and that refusal did not warrant any penalty. Potential participants were informed about confidentiality of data and non-collection of identifiers such as names, addresses, etc. The evaluation did not offer any finances or materials to participants for taking part in the assessment other than refreshments for the FGD participants.

Consent and assent: Consent to participate in the study was sought from all potential participants individually after they had understood all elements of the study. For women below the age of 18, consent was sought from guardians/parents before assent was sought from them.

Data storage: All data collected using tablets were submitted and stored with limited access only to the Research Team at CARE International. The data will not be accessed by anyone unless with permission from CARE International.

FGD Moderation: Moderators of FGDs were trained and required to inform all participants about the confidential nature of the discussion with emphasis not to be tempted to divulge information generated from these discussions.

3.0. STUDY RESULTS

3.1. CHARACTERISTICS OF WOMEN WITH CHILDREN <2YEARS

3.1.1. Socio-demographic Information

The mean age of participants in the survey was 32 years old. Most respondents at endline were married monogamously (71.1%) as compared to the baseline results that showed 74%. The large majority of households were male-headed, 85% at endline as compared to 80.6% at baseline. About 74% of women who participated on this study have attended school as compared to 71% at baseline. Of these women, 17.2% at endline reported to have completed secondary education as compared to 11.5% at baseline as depicted in table 2.

Table 2: Percent distribution of women by demographic and social characteristics

Socio-economic Characteristics	Results	
	Baseline % (n=200)	Endline % (n=627)
Marital status		
Married (monogamous)	74.0	71.1
Married (polygamous)	7.0	7.3
Divorced or separated	8.5	7.0
Widowed	1.5	1.3
Single (Never married)	9.0	13.2
Head of household		
Male-headed household	80.6	85.0
Female-headed household	14.0	15.0
Joint (male and female) headed household	5.4	0.0
Highest level of education attained		
No Education	29.0	26.0
Primary	59.5	54.9
Secondary	11.5	17.2
Higher Education	0.0	1.9
Source of Income		
Sale of own produced crops	95.0	97.3
Sale of own produced animal products	14.0	20.6
Sale of own produced or gathered goods/crafts	0.5	22.6
Casual labor/temporary salary	41.0	22.6
Petty trade/small business	38.0	25.5
Remittances from relatives/husband	0.0	3.2
Income generated by sale or exchange of public transfers (cash for work, food for work, food vouchers, fertilizer or seed vouchers etc.)	0.0	7.3
None (subsistence farming only)	0.0	0.6
Other:	0.0	1.1

The average number of children women had at endline was between three and four (Mean= 3.5 ±2.1, Md=3, Min=0, Max=10) as compared to 5.6 members (±2.2) (Md=5, Min=2, Max=15) at baseline.

Table 2 further shows that the majority of respondents had one to two income sources (80%). Virtually all the respondents sold crops as an income source, 97.3% at endline as compared to 95% at baseline. Sale of own produced or gathered goods/crafts increased from 0.5% at baseline to 22.6% at endline. The percentage of respondents engaging in different income sources at both baseline and endline is as shown in table 2.

3.2. ACCESS TO FOOD AND EXTENSION SERVICES

This section presents findings on agricultural production with regards to households' source of food, ownership of home/kitchen gardens, fruit and vegetable preservation, storage of food crops and visitation by agricultural and livestock/fisheries extension officers.

3.2.1. Agricultural Practices

Agricultural practices focused exclusively on crop yields at a local scale can be transformed to practices focused on sustainable production at a global scale through a better understanding of what soils need beyond specific constituent amendments to effectively carry out their metabolic processes. However, this wasn't the focus of the project. This section gives an overview of the agricultural practices that the project promoted. Virtually all the desired agricultural practices-increased garden ownership, homestead vegetable production, consumption of fruits, vegetables and livestock-improved from baseline, as reflected in Table 3.

The only exception is the practices around fruits; the access to fruits decreased marginally (95 to 93%). The percentages of households reporting that consumption was the main use of fruits also decreased (92 to 81 %); this decrease is attributed to the increase in the percentage of households selling and consuming fruits in equal amounts.

Table 3: Agricultural Practice Change

Agricultural Practices	Baseline (%)	June 2018 (%)	Sparklines
Garden Ownership	38	53	
Households that do <i>not</i> grow vegetable	66	2	
Consumptions is the main use of vegetables	16	62	
Access to Fruits	95	93	
Consumption is the main use of fruits	92	81	
Both consumption and sale of fruits in (approx.) equal amounts	4	18	
Households that keep livestock	58	87	
Consumption is the main use of Livestock	22	34	
Both consumption and sale of livestock in (approx.) equal amounts	35	60	

3.2.2. Crop Diversification

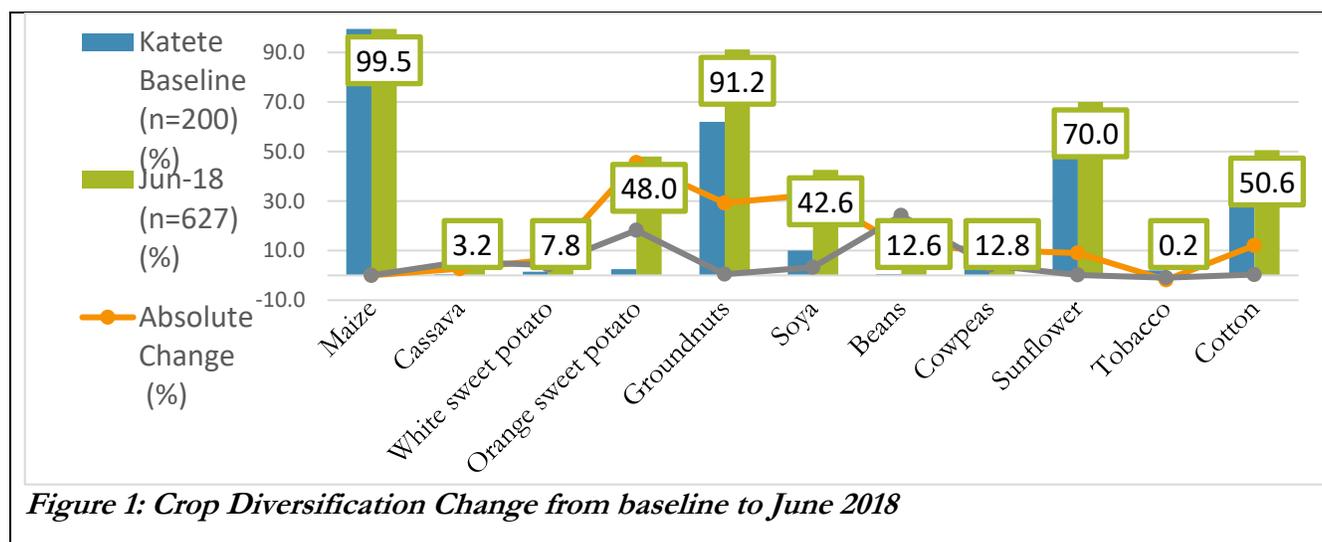
Research in Sub-Saharan Africa has shown that crop diversification provides smallholder farmers with a diversity of diet, improves their income, and nutrition security. Due to increased cases of malnutrition and food insecurity, in the wake of climate change, the FANSER Project in partnership with government of the Republic of Zambia has in the past few years intensified extension efforts for crop diversification.

Table 4: Crop Diversification Relative and Absolute

Crops	Baseline (n=200) (%)	Jun-18 (n=627) (%)	Absolute Change (%)	Relative Change (%)
Maize	99.5	99.5	+0.0	+0.0
Cassava	0.5	3.2	+2.7	+5.4
White sweet potato	1.5	7.8	+6.3	+4.2
<i>Orange sweet potato</i>	2.5	48.0	+45.5	+18.2
<i>Groundnuts</i>	62.0	91.2	+29.2	+0.5
<i>Soya</i>	10.0	42.6	+32.6	+3.3
<i>Beans</i>	0.5	12.6	+12.1	+24.2
<i>Cowpeas</i>	2.5	12.8	+10.3	+4.1
Sunflower	61.0	70.0	+9.0	+0.1
Tobacco	2.0	0.2	-1.84	-0.92
Cotton	38.5	50.6	+12.1	+0.3

The end of project evaluation has shown improvement in overall crop diversity. At baseline, the crop diversity was low with household growing between 2 and 3 crops (mean= 2.7 ±1.0, Md=3, Min=1, Max=6). This survey found that households grew four to five different crops (mean= 4.4 ±0.1, Md=4.0, Min=1.0, Max=10).

The difference from baseline to June 2018 are shown in Table 4 and Figure 1. The nutrient dense crops promoted by the project (highlighted in orange) saw the greatest percentage increase.



3.2.3. Food Preservation

From project inception, 2,652 households received trainings related to food processing and preservation implemented by the project. One of the interventions intended to increase the nutrient rich food consumption was training beneficiaries on food processing and preservation techniques. The survey found that 92% of households were using a food preservation technique. Study results show that 97% of households surveyed were using a technique that retain nutrients in preserved foods, with the most common method being hot water – under 5 seconds. The project provided a total of six solar dryers (two in each intervention ward); these dryers supported 780 households.

One of the beneficiaries from group discussion said, *“I now know how to process vegetables so that they contain all the necessary nutrients; there is a difference between the way we processed vegetables before and now.”* – FGD Beneficiary_02

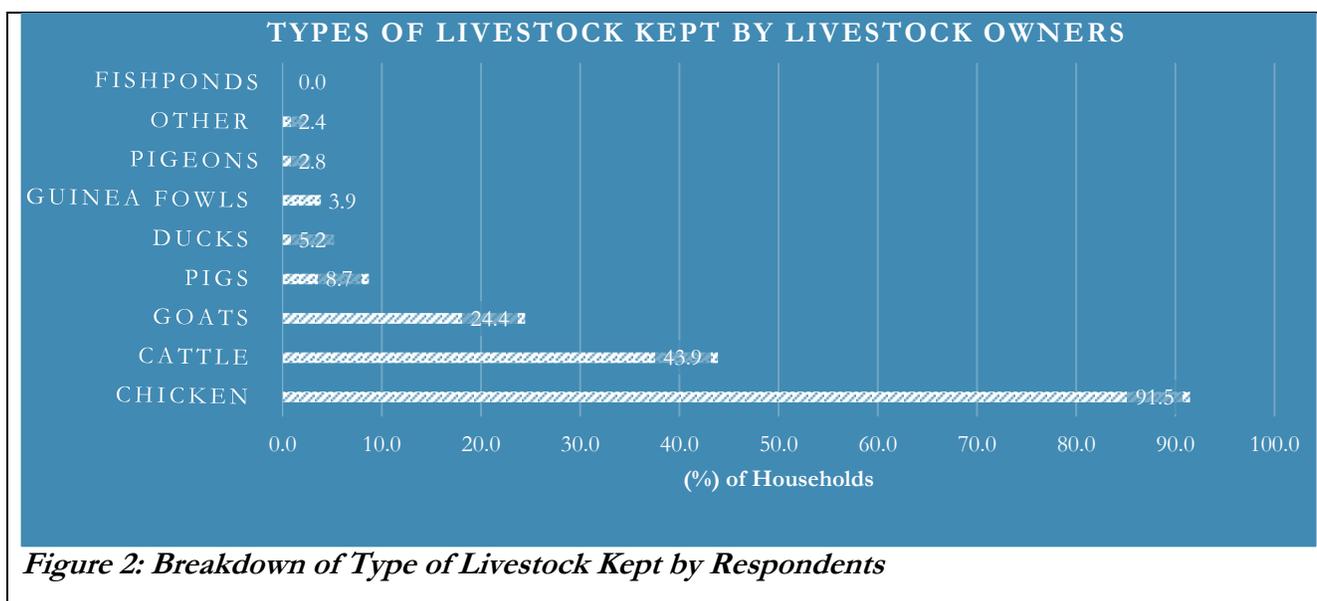
Another study participant from the focus group discussion with Volunteers said, *“Food processing trainings have been rolled out and delivered to the beneficiaries with [an] emphasis on the correct way of processing food.”* – FGD Volunteers_03

3.2.4. Livestock Management

Increasing food availability at household level is one of the primary goals of the project. In an effort to accomplish this goal, households were encouraged to keep small scale livestock (e.g. poultry, rabbits, goats).

At baseline, about 58% of the households in the district were keeping livestock and this has since increased to 87% of households at endline. Chickens were distributed to 1,370 selected beneficiaries. The project utilized the pass-on approach, which involves each beneficiary who receives livestock from the

project passing on the first female offspring to another beneficiary household , 905 beneficiaries received chickens through the pass on scheme.



In addition to chickens, 120 beneficiaries received goats and 83 other beneficiaries received goats on a pass-on scheme within the project. The average number of types of livestock kept by participant households was between 1.8 (± 1.1) (Md=2, Min=1, Max=7). As detailed by Figure 2, chickens (91.5%) followed by cattle (43.9%) were the most common types of livestock kept by respondents. Study findings in figure 2 further show that there has been an increase in the number of households that keep livestock from 58% at baseline to 87% at endline.

3.3. FOOD SECURITY

In order to assess food security of the households, the standardized “Household Food Insecurity Experience Scale” (HFIES), developed by the Food Agricultural Organization was used. The FIES is a measure of access to food at the level of individuals or households. It measures severity of food insecurity based on people’s responses to questions about constraints on their ability to obtain adequate food. This approach to food security measurement represents a significant change compared to traditional ways of assessing it indirectly through determinants such as food availability, or consequences such as poor quality diets, anthropometric failures, and other signs of malnutrition.

Food insecurity can affect the health and well-being of mothers and children in many ways, with potentially negative consequences for the mental and social wellbeing in addition to the physical well-being. FIES is an experience-based food insecurity scale representing a simple, timely and less costly method for measuring the access dimension of food insecurity based on data collected at the household or individual level. It focuses more broadly on reported food-related behaviors associated with the experience of food insecurity due to limited access to food (Ballard et al, 2013). This section highlights findings on food security, with details in terms of household hunger scale, Food Insecurity Experience Scale (FIES) and the Individual Diversity Scores for children and women (IDDS).

3.3.1. Food Insecurity:

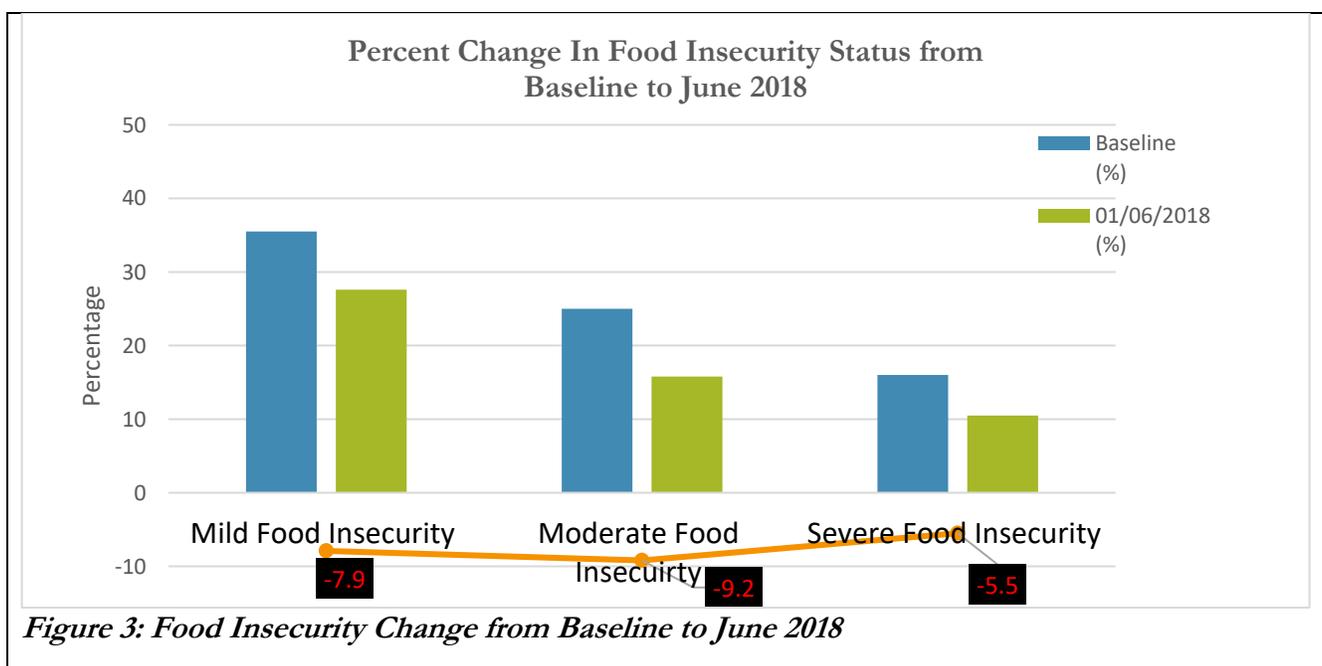
In order to contribute to household food security, the FANSER Project embarked on sensitizations on food processing, preservation and storage and the use of home gardens to grow more food. The FANSER project provided some communities with solar dryers to help with drying of vegetables and fruits, thereby enhancing their capacity for food preservation and storage. Additionally, the FANSER project imparted communities with knowledge on the appropriate methods of food preservation and processing using improved techniques or methods. Therefore, these efforts were aimed at improving not only nutrition but also aspects of the FIES.

The reference period was the previous four weeks (one month). Table 5 shows that almost half of the households surveyed (46.1%) were classified as food secure, which was an absolute percent change of 22.8 from baseline. Only 10.5% of households were classified as severely food insecure (a 5.5 percent decrease from baseline).

Table 5: Change in Households Classified as Food Secure from Baseline to June 2018

Food Security Categorization	Baseline (%)	June-18 (%)	Absolute Change (%)	Relative Change (%)
Food Secure	22.5	46.1	+23.6	+1.0

There was also a reduction in the percentage of households who were classified as mild food insecure, accounting for 35.5% at baseline as compared to 27.6% at endline. Households classified as moderately food insecure reduced from 25% at baseline to 15.8% at endline as depicted in figure 5.



3.3.2. Increased Dietary Diversity

Children: Individual dietary diversity Score (IDDS) is the sum of the number of different foods or food groups consumed by an individual over a specific time period. This indicator is a proxy for quality of diet and is highly correlated with adequate caloric and protein intake, quality of protein consumption, and household income.^{vi}

The mean IDDS for children 6-23 months of age at baseline was 3.5 (± 1.3) (Md=4, Min=0, Max=7) as compared to this survey that reported a mean of 4.5 (± 1.0) (Md=4, Min=1, Max=7) as shown in figure 2. This implies therefore that there was an increase in the number of food groups consume by children at baseline as compared to the endline results, 3.5 and 4.5 groups respectively.

Figure 3 further shows that almost all children consumed grains, roots and tubers accounting for 98% of children at endline as compared to 97% at baseline, legumes and nuts accounted for 91% of children at endline as compared to 72% at baseline, vitamin A-rich fruit and vegetables accounted for 92% of children at endline compared to 67% at baseline, and Other Fruits and Vegetables accounted for 89% of children at endline as compared to 76% at baseline; only 29% of children consumed eggs at endline as compared to 7% at baseline, 33% consumed flesh foods at endline as compared to 18% at baseline and 13% consumed dairy at endline as compared to 8% at baseline.

Figure 4 : Dietary Diversity Score-Children

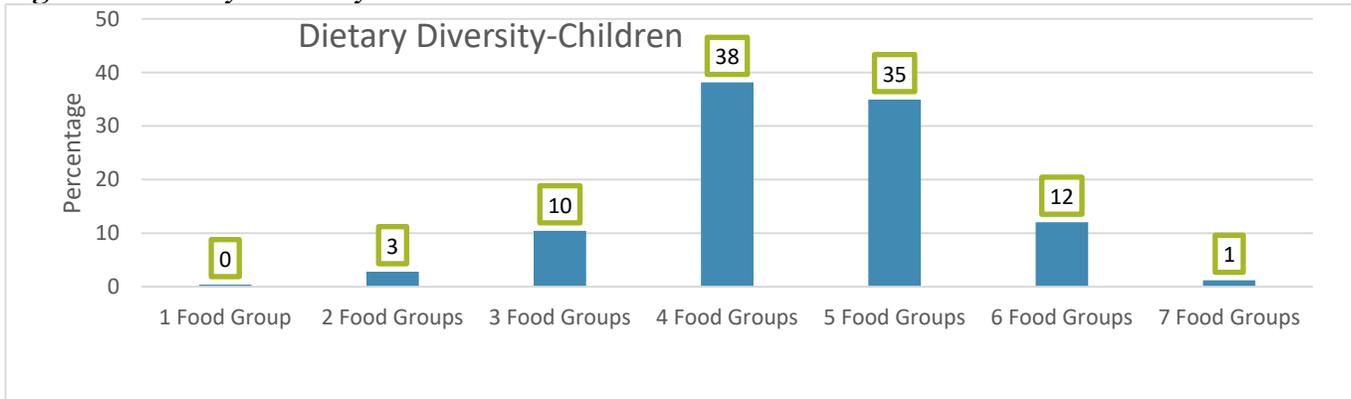
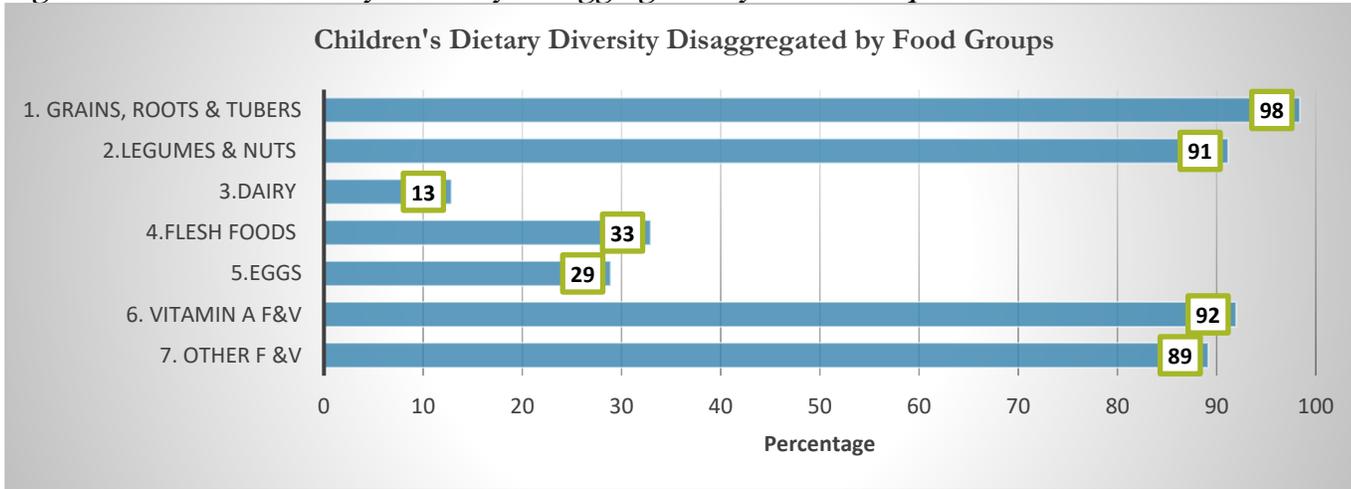


Figure 5: Children's Dietary Diversity Disaggregated by Food Groups



In a FGD for Volunteers in Chimtende ward, a participant said; “.....*food preparation has changed as women have learned [how] to cook different types of food. The food prepared is more nutritious and delicious for both children and elders.*” - FGD_Volunteers_01

A number of factors may have contributed to this change and particularly, the trainings that the project conducted in the communities exposed women and men to best practices around food preparation.

Women: Study results show that the mean IDDS for women at baseline was at 4.6 groups (Mean IDDS-W was 4.7; ± 1.3 ; Md=5, Min=0, Max=9) as compared to 6.0 (± 1.3) (Md=6, Min=2, Max=10) at endline as depicted in figure 4. This implies that the majority of women reported to have consumed foods from a minimum of six or more food groups in the seven 24 hours preceding the assessment as compared to 4.6 reported at baseline, showing a significant change.

Figure 6: Dietary Diversity Breakdown-Women

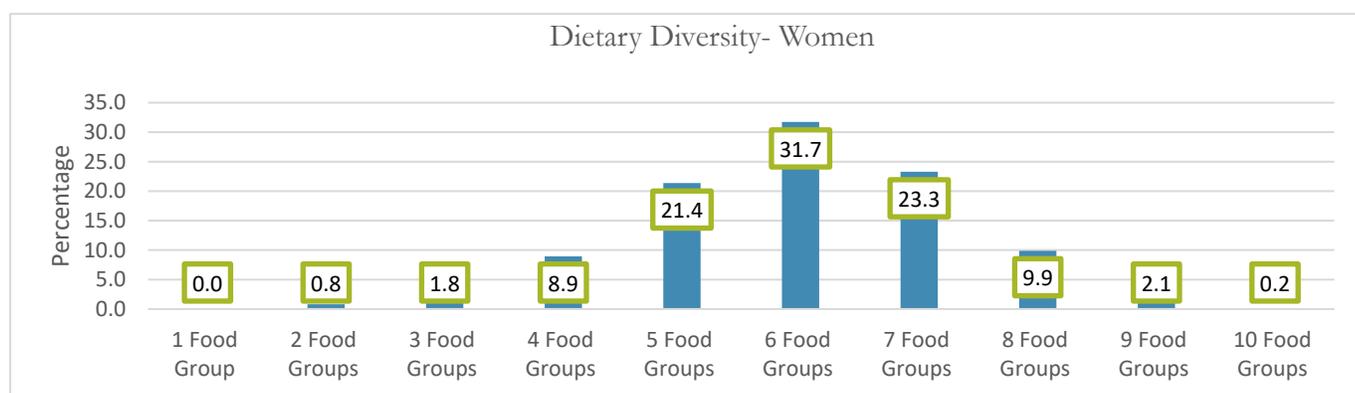


Figure 7: Women's Dietary Diversity Disaggregated by Food Groups

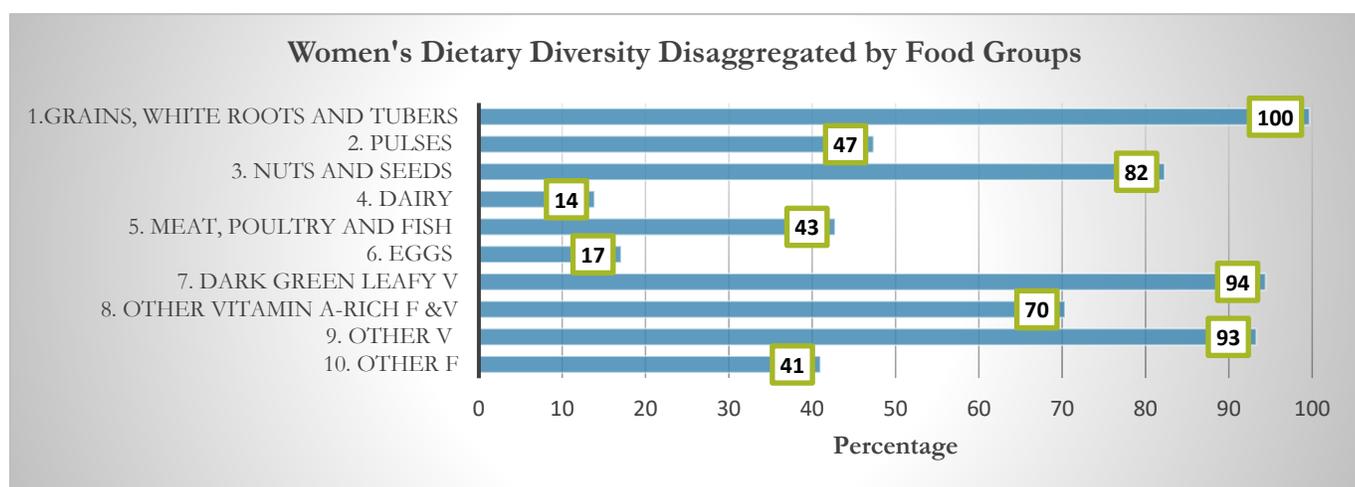


Figure 7 further shows that most women consumed starchy staple foods accounting for 100% at endline as compared to 99.8% at baseline, other vegetables accounted for 93.0% at endline as compared to 98.0% at baseline, and green leafy vegetables accounted for 94% at endline as compared to 84.8% at baseline. Many women consumed vitamin A rich fruits and vegetables accounting for 70% participants as compared

to 14.5% at baseline, and nuts and seeds 82% at endline as compared to 58% at baseline. Almost half of the women consumed pulses (47%), meat, poultry and fish (43%). The food groups that were the least consumed were dairy products at 14% at endline as compared to 3% at baseline and eggs accounting for 17% at endline as compared to 7% at baseline.

A participant in one of the group discussions held in Vulamkoko said, “..... *I now know how to prepare nutritious foods for children and the rest of my family members.*” – FGD_Beneficiaries_03.

3.4. INCREASED KNOWLEDGE ON CHILD CARE PRACTICES

Feeding practices play a critical role in child development. Poor feeding practices can adversely impact the health and nutritional status of children, which in turn may deter their mental and physical development. The duration and intensity of breastfeeding also affects a mother’s period of postpartum infertility thereby affecting the length of birth intervals and fertility levels.

A study conducted in Kenya in 2002 showed that Mother's knowledge about child care influences the amount and type of care that is given to children. Time taken to perform various activities was also found to vary with the mother's education level, her occupation, number of children less than five years in the house and the child's age and birth order. Comparatively, children who were malnourished (stunted) had less time devoted to them for breastfeeding, food preparation and feeding. Although mothers were the primary caregivers, the responsibility of care giving was shared with other household members as well as with neighbors. Therefore, this section **seeks to provide** highlights of these aspects as captured through the FANSER Project endline evaluation.

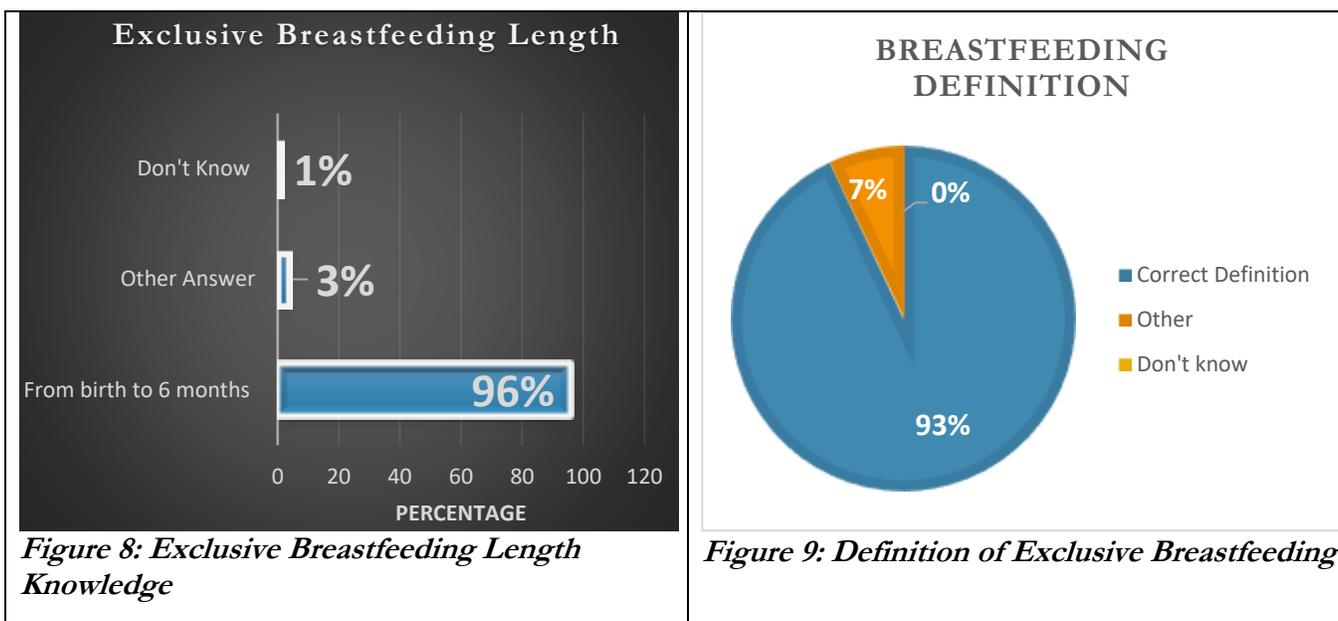
3.4.1. Exclusive Breastfeeding

According to WHO, breastfeeding has many health benefits for both the mother and infant. Breast milk contains all the nutrients an infant needs in the first six months of life. Breastfeeding protects against diarrhoea and common childhood illnesses such as pneumonia, and may also have longer-term health benefits for the mother and child, such as reducing the risk of overweight and obesity in childhood and adolescence.

Exclusive breastfeeding means that the infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines.

One participant in a FGD said, “.....*I have learned so much about exclusive breastfeeding: fathers can also take their children to the clinic to have their weight checked...supporting us women.*” – FGD_Beneficiaries_01.

Another study participant in a group discussion said, “....*before I got involved in this program, I listened to traditional [beliefs] like not breastfeeding a child when they are born because [colostrum] contains blood.*” – FGD_Beneficiaries_03



The trainings given about breastfeeding were transformational, as detailed in the quotes above, in that they specifically challenged social norms and deeply entrenched opinions about gendered care work.

Respondents had a high level of knowledge related to exclusive breastfeeding with 93% of respondents correctly defining exclusive breastfeeding and 96% selecting the correct length of exclusive breastfeeding (0-6 months), as shown in Figure 8 and 9. Respondents also identified an average one to two benefits of exclusive breastfeeding (1.8 ± 1.1) (Md=2, Min=0, Max=4). This study further assessed practice around breastfeeding and results show that 8% of the study participants were breastfeeding and 100% of these confirmed of having breastfed their youngest child the previous 24hours before the assessment as compared to the baseline results that show that breastfeeding rates were above 90%.

3.4.2. Types of complementary foods

Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The transition from exclusive breastfeeding to family foods – referred to as complementary feeding – typically covers the period from 6–24 months of age, even though breastfeeding may continue to two years of age and beyond. This is a critical period of growth during which nutrient deficiencies and illnesses contribute globally to higher rates of undernutrition among children under five years of age (WHO 2018).

Ideally, complementary foods (solid or semisolid foods fed to infants in addition to breast milk) should be started at age 6 months, since at this age, breast milk alone is no longer sufficient to maintain a child’s recommended daily allowances of nutritional requirements to enhance growth. Children are fed small quantities of solid and semisolid foods while continuing to breastfeed up to age 2 or beyond. The amount of food is increased gradually from 6 to 23 months onwards, which is the period of transition to eating regular diet.

Figure 10: shows the percentage of children (aged below 36 months) by types of foods consumed in the day or night preceding the evaluation. Results show that, most of the children consumed foods mostly

made from grains or cereals (98%). Other vegetables, vitamin A rich fruits, nuts and seeds accounted for 92% of children. Other foods included dark green leafy vegetables, flesh foods and dairy.

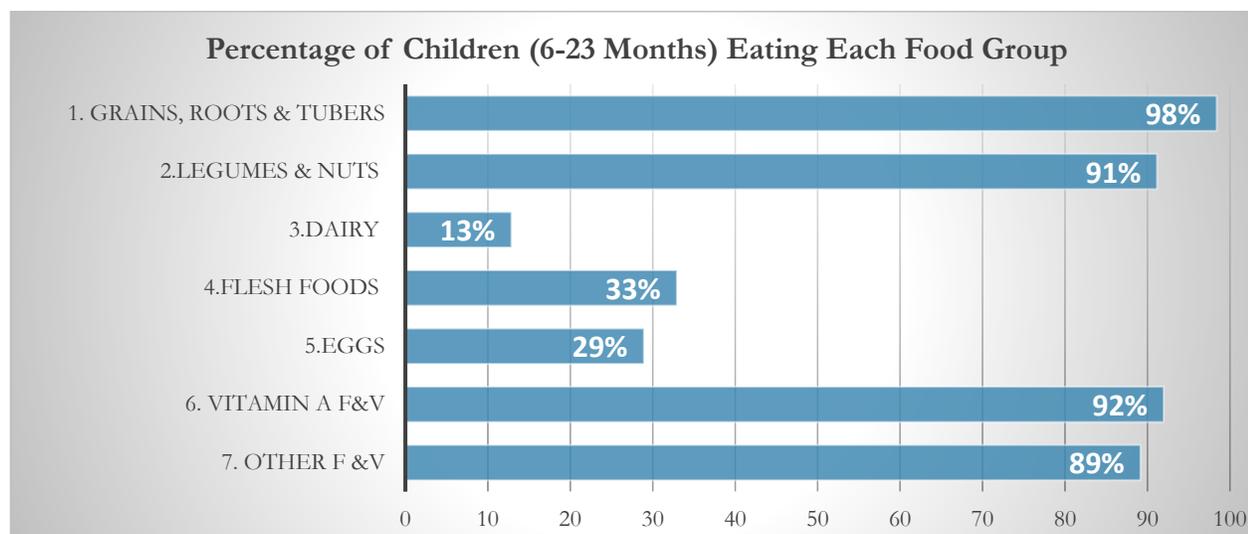


Figure 10: Percentage distribution of children’s complementary feeding

3.5. WATER, SANITATION AND HYGIENE PRACTICES

This section shows findings on women’s knowledge, attitudes, practices and behaviour in relation to water and sanitation. It presents findings on source of water, type of toilet facility available and method of garbage disposal. Communities were aware of the importance of having sanitary facilities and have been informed about the key moments for handwashing. When conducting interviews and discussions, hygiene was a topic that many participants were passionate about.

3.5.1. Source and treatment of drinking water

The majority of households gathered water from a borehole accounting for 85.2% at endline as compared to 82% at baseline. Other sources of water listed during the endline evaluation include: protected well (7.2%), unprotected well (0.2%) and surface water (0.2%).

Respondents were further asked, if they were treating their water in any way to make it safer to drink. Only 24.5% used a method of purifying their drinking water in Katete district at baseline as compared to 83% at endline. However, most households were boiling their water as a method of water purification accounting for 22.4% at baseline as compared to 65.6% at endline.

3.5.2. Type of toilet facility used

The provision of facilities and services that enable safe disposal of human waste (urine and faeces) is of great importance to reduce morbidity and mortality. This evaluation gathered data on types of toilet facilities used. Study findings at baseline showed that the majority of households were using an unimproved sanitation facility (89.8%), which was defined as the absence of a flush or pour-flush toilet to piped sewer system or septic tank, flush to pit latrine; ventilated improved pit latrine; pit latrine with slab; and composting toilet. The endline assessment results show that there has been change in this area,

showing a significant reduction in the number of households using an unimproved sanitation facility accounting for 15% of project beneficiaries. The most common type of toilet at endline was a pit latrine without a slab (62%) followed by pit latrines with slab (16%). This is as a result of the sensitization campaign that the project promoted through health facilities and community volunteers.

KI stated that, “.....we have been conducting awareness and sensitization sessions for beneficiaries through drama on hygiene, teaching them on how to construct simple sanitation facilities such as tippy-taps, pit latrines, and rubbish pits. We also taught them on the dangers of open defecation to human life.” - (FGD_Project Team)”

A FGD participant said, “Hygiene for women has improved [they now have] toilets, rubbish pits, and dish stands outside in their households.” – FGD_Volunteers_03)”

Another FGD participant among volunteer discussions said, “the trainings have also encouraged [community members] in that they now know a lot of things about hygiene and how to dispose of waste within the households.” - (FGD_Volunteers_02)”

The project beneficiary added that, “Most of us never knew how to use toilets, we would use the bush mostly and this changed, as most of us do have toilets in our villages.” - (FGD Beneficiaries_01)”

3.5.3. Handwashing at critical times

It was established that almost all women in the project areas were sensitized on WASH. Sensitization messages were mainly received at health facilities (through nurses) during antenatal visits; other sources were community groups such as those that would meet for a training in cooking demonstrations and food preservation training groups.

The use of tippy taps promoted during the FANSER project implementation were essential to the increase in the proportion of women who washed hands after using the toilet. KIs commended the FANSER project for the promotion of tippy taps in the community which subsequently have generally improved community sanitation.

Communities were aware of the importance of having sanitary facilities and have been informed about the key moments for handwashing. Findings from the assessment show that 100% of respondents believed that it was good to wash hands with soap before feeding a child or touching food as compared to 31% at baseline. And 99% of the respondents felt that it was not difficult to wash their hands with soap before feeding a child or touching food as shown in table 7.

3.5.4. Diarrhoea Prevalence

High prevalence of diarrhoea as well as frequent diarrhoea episodes can be an indicator for poor sanitation and hygiene environment (UNICEF 1998)^{vii}. Information on child health included the occurrence of diarrhoea within the last two weeks prior to the survey and the frequency of diarrhoea episodes of the child since birth until the day of the interview. Diarrhoea was determined as perceived by the study participant, or as three or more watery stools per day, or blood in stool. The prevalence of diarrhoea within the two weeks prior to the survey was 59.5% at baseline and this significantly reduced to 16.1% at

endline. This can be attributed to the sensitization sessions that project beneficiaries have been exposed to and as promoted by the FANSER project in the area.

3.5.5. General Attitude Shifts

Attitudes are general evaluations of objects, ideas, and people one encounters throughout one’s life. Attitudes are important because they can guide thought, behavior, and feelings. Attitude change occurs anytime an attitude is modified. Thus, change occurs when a person goes from being positive to negative, from slightly positive to very positive, or from having no attitude to having one. Because of the functional value of attitudes, the processes that change them have been a major focus throughout the history of social sciences.

Study findings on attitude shifts show that 99% of women believed that it was good to feed a child different food groups each day as depicted in table 6. On knowledge, attitude and practices related to WASH, it was established that almost all women in the project areas were sensitized on WASH. Communities were aware of the importance of having sanitary facilities and have been informed about the key moments for handwashing. Findings from the assessment show that 98 percent of respondents felt that it was serious if a child gets sick from unwashed hands. 100% of respondents believed that it was good to wash hands before feeding a child. And 99% of the respondents felt that it was not difficult to wash their hands before feeding a child. This is as shown in the table 4 showing WASH attitudes.

Table 6: Children’s Diets Attitudes

Children’s Diets Attitudes	
Confidence in Food Preparation	95% of respondents felt confident in their ability to prepare food for their child
Dietary Diversity for Child	99% of respondents believed that it was good to feed child different food groups each day
Dietary Diversity Difficulty	91% of respondents felt that giving different food types to their child each day was not difficult
Feeding Frequency Benefits	97% of respondents felt that it was good to feed their children multiple times a day

Table 7: WASH Attitudes

WASH Attitudes	
Perceived Severity WASH	98% of respondents felt that it was serious if a child gets sick from unwashed hands
Perceived Benefits WASH	100% of respondents believed that it was good to wash your hands before feeding a child
Perceived Barriers WASH	99% of respondents felt that it was not difficult to wash their hands before feeding a child
Confidence Towards WASH	96% of respondents felt confident in their ability to wash their hands properly

3.6. WOMEN EMPOWERMENT

Different trainings were rolled out in these areas. From the agricultural sector, extension officers from ministry of agriculture and ministry of livestock and fisheries were trained in crop and livestock production and management.

A total of 2,478 women who were trained and supported with livestock i.e. chickens and goats for purposes of improving nutrition in their respective households. An increase in the number of households owning livestock from 58% at baseline to 87% at endline is a clear indication that a number of women project beneficiaries have now been empowered and are able to sell some of the proceeds to raise household income used for various household and nutrition needs. This study has also shown that the number of households confirming of having sold their own produced animal products as a source of income increased from 14% at baseline to 20.6% at endline.

Similarly, the project provided various farming inputs (legumes, vegetables, fruit tree seedlings and OFSP) and livestock (chicken and goats) and implements (treadle pumps and solar dryers) were provided to the selected beneficiaries. For instance, since the inception of the project, a total of 50 women farmers were identified, trained and supported to be Orange Sweet Potato (OFSP) vine multipliers. Of these, 45 women met the requirement to be certified as multipliers of vines for OFSP and were still active by the time the assessment was being conducted. The 45 women who were trained and supported to produce vines for OFSP were enabled to engage in business such as the multiplication and sale of OFSP vines which they sold to other project beneficiaries and the general public to earn extra income.

A project beneficiary said, "I was initially engaged on the FANSER project in 2016 and received various trainings that related to food preparations, livestock maintenance. I was also trained in gardening for crops such as rape, tomatoes, and sweet potatoes..... I got interested in trying the orange sweet potato vine multiplication business. For the first time [the time the first batch], I was able to raise a sum of K2,000 and the second time, I raised K3,000, the money I used to buy a cow, houseware, and kitchen ware. I bought a plough as well. I managed to further buy a 100m by 100m garden at K1,200 because my initial space was not enough. I also managed to purchase 8 pockets of cement and glasses to rehabilitate the house" (Project Beneficiary_01).

To help women establish homestead gardens, a total of 62 Treadle pumps were procured and distributed to 24 women groups (24 pumps in Chimwa, 16 in Chimtende, and 22 in Vulamkoko wards) and a total of 802 households have so far benefited from the use of the treadle pumps. As shown in table 7, the proportion of women owning gardens has increased from 38% at baseline to 53% at endline. Other trainings have been conducted in diverse crop production with the focus of promoting nutrient rich foods such as vegetables, legumes, fruits, and orange sweet potatoes and keeping small livestock.

A project beneficiary stated that, "...because of the FANSER project, hunger levels in homes has reduced significantly. Some of us have bought phones, bicycles and other food staff from the money I raised from the orange flesh sweet potatoes." (Project Beneficiary_05)

3.7. INCREASED CAPACITY OF SERVICE PROVIDERS

One important success factor in ensuring effectiveness and sustainability of project interventions is working through the existing government structures and the application of a multi-sectoral approach due to the multi-faceted causes of malnutrition. In this regard, CARE focused on strengthening the capacity of government extension actors from key sectors such as Agriculture, Fisheries and Livestock, Health, Community Development and Social Welfare and Local Government and Housing and used them as delivery tools/platforms for program interventions.

A KI stated that, *“the FANSER Project has helped us to come up with the District Nutrition Coordinating Committee (DNCC). There has been significant change that has been observed in child feeding among mothers. We have been exposed as a district to new ideas. For instance, we had an exchange visit to Lundaŕi district and we learnt a lot of things there. Not only that, this initiative has also enabled us as Government departments to come together to work. So even when the FANSER project goes, we would take it up and ensure that activities continue.”* (KI2_Katete).

A KI added that, *“the multi-sectoral approach is good because most government institutions are doing nutrition related activities. This approach is solving a lot of problems like duplication of efforts. There is also cohesion among various government departments and NGOs in the district.”* (KI3_Katete)

3.7.1. Training of Extension Staff and Community Volunteers

The project provided training to a total of 207 Volunteers in the three project wards in various thematic areas as shown in table 8. This study established that all Extension officers and volunteers were happy and appreciated the value of refresher trainings they received in enhancing their work. This has significantly improved their knowledge levels in various thematic areas.

Table 8: Training distribution among Community Volunteers

Training area	Number of Volunteers
MoH staff and community volunteers trained on CMIYCN	95
Volunteers trained on promotion of diverse diets, fruit and vegetable production	81
MoFL/MoA volunteers trained on promotion of diverse diets and livestock production	101
Volunteers trained in Monitoring and Evaluation	207
Volunteers trained in WASH	181
Volunteers trained in the 10 Food Groups	181
Volunteers trained in the production and management of OFSP	118
Volunteers trained on the production and management of Legumes	118
Volunteers trained on Food processing	181
Volunteers trained on Cooking Demonstrations	181

A participant in a Volunteer FGD said, *“...we did not know how to process and preserve many local food staffs, so we were taught and we also teach in turn the beneficiaries in the community”* (Volunteer FGD_Chimtende).

Another Volunteer participant added that, “I have learnt a lot on causes of malnutrition and how to prevent such diseases in the community and my household” (Volunteer FGD_Vulamkukoko).

Figure 11 further shows the number of project beneficiaries trained in various thematic areas, which include exclusive breastfeeding, complementary feeding, food processing and preservation, vegetable production and cooking demonstrations. For instance, those trained in food processing and preservation were a total of 2,652. Of these, 1,346 came from Chimtende, 812 from Vulamkoko and 494 from Chimwa wards.

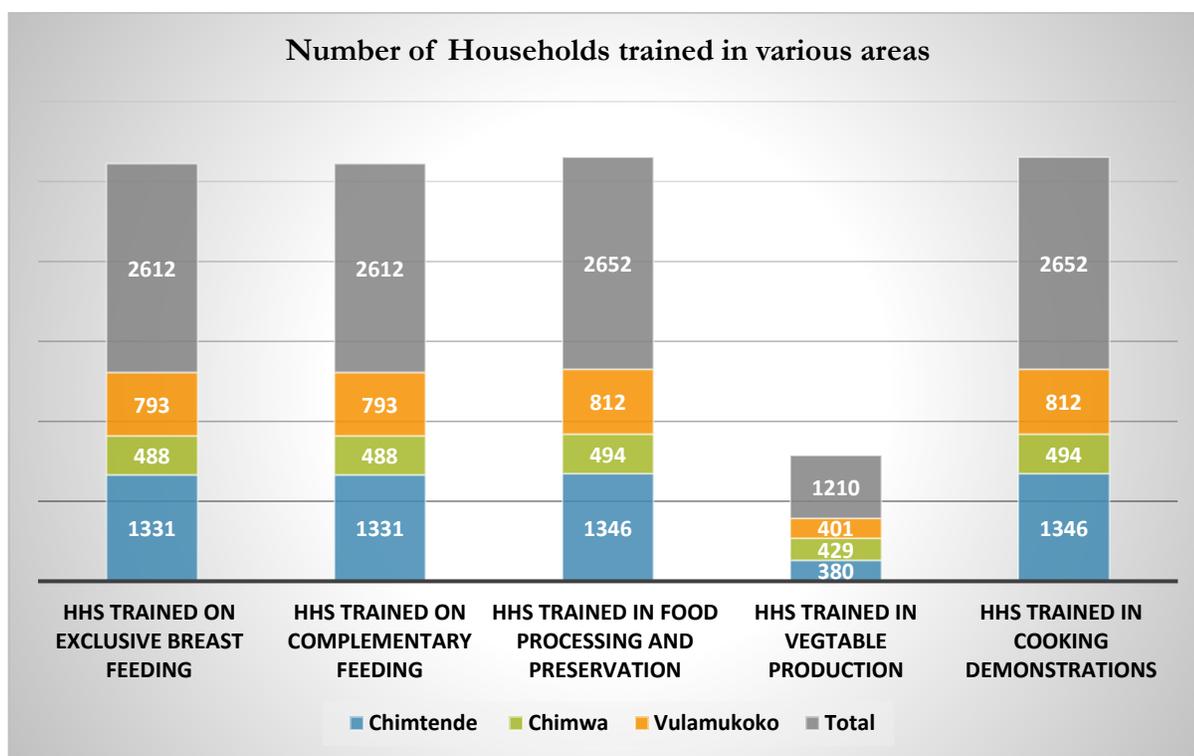


Figure 11: Project Beneficiaries trained in various thematic areas by ward

This was also confirmed by project beneficiaries who agreed with the fact that they were visited by the extension officers and volunteers to support them meet their nutrition needs, this could be in form of provision of knowledge for managing gardens, livestock or in form of food preservation and preparation trainings.

A project beneficiary indicated that, “.....pests and insects affect the growth of vegetables. There were trainings to show beneficiaries a number of problems and solutions to those challenges on how best to manage pesticides. The trainings may have not been so adequate but gave us some level of knowledge on what to do when we are faced by such problems. I would only wish that such trainings can be conducted regularly” (Project Beneficiary_09).

As depicted in figure 12 below, respondents were very satisfied with the service provision, especially with the CARE Staff and Volunteers.

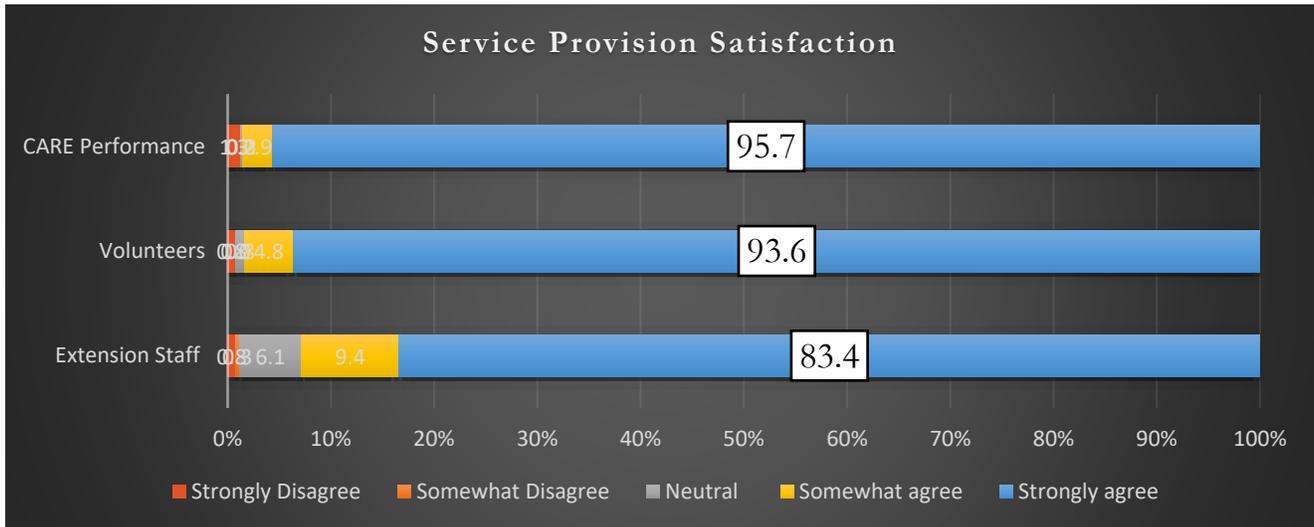


Figure 12: Service Provision Satisfaction

3.8. SUSTAINABILITY OF THE PROJECT INTERVENTIONS

One key aspect of the project involved exploring new ways to promote coordination between officials in the agriculture, health, and community development sectors. Malnutrition is a multidimensional problem with many direct and underlying causes. The project’s efforts to address this, relied in a multi-sectoral approach as increased coordination and alignment between sectors and ministries would be vital for sustained impact on nutrition outcomes.

At inception, the project was able to facilitate for the formulation of district and ward structures so as to enhance coordination mechanisms at all levels and the structures included the District Nutrition Coordinating Committee (DNCC) and Ward Nutrition Coordinating Committees. Various capacity building trainings have been conducted to bring to speed

The Government of the Republic of Zambia, through the Heads of Government departments that interacted with the project strongly felt that the implementation approach that the FANSER project used was very helpful to their operations. This system enabled them to jointly plan together and every sector knew what the other was doing at any particular given time. This presented an opportunity for government to work as one unit in fighting malnutrition in the district.

“The multi-sectoral approach enables us, as Government, to work together to fight malnutrition in the district, and most importantly [this approach] helps us continue with the interventions even if the actual implementers pull out. We would want to have continuity even after the project comes to an end” (The District Commissioner’s Office).

A participant in FGD for DNCC members said, “as NGOs, line ministries, we are all targeting one person. As ministries, we help each other to achieve different objectives. For instance, if one ministry has an activity and they do not have enough resources, we all come on board and try to help out. This enables us to achieve some objectives set as a team”. (DNCC FGD)

Discussions with key informants from the key line ministries show that this approach is working well for the district as it has provided an opportunity for government to fight malnutrition in a coordinated and sustainable manner.

4.0. LESSONS LEARNT ON THE FANSER PROJECT

This section highlights some of the lessons we thought could be shared as a result of the FANSER project. The lessons learnt presented are based on the Research Team's analysis and conclusions on responses from KIIs.

The Project facilitated for the formation of district and community level nutrition coordinating structures that enabled different key players to come on board in devising best strategies to address the malnutrition problem in the district. The project spearheaded the formation of District Nutrition Coordinating Committee and Ward Nutrition Coordinating Committees in the project wards.

The other learnt lesson is around the selection of project beneficiaries. It was established that in some cases some of the project beneficiaries were not vulnerable neither were they marginalized in society. Therefore, in future the project must consider taking keen interest in the selection and recruitment of project beneficiaries so that the interventions are directed to intended beneficiaries.

Additionally, in the design of the project, the focus was on pregnant women and women or households with children aged 2 years and below. However, women with older children to some extent felt to have been discriminated from the project interventions. In some cases, some women may have children above 2 years and yet could be pregnant along the way, those were left out. Therefore, the project should find a best way to continuously register pregnant women during the life of the project. Not only that, the project should also consider engaging grandparents and old women so that they do not feel so left out too. This is so because the old women and grandparents do play a critical role in the lives of their grandchildren and mothers in the community. They must be treated as an integral part of the fight against malnutrition.

The other lessons gathered was around the provision of extension services in the communities. This study established that extension officers were unable to reach out to all communities as planned due to lack of fuel in most cases. The little fuel is provide to them in most cases is not enough to cater for all communities and some of the project beneficiaries end up not being visited. Therefore, the project in future should consider increasing the fuel allocation for extension officers so that they would be able them to visit a good number of communities and promote project interventions.

Similarly, effective monitoring of the FANSER by government staff was problematic. Mostly, lack of adequate transport and insufficient fuel availability inhibited these staff to conduct frequent monitoring visits to all project sites in various project sites. The lesson therefore and for future projects to work effectively in monitoring of project beneficiaries would be to ensure such requirements were readily available. Frequent joint monitoring could have enabled stakeholders to identify areas of strengthening.

Knowledge gained by women as a result of interactions with the FANSER likely enhanced women and child health in the three intervention wards. However, there are still some elements of traditional practices that are hindering people from adopting desired behaviour. For example, some women fear to breastfeed their children in public because they fear their children will get a disease called "chibele". This implies that that continuous sensitization is highly needed in these communities.

5.0. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1. Discussion of findings

The FANSER project focused on three intervention areas which are: diversifying food intake at household level to improve the dietary diversity of pregnant and lactating women and young children; capacity building for the Government extension system to provide appropriate extension services; and developing and strengthening multi-sectoral food and nutrition coordination mechanisms.

The end of project assessment was aimed at providing the FANSER project with information on the results of project interventions. The study assessed the knowledge, attitudes, and practices surrounding nutrition, childcare, agriculture, and service provision in the project intervention areas.

From the community perspective, it can be deduced that there is sufficient knowledge among sampled women on hygiene, water and sanitation, agriculture, health, nutrition and women empowerment. The knowledge, was based on information passed on from health facility personnel, community volunteers and extension officers. For instance issues and information around sanitation and hygiene was shared with women in each and every training meetings they attended. Nonetheless, the study established that access to water points was not a significant problem but the quality of water and functionality of boreholes remained a source of concern in the intervention areas. To encourage women utilize safe water points, more attention needs to be provided in this area by drilling boreholes as closer to households as possible or where need be, improve existing points. Knowledge on garbage disposal was present among women and most households reported using rubbish pits. Similarly, knowledge of hand washing at critical times was present among most women.

Agriculture production is a major economic activity in Zambia more especially in rural areas where about 80 percent of the population are engaged. Findings from the FANSER project endline evaluation have shown that most households (97.3 percent) in project sites produced their own food to sustain their livelihood. The 2015 Living Conditions and Monitoring Survey (LCMS) Report shows that 89.4 percent of households in rural areas engaged in agricultural activities. The 2015 LCMS Report also shows that Eastern Province had the highest number of agricultural households in the tune of 307,640 representing 89.8 percent. Trainings implemented by the FANSER project did not only introduce women to planting new crops thereby introducing diversity, but also in food crop storage, preparation and preservation (fruits and vegetables). Notably also was that the FANSER project led to a paradigm shift in community (women) mindset where household nutrition status preceded the desire to earn income. In the same way, provision of solar dryers used to preserve fruits and vegetables had enhanced nutrients intake in Chimtende, Vulamkoko and Chimwa wards of Katete district.

On the other hand, 96% of women reported that breast milk should be the first food a baby should exclusively receive after birth. To effectively initiate breast feeding, the WHO recommends that the baby be put on the breast within one hour. Emphasizing on the maternal benefits of exclusive breastfeeding among project beneficiaries, helped to encourage mothers to exclusively breastfeed their infants.

Agricultural extension officers played an important role in the implementation of agricultural production and food security interventions of the FANSER project. Some of these roles included; facilitation of trainings of target groups on different topics related to agriculture farming and food crop storage, preparation and preservation. The FANSER project linked households to agricultural extension officers; results show that these officers visited more households. Agriculture extension officers argued that more could have been done, but, the frequency of visits to households relied on availability of resources such as fuel which was erratically provided.

On the other hand, food security is a very important integral part of the growth of any human being. This is so because children from food secure households are less likely to be malnourished compared to those from food insecure households. In food insecure households, an indicator known as the Household Hunger Scale is commonly used to assess hunger partly because of its applicability across cultures (Ballard et al., 2011; Deitchler et al., 2010)^{viii}. Overall, findings have shown that almost half of the households surveyed (46.1%) were classified as food secure, which was an absolute percent change of 22.8 from baseline. Only 10.5% of households were classified as severely food insecure (a 5.5 percent decrease from baseline). This could be attributed to the project interventions implemented in the area. This also entails the commitment towards the application of methods learnt from the FANSER on food preservation and storage.

A very important focus of the FANSER Project was nutrition for women and more also for children. Women consuming foods from five or more food groups have a greater likelihood of meeting their micronutrient needs than women consuming foods from fewer groups. Findings of the evaluation have shown that, most women were meeting their micronutrient needs. Findings show that the mean IDDS at baseline was at 4.6 groups as compared to 6.0 at endline. Similarly, the mean IDDS for children 6-23 months of age at baseline was 3.5 as compared to this survey that reported a mean of 4.5. This implies that the majority of women reported to have consumed foods from a minimum of six or more food groups in the 24 hours preceding the assessment as compared to 4.6 reported at baseline, showing significant change. These findings suggest the need for programs such as the FANSER to focus not only on strengthening the consumption of various locally available food groups.

Another very critical ingredient to nutrition for both women and children is access to clean water and safe sanitation. WASH helps improve health, life expectancy, gender equality, and other important issues of national and international development nature (Kooy, M. and Harris, D. 2012). The FANSER project interventions had a positive effect on most of the people through WASH. In the same way, sanitation, results show more improvements attributable mostly to the FANSER interventions. In the same way, the proportion of households with access to unimproved facilities reduced from 90% at baseline to 15% at endline.

5.1.1. Integrated Approach to Nutrition

The Government of the Republic of Zambia, through the Heads of Government departments that interacted with the project strongly felt that the implementation approach that the FANSER project used was very helpful to their operations. This system enabled them to jointly plan together and every sector knew what the other was doing at any particular given time. This presented an opportunity for government to work as one unit in fighting malnutrition in the district.

In order to enhance food security at community level, the FANSER project engaged the agricultural extension officers to provide support to Community Volunteers and household beneficiaries in vegetable production, storage and preservation. The endline evaluation established that these integrations may have

promoted the dependability of information provided to communities. Agricultural extension officers equally participated in various trainings in their field so as to appreciate and best support the implementation of the FANSER project.

The project engaged Community Volunteers who were already working with Ministry of Health to support the project's interventions in the community. Integrating CVs yielded better outcomes because most of them have training in maternal, child health and nutrition and other aspects at the health facility level. Moreover, CVs were providing the WASH aspect of the trainings in their respective NHCs. Further, the project was implementing activities using the lead/contact farmers in collaboration with Community Volunteers in implementing some aspects of food security as these already attached to the Ministry of Agriculture and community structures.

5.1.2. Sustainability

The design of the FANSER project aimed at ensuring sustainability of health and nutrition initiatives by working through existing structures such as the health facility and neighborhood health committees (NHCs). Volunteers at the health facility composed of the different NHCs in various communities and these were the channels through which project beneficiaries were enrolled.

The FANSER project had quite a good number of volunteers; however, voluntarism in most of such projects has been highly monetarized and it is therefore very possible for these volunteers to shift camp once they perceive no more gains from the FANSER project. It was evident from the discussions held with the Volunteers that they may require some level of motivation even in form of soap or a small amount that will enable them access detergent for their t/shirts or uniforms. Other than that, it was learnt that some of the volunteers did not receive a bicycle because they were already having one from a different program. At this point, this study learnt that volunteers were or are in most cases already engaged in a number of other activities supported by other partners within the same areas. Therefore, for the project to get the best out of this cadre, it would be important to seriously consider the motivation factors to keep these supporting the project.

However, this study established overall that all stakeholders on the project were satisfied with the working partnership. The Government of the Republic of Zambia, through the Heads of Government departments that interacted with the project strongly felt that the implementation approach that the FANSER project used was very helpful to their operations. This system enabled them to jointly plan together and every sector knew what the other was doing at any particular given time. This presented an opportunity for government to work as one unit in fighting malnutrition in the district.

It is given that Government alone cannot manage to answer to the development needs of all its people. That is why it needs other development agencies such as NGOs to supplement its efforts. As such, the project worked closely with Government departments in the district in implementing the project. One initiative the project introduced was the formation of the District Nutrition Coordinating Committee comprising of Government departments and other stakeholders in the nutrition sector. CARE International in Zambia is eager to see this structure continue playing its role of planning, coordinating and monitoring nutrition activities in the district. That is a key sustainability initiative as it is mainly anchored on the already existing development structures in the district.

By bringing different Government departments on board, the project demonstrated the multi-sectoral nature of nutrition. This synergy is important in addressing malnutrition. The convergence of different interventions on the household is something Government can adopt and replicate in its own programmes.

Therefore, this report strongly suggest that the working relationships that have been established through the formulated structures should be maintained and strengthened further so that the common community member in the community will be able to gain maximum benefits and in the long run, be able to bring down the malnutrition levels in the community and the district as a whole.

5.2. Conclusion

Overall, crop diversity has improved. At baseline, the crop diversity was low with household growing between 2 and 3 crops as compared to 4 and 5 different crops at endline. This clearly shows that a number of households did not only learn about crop diversification, but also putting into practice what they learnt. From project inception, 2,652 households received trainings related to food processing and preservation. Findings show that 92% of households were using a food preservation technique; 97% of households surveyed were using a technique that retain nutrients in preserved foods, with the most common method being sun drying.

On knowledge, attitudes and practices relating to Agriculture, findings related to food security indicate that 46.1% of households were food secure, which was an absolute percent change of 22.8 from baseline. Only 10.5% of households were classified as severely food insecure. There was also a reduction in the percentage of households who were classified as mild and moderately food insecure, representing a 25% reduction.

Increasing food availability at household level is one of the primary goals of the project. In an effort to accomplish this goal, households were encouraged to keep small scale livestock (e.g. poultry, rabbits, goats). Chickens were distributed to 1,388 selected beneficiaries; chickens were passed on to 378 second-round of beneficiaries. In addition to chickens, goats were distributed to 120 project beneficiaries and 72 goats were passed-on to other households within the project.

This assessment has established that women in general have WASH, agriculture, maternal and child health and nutrition knowledge. Overall, this survey demonstrates impressive results in all key programmatic areas. The project collaborated and worked with other structures especially government in the fight against malnutrition among children below the age of 2 years. The FANSER project significantly contributed to the achievement of the goal and objectives of the intervention. Evidence highlighted in this report suggests that women's nutritional status has tremendously improved in the intervention areas.

Not only that, the project has shown change in a number of nutrition related behaviors such as hygiene and sanitation. Results have shown an increase in households adopting appropriate water, and sanitation practices. Most importantly, the project contributed intensely to the impact indicator of increasing food availability in households.

5.3. Recommendations

Based on the findings of the evaluation and lessons learnt on this project, the following are the recommendations:

- *Selection of project beneficiaries:* The project is alive to the fact that there is a clearly defined selection criteria for project participants, i.e, households with women that are either pregnant or lactating or with children under the age of 2. However, there is urgent need to closely monitor the selection of project beneficiaries so that they are really the intended vulnerable and marginalized audience in the community. For example, the targeting can be done in collaboration with Ministry of Health to identify malnourished children in the respective project areas so that interventions are specific and targeted.
- *Working with Government:* The project should continue working with Government's District and Community structures to promote sustainability of the project interventions. And Government should consider replicating this practice to other new wards so that the fight against malnutrition can be achieved.
- *Motivation for volunteers:* The project should consider supplying farming inputs to volunteers as they are the agents of change in the community and most people look up to them to learn what should be done. Additionally, Volunteer incentivisation needs to be prioritized; provision of bicycles to all volunteers should be considered by the project.
- *Working with Local Leadership:* Because local leaders enjoy a high level of legitimacy among their people, the project should strengthen the engagement of traditional leaders in awareness raising, monitoring and compliance so as to help address and maintain better nutrition practices among targeted beneficiaries. For example, in the area of water, hygiene and sanitation, local leadership becomes critical in enforcing such practices in their respective territories.
- *Men's Involvement in women empowerment:* There is need to deliberately target men (spouses to women beneficiaries) in order for them to appreciate the value of the project interventions in their respective households. In the empowerment of women, men should not be left behind. The empowerment must be for the household and not only for the woman in that household.
- *Challenging existing cultural norms:* Undesirable cultural practices on maternal and child feeding still exist in some communities and should be discouraged. Interventions, therefore, should aim at challenging such misconceptions by targeting pregnant and lactating women, and other vulnerable women (especially adolescents and the elderly), including men.
- *Scaling up activities:* The project should consider scaling up the implementation of activities to additional wards in Katete district so as to increase its impact.
- *Provision of water:* The Government of Zambia, through the local authority in Katete should consider improving the provision of water in the project intervention areas. In some places, boreholes do exist, but are in deplorable state. The local authority may not necessarily drill new boreholes, but they may consider rehabilitating already existing water points so that communities do have access to clean water.

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