Baseline Survey for Child Nutrition Improvement project through Nutrition Sensitive Agriculture-Phase 2 (KOICA II).

Project Number: R 210389 (2018-2020)

Final Report

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This baseline report was produced at the request of World Vision Rwanda. The author's views expressed in this report do not necessarily reflect the views of WVR.

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Abbreviations & Acronyms

BCC	Behaviour Change Communication
CBEHPP	Community-Based Environmental Health Promotion Program
CBO	Community Based Organisation
CHC	Community Health Club
CHWs	Community Health Workers
DME	Design Monitoring and Evaluation
ECOS	Educational Consulting Success
FBOs	Faith based organisations
FFS	Farmer Field School
FGD	Focus Group Discussion
FP	Family Planning
GBV	Gender Based Violence
GI	Group Interview
GoR	Government of Rwanda
HC	Health Centre
HFIAS	Household Food Insecurity Access Scale
HH	Household
ICT	Information Communication Technology
KIIs	Key Informant Interviews
KOICA	Korea International Cooperation Agency
LW	Lactating Women
MAD	Minimum acceptable diet
MDD	Minimum Dietary Diversity
MEL	Monitoring, Evaluation and Learning
MMF	Minimum Meal Frequency
MoH	Ministry of Health
MUAC	Middle Up Arm Circumferences
NISR	National Institute of Statistics of Rwanda
OCA	Organisation Capacity Assessment
PD/H	Positive Deviance Hearth
PDD	Program Design Document
PLW	Pregnant and lactating women
PPS	Probability Proportional to Size
PW	Pregnant Women
RDHS	Rwanda Demographic and Health Survey

SEDO	Social Economic Development Officer
SRS	Simple Random Sampling
TOR	Terms Of Reference
UNICEF	United Nations Children's Fund
UR	University of Rwanda
WASH	Water Sanitation and Hygiene
WV	World Vision
WVK	World Vision Korea
WVR	World Vision Rwanda

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Evaluation team of ECOS Ltd

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EXECUTIVE SUMMARY

The Rwandan Ministry of Health together with its development partners has been putting a lot of effort into finding solutions to health problems through national policies and strategies. It is in this context that the World Vision Rwanda has initiated Rwanda Child Nutrition Improvement Project through Nutrition Sensitive Agriculture-Phase 2, which is a two years and seven months of its implementation from June 2018. In order to identify the benchmarks on which the project interventions will be focusing to contribute to the reduction of chronic under nutrition as well as other issues related to under nutrition, WVR contracted the Educational Consulting Success (ECOS LTD) to carry out the project baseline survey with the purpose of providing the project management team with an information base against which to monitor and assess implementation progress and effectiveness during implementation and after the activity is completed. As presented and discussed in this report, the baseline measured key indicators of the project outcomes: 1) Improved nutrition and health behaviors of pregnant and lactating women (PLW), caregivers and children 6 to 59 months of age, and 2) Improved food and nutrition security at households level through sustainable agriculture. The evaluation was conducted by an independent evaluation team in November 2018. The evaluation team used a mixed data collection method combining documents review, households' survey for PLW and under five children, focus groups discussions, and key informant's interviews.

Key Results

The following are the key findings of the baseline survey of 239 households of pregnant and lactating women and 555 households of children 6-59 months old in the two sectors of the project intervention area, namely Mushubati and Gihango in Rutsiro District:

- It was found that in *KOICA II* interventions area the average family size was 5.1 members in pregnant and lactating women's households and 4.4 in households with children under-five years of age.
- The most common households' assets in Pregnant and Lactating Women's households (n=239) were bed (69.7%) and mobile phone (56.9%). Similarly, in households with children under five years of age (n=555), the most possessed assets were beds (62.2%), tables and chairs (56.8%), mattresses (45.3%) and mobile phones (44.9%). The information and communication technologies sector has been regarded as a key element in Rwanda's development process.
- **Land ownership:** Among all PLW's households (n=218), 72.5% owned a land and 27.5% were landless while in Under-5 children's households (n=548), 80.8% owned a land and 19%, almost 1 person in five were without land.
- **Grains production:** The majority of grains growers in PLW's households (n=120) and in the under-five children's households (n=341), 88.2% and 86.2%, respectively produced less than 70 kilograms in the one-year period preceding the survey.
- **Vegetables production:** It was revealed that heavy leafy green vegetables are the most produced vegetables in terms of number of growers both in PLW's households (n=128) and households with children under-five (n=358), 89.8% and 86%, respectively. This is a good thing as long as they are important source of vitamins and minerals.

- **Fruits production:** All types of fruits taken together, 28 respondents (31.5%) reported having produced 10-29 kg and 20 (22.5%) produced 100 kilograms or more in the PLW's households (n=89), while in the under-five children households (n=234), 31.2% reported having produced 10-29 kg, and 22.2% produced 100 kilograms or more. In both groups, these percentages were greatly influenced by the banana fruit and avocado production.
- **Livestock ownership**: Overall, the research showed that for both PLW's households (n=218) and under-five children's households (n=548) less than 30% owned any type of livestock. These figures are critically low, although it is a fact that animals such as chicken, rabbits are affordable for poor families and can boost the nutritional status of family members besides of being source of income.
- **Access to agriculture information/services:** Apart from kitchen gardening on which 66.3% of PLW's households (n=172) and 72.8% of under-five children's households (n=530) received either information or services, very few households received information and services on other topics of interest. Households' members received information/services on agriculture, mainly from the governmental structures.
- **Households income:** Within the year before the survey, 67.9 % and 69.1% of PLW's households (n=218) and under-five children's households (n=548) gained 100,000 FRW or less, respectively. Considering the month preceding the survey, 64.5% of PLW's households and 81.3% of under-five children's households gained 10,000 FRW or less. In both groups, 5% of households did not achieve any income within the month. It was also found that most of the households, 65.6% and 66.2% in PLW's households and under-five children's households, respectively, were not able to make income from selling agriculture products.
- The majority of PLW's households (n=218) and under-five children's households (n=555), 86.7% and 93.4% respectively, experienced stress due to lack of enough food or resources (money) to buy food in the 30 days preceding the survey. Other worries around food security were also expressed at high percentages. Using the Household Food Insecurity Access Scale (HFIAS) score, only 1.3% and 0.4%, of households with PLW and under-five children's households respectively, were food secure. The most commonly used coping strategy was 'Taking an in-kind loan from outside household (e.g. shop/boutique) used by 84.9% and 87.2% in the two respective groups, followed by 'taking low status work out of desperation' used by 74.8% and 77%, and 'taking a cash loan from outside household' used by 59.6 and 55.3%.
- **Women consumed a diet with poor nutritional quality:** Only 37.6% met the minimum dietary diversity (≥ 5 food groups) recommended.
- **Receipt of supplements in women (n=239):.** It was found that 185 of interviewed women (77.4%) have received iron-folic acid supplements during their current or last pregnancy; only 45.9% of mothers had completed two doses of tetanus vaccine and 29.1% had received one dose; only 54.9% had received deworming tablets; only 25 women (10.2%) were given anti-malaria prophylaxis dose, and only 77 (31.4%) were given vitamin A post-partum capsules.
- **Use of mosquito nets in PLW's households:** 198 women (82.7%, n=239) reported having mosquito bed nets in their households that they use while sleeping. Among those having mosquito bed nets (n=198), 191 (96.3%) women reported having slept under a mosquito bed net the night preceding the survey.

- **Women morbidity:** 44.7% (n=239) of women reported having suffered from a severe headache within the 30 day-period preceding the survey while 30.1% have had malaria or nausea. One woman in five (20.5%) expressed having had a productive cough and 14.1% have had watery stools four or more times per day, a sign of diarrhea. The first 6 most prevalent symptoms or illnesses were severe headache (n=108), nausea (n=87), productive cough (n=49), low grad fever (n=37), loose of watery stools for four times or more times per day—diarrhea (n=34) and rapid breathing (n=31), big proportions in the range of 41.7% to 70.6% of patients did not seek for treatment for any symptoms experienced within the 30 days preceding the survey.
- **Caring on the youngest child:** The majority of mothers, 89% (n=210), reported preparing themselves food for their child and 90.5% feed the child themselves.
- **Home visits to households by health workers for messaging**: Out of 172 women who responded to the question, only 19 (11%) reported having been visited in the 30 days preceding the survey. Overall, it was found that home visits by community health workers (CHWs) or health workers or other relevant persons were rare in the intervention area of the project, even if essential topics on nutrition were covered.
- **Sources of drinking water and its treatment**: Overall, 34.4% of PLW's households (n=218) and 33.9% of under-five children's households (n=546) used unimproved sources of drinking water, which are considered unhealthy. In both groups 42.7% of households reported treating drinking water by any method. Boiling is the most common method used as this method was used by 63.9% and 66.9% of households who treat drinking water in the two respective groups.
- Most of the respondents (82.8%) in the under-five children's households (n=528) safely disposed the feces of children.
- **Access to improved toilets facilities:** This was found to be a big issue. Of the households that had a toilet, those with under five children (n=213) and those with PLW (n=536), 83.9% and 82.3% used an unimproved sanitary facility which is a traditional pit latrine (basic latrine), knowing that those traditional pit latrines do not prevent flies and other vectors from entering into the latrine.
- **Hand washing practices were strong:** PLW's households and under-five children's households considered together, 72.4% up to 89.5% washed hands at any critical moment. In a range of 58% up to 75%, the respondents used water and soap at the same time.
- **Access to a separate kitchen and place for keeping livestock:** It was observed that only 53.7% and 47.8% of PLW's households (n=218) and under-five children' households (n=548) had a kitchen separate from the main house. Among households who had livestock in the first group (n=110) and the second group (n=115), 30% and 35.2%, respectively had their livestock kept in the same house where they cook and family members eat and sleep.
- With regard to **early breastfeeding**, 86.1% of the children (n=554) were put to the breast in the first hour after birth.
- **Exclusive breastfeeding** for six months was practiced by 74.7% of the mothers.
- **Child food consumption:** Less children aged 6 to 11 months had consumed food in comparison to children aged 12-23 months. Children aged 12-23 months had consumed meat, as opposed to none of the children between 6 and 11 months. The most frequently food groups

that were consumed by children aged 6-8 months were orange fleshed fruits (mangoes, papayas) and eggs, both food groups at a percentage of 33.3%.

- **Minimum Dietary Diversity (MDD) in children** was low in all age groups: Overall, 19% of children 6-23 months reached the MMD.
- **Minimum Meal Frequency (MMF)** was high in all age groups: The MMF was reached by 88.7% of the children aged 6-23 months.
- **Minimum acceptable diet (MAD)** was low with 19% of the children aged 6-23 months who had reached the MAD.
- Food availability [1]in households were found to be associated with land use (p=0.003), household monthly income and birthfather's occupation (p<0.001).
- **Nutritional status of women using MUAC:** It was found that only 2 pregnant women (1.9%, n=106) had a moderate acute malnutrition while 3 lactating mothers (2.3%, n=133) were in severe acute malnutrition. Overall, the prevalence of moderate acute malnutrition was 0.9% (n=239) and the prevalence of severe acute malnutrition was 1.1%. Only 5 women (2.1%, n= 239) were malnourished.
- **Nutritional status of under-five children**: 2.9% wasted, 13% underweight and 48.1% stunted. Among those stunted, 30.3% were moderately stunted while 17.8% were severely stunted. Stunting increased with the age of the child untill the child is 35 months old, rising from 12.0% among children age 6-8 months to 59.5% among children aged 24-35 months and then declining progressively to become 49.2% among children between 48-59 months of age. Younger children (under 18 months) were less stunted than older ones. Boys were likely to be stunted than girls 50% and 46.1%, respectively.

Conclusion

According to the *KOICA II* baseline findings, insufficient food production and access pose publichealth problems. At least one household in five do not have land (19%-27.5%). The production of grains (86%-88% of HHs produced less than 70 kgs in the year preceding the survey), vegetables and fruits are at their lower levels to satisfy families' foods needs in a one-year period**.** Less than 30% of households owned any type of livestock. Most of the households, 67%-69% gained 100,000 FRW or less within the year before the survey. Also, most of the households (86%-93%) experienced stress of not having enough food due to lack of food or money to buy food in the 30 days preceding the survey. Two in five women (43.2%) had low dietary diversity (≤3 food groups). Dietary Diversity was low, with 19% of the children aged 6 to 23 months reaching the MDD indicator.

[1] Food availability: 'Food availability' was a created variable to get an idea on how households were likely to access food. It combines other variables, namely household production of one or more crops, possession of livestock (one or more) and an income of at least 10,000 Rwandan francs within the month preceding the survey.

Households have received limited services and information on agriculture. Apart from information/services provided on kitchen gardening, other topics were poorly covered and consequently put into practice. Home visits to households by health workers for nutrition messaging were found very limited as only 11%-14% of households reported having been visited in the 30 days preceding the survey.

Maternal supplements during antenatal and postnatal periods are of low coverages particularly for tetanus vaccine (45.9%), deworming (54.9%), malaria prophylaxis (10.2%) and vitamin A post-partum (31.4%). Women do not seek for treatment when sick in the range of 41.7% to 70.6% for any kind of symptoms seen/felt or illness.

A third of the households (34%) used unimproved sources of water, which are considered unhealthy and 57.3% of the households do not treat drinking water to make it safe before drinking it.

Indicators of households' practices on key hygiene, sanitation, and water issues were encouraging in terms of hand washing at critical moments. However, access to improved toilets facilities was an issue since 82%-84% of the households used an unimproved traditional pit latrine which can't prevent flies and other disease vectors from entering into the latrine. Only 48%-54% of the households had a kitchen separate from the main house, this implies that the remaining part (almost 50%) cook inside the house. On another side, 30% of the households had their livestock kept in the same house where they cook and family members eat and sleep, this being a situation of potential transmission of illnesses from animals to human being.

The prevalence of stunting in children under-five in the zone of intervention remains very high, 48%, above the WHO's high severity threshold (30%). In the same way, the prevalence of underweight is also high, 13% and above the WHO's severity threshold (10%). In contrast, the prevalence of wasting in children has drastically dropped down across the time, reaching 2.9% from 7.6% three years ago.

Recommendations

Based on the results from the baseline survey, there are issues including but not limited to the insufficient food production and accessibility, low production of grains, vegetables, and fruits, low income generation, limited number of households possessing the livestock, low dietary diversity for PLW, low Minimum Dietary Diversity for children, limited information and practices on agriculture and Hygiene and sanitation issues, the following recommendations are formulated:

- Inform and train women and their husbands on bio-intensive agriculture techniques (BIATs) supported with substantial and consistent information and skills creation to cope with land scarcity by increasing production per surface unit and put a big emphasis on follow-up to check that the information knowledge influences people's attitudes and behavior for best practices.
- Help and coach people in the zone of intervention, especially households in category 1 and 2 of Ubudehe and those without land to create off-farm jobs.
- Educate the entire community members and encourage the production and consumption of diversified nutritious crops for a better nutrition, especially for under five children, pregnant and lactating women.

- Increase the nutritional content of food items consumed, through nutrition education and increased accessibility to nutrients-rich food, especially vitamin A-, protein- and iron-rich food, by providing families with improved seeds of nutritious crops and small livestock such as poultry and rabbits.
- Encourage and motivate health workers, CHWs and other specialized community volunteers such as agriculture volunteers (farmer promoters) to conduct regular and frequent home visits to coach households on promotional activities.
- Boost WASH practices, motivate the creation of Community Health Clubs (CHC) whose all communities' members will be called upon for membership. The existing national Community-Based Environmental Health Promotion Program (CBEHPP) would be implemented through those communities' clubs, which would help to improve sanitation and hygiene conditions.
- Building capacities of households to install a hand-washing station near the toilet and equip it with soap and clean water.
- Continue to educate the population about crucial hand-washing times and the importance of hand washing at each of these times, and increase their economic capacity to get soap and water.
- Educate communities about the importance of the proper treatment of drinking water.
- Motivate pregnant women to access antenatal-care services including iron-folic acid, vitamin A and deworming tablets intake. This would be boosted through home visits conducted by relevant health officers and CHWs.

I. INTRODUCTION

The Rwanda has made advances in recent years in terms of health care. It is one of the countries that have meaningful achievements of the Millennium Development Goals, and has done particularly well in reducing the number of people living in poverty2. In spite of these positive developments, food insecurity and childhood stunting continue to pose a challenge to many households as the prevalence of chronic malnutrition (stunting) among children between 6-59 months was 34.9 percent globally and remains 'serious' according to the WHO threshold (30-39 percent)3.

It is with that background that the World Vision Rwanda through its project KOICA II intends to contribute to a sustainable health care improvement in Rwanda and, in particular to the reduction of stunting among children under five years of age. The Purpose/Outcome of KOICA II project has two folds; 1) Improved nutrition and health behaviors of PLW, caregivers and children 6 to 59 months of age, and 2) Improved food and nutrition security at HHs level through sustainable agriculture. This will be mirrored as outcomes achieved through contributing to the reduction of all forms of malnutrition in the zone of intervention, including stunting (chronic malnutrition) which is the most critical malnutrition problem in the country. Fighting against stunting goes through PLWs and infant and young child's nutritional conditions improvement, which themselves require improved food availability and accessibility as well as health conditions.

1.1 Childhood Stunting

1.1.1 Overview

Childhood stunting is one of the most significant obstacles to human development. Stunting, or being too short for one's age, is defined as a height for age that is more than two standard deviations below the median height for one's age according to the World Health Organization (WHO) Child Growth Standards[4]. In 2015, 23.2%, or just under one in four, children under the age of 5 years were affected by growth stunting worldwide. Between 1990 and 2015, the global childhood stunting prevalence declined from 39.6% to 23.2%, and the number of children affected fell from 255 million to 156 million[5]. In 2015, just two out of every four stunted children lived in South Asia, and one in three lived in sub-Saharan Africa[6]. However, the number of children with stunted growth in West and Central Africa increased at an alarming rate–from 19.9 million to 28.3 million[7] At present, the prevalence of childhood stunting ranges from 5% to 65% among the less-developed countries[8]

2 World Bank. (2017). Rwanda Economic Update. Sustaining Growth by Building on Emerging Export Opportunities.

3 WFP (World Food Programme). 2018. Comprehensive Food Security and Vulnerability Analysis 2018

[4] World Health Organisation. WHO child growth standards and the identification of severe acute malnutrition in infants and children. A joint statement by the World Health Organization and the United Nations Children's, http://apps.who.int/iris/bitstream/handle/10665/44129/9789241598163_eng.pdf

[5] UNICEF, WHO, World Bank Group, Levels and trends in child malnutrition,2016 (https://data.unicef.org/wp-content/uploads/2016/09/UNICEF-Joint-Malnutrition-brochure.pdf.)

[6] UNICEF, WHO, World Bank Group, Levels and trends in child malnutrition,2016 (https://data.unicef.org/wp-content/uploads/2016/09/UNICEF-Joint-Malnutrition-brochure.pdf.)

[7] World Health Organisation, Global Database on Child Growth and Malnutrition, . 1997, : Geneva.(http://www.who.int/nutrition/databases/childgrowth/en/).

[8] World Health Organisation, Global Database on Child Growth and Malnutrition, . 1997, : Geneva.(http://www.who.int/nutrition/databases/childgrowth/en/).

1.1.2 . Causes of childhood stunting

Factors associated with childhood stunting include poor maternal health and nutrition, inadequate infant and young child feeding practices, and infection during the first 1000 days of life from pregnancy to the child's second birthday. Specifically, the maternal nutritional and health status before, during, and after pregnancy influences the child's early growth and development, beginning in the womb[9] . Other maternal contributors to stunting include short stature, short birth spacing, and adolescent pregnancy (which interferes with nutrient availability to the fetus owing to the competing demands of ongoing maternal growth). Infant and young child feeding practices associated with growth stunting include non-exclusive breastfeeding and complementary feeding that is limited in quantity, quality, and variety. Severe infections during the first 1000 days of life can result in wasting, which has long-term consequences for linear growth. Some subclinical infections, which result from exposure to contaminated environments and poor hygiene, can also lead to stunting, as they lower nutrient absorption and reduce the ability of the gut to function as a barrier against disease-causing organisms[10]. Furthermore, household poverty, caregiver neglect, nonresponsive feeding practices, inadequate child stimulation, and food insecurity can all interact to impede growth and development.

The most recent Comprehensive Food Security and Vulnerability Analysis in Rwanda (2018) has shown that the stunting was associated with the sex of the child, boys being more likely to be stunted than girls. The stunting rate increased when children reached one year of age (within the months following the introduction of complementary feeding). Children achieving the minimum acceptable diet were less likely to be stunted and children who suffered from diarrhea in the two weeks before the survey were also more likely to be stunted. Educated women had fewer stunted children and children in food secure and wealthier households were less likely to be malnourished. Finally, the stunting was associated with the family size as households with three or more children under 5 were more prone to have stunted children.

Stunting has long-term effects on individuals and societies. Stunting before the age of 2 years can predict poor cognitive and educational outcomes in later childhood and adolescence[11] and has economic consequences at the individual, household, and community levels[12]

1.1.3 Childhood stunting in Rwanda

The prevalence of chronic malnutrition or stunting among children under the age of 5 years remains persistently high in Rwanda. According to the Rwandan Demographic and Health Survey (RDHS, 2014–2015), stunting, which results in delayed growth, affected 38% of children under the age of 5 years, a prevalence comparable with those revealed by the Comprehensive Food Security and Vulnerability

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[9] World Health Organisation, Global Database on Child Growth and Malnutrition, . 1997, : Geneva.(http://www.who.int/nutrition/databases/childgrowth/en/).

[10] Prendergast AJ, Rukobo S, Chasekwa B, Mutasa K, Ntozini R, Mbuya MNN et al. Stunting is characterized by chronic inflammation in Zimbabwean infants. PLoS One. 2014;9(2):e86928. doi:10.1371/journal.pone.0086928)

[11] Prendergast AJ, Rukobo S, Chasekwa B, Mutasa K, Ntozini R, Mbuya MNN et al. Stunting is characterized by chronic inflammation in Zimbabwean infants. PLoS One. 2014;9(2):e86928. doi:10.1371/journal.pone.0086928)

[12] (Prendergast AJ, Rukobo S, Chasekwa B, Mutasa K, Ntozini R, Mbuya MNN et al. Stunting is characterized by chronic inflammation in Zimbabwean infants. PLoS One. 2014;9(2):e86928. doi:10.1371/journal.pone.0086928).

Analysis in 2015 and 2018, 36.7% and 34.9%, respectively. According to the RDHS 2014-15,, 45.8% of children under five years of age were stunted in Rutsiro District which Gihango and Mushubati, the intervention sectors of the project are part of[13]. The prevalence of stunting has increased so far in the district to become 54% in 2018, raising the district at the first position among the most affected districts in Rwanda[14].

1.1.4. KOICA II project overview

Malnutrition and food security have been highlighted in the Economic Development and Poverty Reduction Strategy II as foundational issue that need coordinated, strengthened, and scaled-up community-based nutrition programs and information campaigns across the country.
It is against the above reality and in partnership with the Rwandan Government that the Korea International Cooperation Agency (KOICA) and World Vision Korea supported World Vision Rwanda to implement ***The Child Nutrition Improvement Project through Nutrition Sensitive Agriculture-Phase 2*** named "**KOICA II**". It is one of the World Vision's Projects operating under Tunga Cluster in Western Region. It is located in Gihango and Mushubati Administrative Sectors of Rutsiro District, Western Province of Rwanda. The project was designed to contribute to improvement in nutrition and health status of children and families in Rutsiro and Rwamagana district by 2020. KOICA II project will focus on community-level service delivery interventions targeting women of reproductive age and children aged under 5 years, especially in the first 1000 days of life.

Strategically, KOICA II project seeks to reinforce the Rwandan government's nutrition and health efforts to accelerate progress toward the national goal of eliminating malnutrition. The Purpose/Outcome of KOICA has two folds; 1) Improved nutrition and health behaviors of PLWs, caregivers and children 6 to 59 months of age and 2) Improved food and nutrition security at HHs level through sustainable agriculture. To achieve these purposes, the project will conduct outputs related to below intermediate outcomes:

i. Increased nutrition and health knowledge and healthy behaviors of PLWs and caregivers through community-based nutrition interventions (PD/Hearth);
ii. Improved awareness of PLWs, caregivers, and government officials on the nutrition and health through advocacy activities;
iii. Improved access to nutrition and health services;
iv. Increased food production and capacity building at household level;
v. Improved dietary diversity in households with children 6 to 59 months of age and PLWs.

1.2 Baseline purpose and objectives

The goal of this baseline Survey is to obtain better understanding of nutrition and economic situation of the project target groups and to collect the baseline data for each of the two outcomes, which will provide the basis for progress monitoring. Specific objectives of the survey were:

- To develop the tools based on indicators for the Baseline Survey, fully reflecting the nutrition and economic status and conditions in project target groups;

[13] National Institute of Statistics of Rwanda (NISR) [Rwanda], Ministry of Health (MOH) [Rwanda]. Rwanda Demographic and Health Survey 2014-15. Rockville, Maryland, USA; 2015)
[14] World Food Program (WFP). 2018. *Comprehensive Food Security and Vulnerability Analysis 2018.*

- To develop complete survey methodologies including field-tested questionnaires for the defined indicators;
- To collect data for the defined indicators under project goal and outcomes;
- To perform an in-depth analysis of data to set the baseline under each outcome and output indicators;
- To organize a validation workshop;
- To draw specific actionable and practical recommendations children good nutrition and health.

This current baseline had four objectives as follows:

1. To assess the undernutrition status (stunting, wasting, and underweight) among children 6 - 59 months of age
2. To assess the infant and young child feeding practices (breastfeeding, minimum dietary diversity, minimum meal frequency, etc.) among children under children 6 - 24 months of age
3. To examine health seeking behaviors (hand washing practices, health center utilization, etc.) of mothers with children 6 - 59 months of age
4. To assess the antennal care practices during pregnancy (TT injection, Iron Folate tablets, extra meals taken, Antenatal checks, place of delivery, food received disaggregated by gender, who distributed food) among pregnant and lactating women (defined as women breastfeeding an infant under 6 months of age)

II SURVEY METHODOLOGY

2.1. Survey design and sampling

For this KOICA II baseline survey, multistage sampling techniques were used and referred to the sampling frameworks where the sampling was carried out in two stages using smaller and smaller sampling units at each stage. In a two-stage sampling design, a sample of primary units was selected and then a sample of secondary units was selected too within each primary unit. We have defined primary units as number of PW, LW and children between 6-59 months at the sector level (Mushubati and Gihango), secondary units as number of PW, LW and children between 6-59 months at the level of cell in the two sectors.

The first step involved the selection of villages (clusters) considered as primary units. Out of 71 villages in the project area, 30 villages were randomly selected based on proportional to population size (PPS). The second step was to select randomly households with children 6 to 59 months of age within the selected clusters. The households were selected from the Ubudehe wealth ranking list of category 1 and 2. The sample of 30 clusters multiply by 18 or 19 households culminated to a sample size of 550 households with children 6 to 59 months old. Given the smaller number of identified women as pregnant or lactating on the project's lists, compared to the initially targeted number, 264 versus 445, all pregnant and lactating women in the selected 30 clusters were systematically targeted by the survey with the aim of maximizing the coverage.

The sample size for anthropometric measurement was determined using the Open Epi(http://openepi.com/Menu/OE_Menu.htm) or ENA SMART. Therefore, the project expected 548 as sample size for anthropometric measurement with 1.5 design effect, 95% confidence level and 16.5% being the current % of children 6 to 59 months of age in Rwanda, and 5% non-response rate. To get roughly 550 children 6 to 59 months of age, per villages were randomly selected in the selected 30. Sampling subjects were divided into two groups, one of children 6 to 59 months old (n=556) and the other one of all pregnant and lactating women (n=264) in the area.

Table 1. Distribution of cluster sampling of 30 clusters/villages per sector

Sector	Cell	Village	PPS	Sampled Village (n = 30)	Names of sampled Villages
Gihango	Shyembe	6	0.08	3	Shyembe, Karongi and Karambo
	Mataba	6	0.08	3	Butare, Nganzo and Kabeza
	Congo-Nil	5	0.07	2	Nkwiro and Kindoyi
	Bugina	4	0.05	1	Gishushu
	Ruhingo	3	0.04	1	Gasharu
	Teba	5	0.07	2	Gasave and Gateja
	Murambi	5	0.07	2	Muhora and Gatomvu
Sub-Total		**34**	**0.48**	**14**	**-**
Mushubati	Gitwa	11	0.15	5	Mbuga, Kibari, Mugote, Gashinge and Rwintore

Sector	Cell	Village	PPS	Sampled Village (n = 30)	Names of sampled Villages
	Cyarusera	6	0.08	2	Kunini and Cyahafi
	Bumba	7	0.10	3	Bityo, Karambi and Rugote
	Mageragere	6	0.08	3	Murambi Nyarusange and Rarankuba
	Sure	7	0.10	3	Kivumu, kanyinya and Kabuga
Sub-Total		**37**	**0.52**	**16**	**-**

2.2 Desk review

A desk review was conducted with the prime objective of putting lighter on the baseline survey in general and of identifying and defining key indicators/parameters. It involved a critical and contextual review of relevant secondary data on the project. The research team has conducted a documentary review on existing sources including but not limited to project proposal, baseline and end line reports for KOICA I, Rwanda Demographic and Health Survey 2014-15, Rutsiro District Development Plan (2-13-2018), KOICA II Monthly Monitoring and PD/Heart database tool among others.

2.3 Survey instruments

The tools used for the survey were adapted based on the main project outcomes. These are (1) Improved nutrition and health behaviors of PLWs, caregivers and children 6 to 59 months of age, and (2) Improved food and nutrition security at HHs level through sustainable agriculture. After the adaptation, translation (English and Kinyarwanda versions), and validation with the client survey team, the tools were pre tested and adjusted according to the lessons learned and feedback resulting from the pilot exercise in Rutsiro district. Qualitative tools were also developed and targeted the FGDs for PW, LW, fathers of under five children and for the selected KIIs in Mushubati and Gihango sectors.

2.4. Training of enumerators

Sixteen enumerators were recruited for the baseline survey. During recruitment, priority was given to individuals with experience in conducting surveys and with the capacity to correctly take anthropometric measurements. The survey team went through two days training on 29-30th September 2018 and the refresher training that took place on 3rd to 4th November 2018. During the training, the enumerators discussed various topics including the project background, survey instruments, digital data collection by using tablets, survey ethics and child protection policy. The team of enumerators got opportunity to make practical session on how to take anthropometric measurements.

2.5 Pre-testing tools

The theoretical training was followed by practical field pre-testing of the survey questionnaires from 12 respondents before the actual survey. The pre-testing exercise was conducted in Gihango and Mushubati HHs on 5th November 2018. Working in pairs, the enumerators have pre-tested the questionnaires and taken anthropometric measurements. The team of enumerators and supervisors pre-tested these tools in villages which were not part of the sampling frame. Subsequently, adjustments were made to the tools accordingly.

2.6 Household survey data collection

The field data collection was done in the period of 6th to 16th November 2018. In partnership with local government leaders, Health Centre's leaders, and community health workers, the enumerators have met the respondents at HH level (door to door) for quantitative data collection. Data were instantaneously filled in the digital interview-guide questionnaires. A daily debriefing with surveyors was done by team leaders together with supervisors, and after the data were daily sent to a central server in Kigali.

One person per eligible household was interviewed, PW or LW in the case and information for other household members were recorded. In households with children aged 6-59 months, the interviewee was the mother/caregiver or the head of the household. The inclusion and exclusion criteria for the households visited were respected.

Data on anthropometric measurements were collected using appropriate height boards, weighing scales and Mid-Upper Arm Circumference (MUAC) tapes for pregnant and lactating mothers. The data collection for households' survey were performed by 2 teams made of 6 data enumerators each, and 1 team leader. A field supervision and monitoring mechanism channel has been overseeing all activities and provide technical support as needed. Where the HH had two or more children at home, the questionnaire was administered on only one child per HH. Where some children/mothers or care givers were not being available the day of the visit, the enumerators planned an extra visit to reach them. If not found, enumerators collaborated with CHWs and village leaders to make replacement by respecting the same survey criteria. The following table illustrates the sample allocation per cluster per sector. For HHs survey, the team of enumerators covered a total of 794 forms which is 239 PLWs and 555 U5 children.

2.7 Qualitative data collection

The qualitative data collection aimed at gathering the thoughts, perceptions, opinions, and appreciations of key program stakeholders with the aim of providing baseline information for clarifying some quantitative data and readjustment of the program design and implementation. Qualitative data has information that will support the project team to understand the root causes, beliefs and practices that challenge or enable children and family status. FGD and Interview guide were developed and used respectively for key different groups and key informants considered knowledgeable with project activities scope implementation. During the FGD and KIIs, at least 2-3 interviewers worked together including 1-2 note takers,1 facilitator, and an observer from WVR. In two sectors, 37 PLWs and 18 men in category one or two of Ubudehe participated in separate FGDs as follows: 19 Lactating women (LWs), 18 Pregnant women (PWs) and 18 fathers of under five children. For KIIs and group interviews (GI), the consultants interviewed 28 informants (13 males and 15 females) including but not limited to the WVR project staff, staff of Health Centers (Nutritionists and CHW supervisors), sector social affairs, agronomists, cooperative and church representatives, cell officials, and Community health workers (CHWs).

2.8 Data quality control

For data quality control purposes, the following measures were taken:

- Inception meeting with KOICA Project Manager to discuss and to get a better understanding about the scope of the work;
- Close collaboration and involvement of evaluation team and the supervisory team of WVR in the implementation process including the validation of tools, training, pretest and field survey;
- Recruitment, training and refresher training of skilled data collectors and supervisor;
- Supervision and monitoring of data collection activity;
- Daily debrief and reporting for quick feedback and appropriate measures;
- Data cleaning prior to analysis;
- Use of Excel and SPSS /ENA software for data analysis;

2.9 Ethical considerations

The Baseline survey has taken into consideration Ethical Principles for World Vision Evaluation and Research. The community in Rutsiro district was informed about the baseline activities. WVR field staff facilitated the community entry for the team of consultants and enumerators by sharing key contacts of local leaders and CHWs. The survey team was guided by ethical principles: respect for persons, beneficence and justice. Efforts were made to protect individual autonomy, minimize harm and maximize benefits and equitably distribute risks and benefits by using procedures that are consistent with sound research designs that take these issues into consideration. Before interview, the participants were voluntarily giving the consent and were explained the nature of the research. The anonymity of data is assured through data collection and analysis by not linking collected data with the participant or institutions that gave this data.

2.10. Data management and analysis

The data were collected using online system Survey platform for data-collection (CTO survey). Raw data were transferred from Server to SPSS Inc version 20 for the data cleaning and analysis and ENA for children nutrition status. Two datasets namely PLWs and under five children were created and used in data analysis. The descriptive statistics (frequencies, percentage, cross-tabulation) were performed for key variables (including but not limited to the age, sex, marital status, education). Cross tabulation was generated by considering the main variables of the study (dependent variables) and socio-demographic and socio-economic variables. Descriptive, univariate associations, correlations were performed to show different factors associated or influencing project outcomes. The type of data collected and analyzed is as follows:

For children 6 to 59 months of age:

- Demographic information of household members (age, sex, education);
- Anthropometry for children (weight, height);
- Infant and young child feeding practices (using WHO infant and young child feeding [IYCF] questionnaire)[15];
- Morbidity;
- Household food security (using Household Food Insecurity Access Scale [HFIAS][16]) & coping strategy;
- Socio-economic status (household asset, monthly income, income sources, agriculture income);
- Agriculture practices (types and number of livestock, types and amount of agriculture product);
- Access and utilization of health, agriculture, and nutrition services including antennal and postnatal care;
- Women's minimum dietary diversity (using FAO measurement tool)[17]

For pregnant and lactating women (defined as women breastfeeding an infant under 6 months of age)

- Demographic information of household members (age, sex, education);
- Women's minimum dietary diversity (using FAO measurement tool)[18];

[15] http://apps.who.int/iris/bitstream/handle/10665/44368/9789241599757_eng.pdf?sequence=1
[16] http://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/doc-training/hfias.pdf
[17] http://www.fao.org/3/a-i5486e.pdf
[18] http://www.fao.org/3/a-i5486e.pdf

- MUAC
- Morbidity;
- Household food security (using Household Food Insecurity Access Scale [HFIAS][19]) & coping strategy;
- Socio-economic status (household asset, monthly income, income sources, agriculture income);
- Agriculture practices (types and number of livestock, types and amount of agriculture product);
- Access and utilization of health, agriculture, and nutrition services including antennal and postnatal care.

Data collected from FGD, group interviews (GI) and Key Informants Interviews (KIIs) were thematically analyzed and backed to the quantitative findings. The content analysis has been the main technique for qualitative data analysis. Content analysis consists of looking for themes that emerge from data such as interviews or focus group responses, and organize responses according to the themes. Data were reported into quotes, statements, and paragraphs.

2.11 Survey limitations

During the baseline exercise, the evaluation team observed the following key observations:

- Inability to establish some comparative trends between the findings of KOICA II and the final evaluation of KOICA I due to various factors including the difference in terms of survey tools, methodology used targeted sample size.
- Some respondents at HH levels and KII were not available during the field data collection period. The team of consultants and field enumerators took this into consideration and planned 1-3 extra visits to meet them. Where it didn't work, by respecting the set of survey criteria, in collaboration with CHWs and village leaders in the targeted clusters the enumerators made appropriate replacements.
- There was a limited time for data collection, analysis and report writing to meet the planned deadline. To overcome this, the client analyzed and accepted the timeline extension request as proposed by the consultant.
- The purposive selection of key informants may affect the baseline findings, but the evaluation team tried to ensure that it involved relevant audiences and triangulated data from different sources and category of key informants.
- The evaluation team acknowledged that bias could arise from the quantitative data collection by the respondents in some aspects of the questionnaires. To address this concern, the findings and data analysis are backed by qualitative data and quotes from the respondents.

[19] http://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/doc-training/hfias.pdf

III. SURVEY RESULTS

PART I: PREGNANT AND LACTATING WOMEN SURVEY

III.1.1. Socio-demographic Characteristics

Under this sub-section we have intended to show details on socio-demographic characteristics of the respondents. These include the household population, the marital status of couples and their level of education.

III.1.2. Household population

The table 2 shows the distribution of households' population, consideration made on a number of patterns including family size, number of household members 5 years old or older, pregnancy status or having a 6-month old child or younger. In total 239 pregnant and lactating women (PLW) were surveyed in the two sectors of intervention. It was observed that 111 (46.4%) respondents were living in families with four to six members, while 97 (40.6%) respondents lived in families of three or fewer persons. Fewer respondents, 31 (13.0%) were living in households with seven or more members. Also 163 households (68.2%) had 3 or less members who are 5 years old or older.

In total, 106 women (44.4%) were pregnant while 133 (55.6%) were not, but lactating (having a child 6 months old or younger).

Table 2. Distribution of the Household population (n=239)

Household characteristics		Total	
		n	%
Number of household members	1-3	97	40.6
	4-6	111	46.4
	7+	31	13.0
	Total	239	100.0
Number of household members 5 years old or older	1-3	163	68.2
	4-6	63	26.4
	7+	13	5.4
	Total	239	100.0
Mother is pregnant	No	133	55.6
	Yes	106	44.4
	Total	239	100.0
Mother gave a birth in the last 6 months	No	0	0.0
	Yes	133	100.0
	Total	133	100.0
Average family size			4.4

Household characteristics	Total	
	n	%
Average number of household's members >= 5 years	3.1	

Source : KOICA II Baseline survey primary data, 2018

III.1.3. Women fertility

With this survey, each woman was asked to respond to two questions, one about the number of children born alive of her in her lifetime, and the other one was to state on the number of children born to her and still alive. The table 3 shows that among the 238 women who responded, 93 (39.1%) have had between 2 and 3 children in their lifetime, while 67 (28.2%) have had 1 child, 49 (20.6%) 4-7 children and 3 (1.3%) 8 or more children. A number of 26 mothers did not know to answer to the two questions or decided to not do.

On average, 2.7 children were born alive to one mother in the surveyed households while 2.5 children were still alive per one mother.

Table 3. Women fertility

	Children number group	Nbr of mothers	%
Number of children born alive to the mother in her lifetime (n=238)	1	67	28.2
	2-3	93	39.1
	4-7	49	20.6
	8 or more	3	1.3
	N/A	26	10.9
Number of children born to the mother still alive (n=231)	1	66	27.6
	2-3	92	39.3
	4-7	45	19.2
	8 or more	2	0.85
	N/A	26	12.4
Average number of children born alive to a mother	2.7		
Average number of children born alive to a mother and still alive	2.5		

Source : KOICA II Baseline survey primary data, 2018

III.1.4. Estimated weight of children at birth

Mothers were asked to estimate the weight of their lastborn child. The way to know how the mother valued her lastborn child's weight was to ask each one how she perceived her child's weight at birth comparing it to the ones of other children at birth in her neighborhood. We found that 72.9% (n=210) of the mothers estimated that their lastborn had an average weight at birth, while 41 (19.5%) estimated

their lastborn child at birth much smaller than the average and only 16 (7.6%) estimated their child at birth bigger or much bigger than the average (Figure 1).

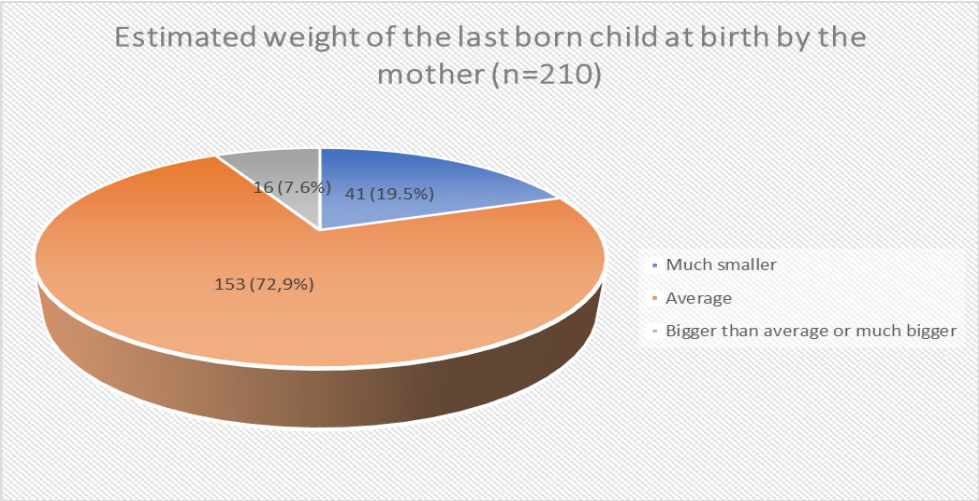


Figure 1. Estimated weight of children at birth by the mothers

Source : KOICA II Baseline survey primary data, 2018

III.1.5. Child care giving in households

One important social characteristic in households is care taking of the youngest child, mainly because the mother can be frequently busy with other duties. Mothers were asked about who else, apart from them, take care of the child. It was revealed that 79.0% of the mothers reported getting help from the child's father and 7.1% from the grandmother while 11.9% do not get help from anybody. A big majority of mothers, 89%, reported preparing themselves food for their child and 90.5% feed the child themselves (Table 4). As reported by the participants to the FGDs and KIIs, it was noted that mothers are the most ones to care of the child since the husbands go for casual works in the area. As discussed, in some cases, you can find elder children taking care of the young ones the time the parents are busy with family activities or other paying works. The role of men on child care was articulated when it comes to the provision of the financial resources to buy what the family needs.

"Mostly the husbands are the ones who decide when it goes to utilization of resources, since they are the ones who generate these resources more than the woman. You know they are the heads!" PW in a FGD in Mushubati sector.

From the discussions in the FGDs and KIIs, women do not have full access to the family property and management and this limiting their ability and willingness to support their respective families.

"Women need more empowerment, so that they don't depend on the husband every time in everything". Confirmed one LW in FGD in Mushubati Sector.

In general, as reported by the respondents, women are taking more responsibilities for food preparation and child care activities except in some circumstances such as illness of the mother where the husband can replace her.

"*At family level when there is a man and woman, the woman is the one who is preparing food".* Said one interviewee in **Gihango S**ector**.**

Table 4. Child care giving in households (n=210)

Characteristics		n	%
Persons in the household who help the mother in taking care of the child	No one	25	11.9
	Father	166	79.0
	Grand mother	15	7.1
	Older child	1	0.5
	Maid/nanny	1	0.5
	Other family member	2	1.0
Person who usually prepare food for the child	Mother	187	89.0
	Father	8	3.8
	Grand mother	1	0.5
	Other family member	1	0.5
	Don't know	13	6.2
Person in the household who usually feeds the child	Mother	190	90.5
	Father	4	1.9
	Grand mother	1	0.5
	Other family member	1	0.5
	Don't know	14	6.7

Source : KOICA II Baseline survey primary data, 2018

III.1.6. Marital status of women

I was found that 64.0% of women were married at the time of the survey while one in five (20.5%) was just cohabitating with her partner. We also saw that 11.7% had never been married whilst 1.7%, 1.3% and 0.8%) were either widowed, separated or divorced, respectively (Table 5).

Table 5. Marital status of pregnant and lactating women (n=239)

Marital status	n	%
Never married	28	11.7
Currently married	153	64.0
Widowed	4	1.7
Divorced	2	0.8
Separated	3	1.3
Cohabitation	49	20.5
Total	239	100.0

Source : KOICA II Baseline survey primary data, 2018

III.1.7. Education level of women and their husbands or partners

Education is often used as a measure of individual empowerment to seek out information, access resources, and make choices in the area of nutrition. In addition, as many nutrition education programs take place in schools, the number of years of schooling an individual completes can determine their level of exposure to nutrition information and possibly their nutrition status.

Findings are that 80.3% of women (n=239) and 76.5% of their husbands or partners (n=204) could read or write in Kinyarwanda. There are more women than men that can read or write in the local language. We also observe that 43.9% of women (n=239) and 25.9%, of their partners (n=239) have achieved 1 to 5 schooling primary years (uncomplete primary), 32.6% of women and 28,9% of men have completed 6 schooling years (primary education). Percentages of 12.1% and 13% of women and men respectively have completed 7-11 years (uncomplete secondary education) while 3.8% of women and 2.5% of men had a secondary education level. Only 0.4% of women had a tertiary education level and no husband/partner has that level of education. 5.9% and 11.3% of women and their partners were illiterate, respectively (Table 6).

Table 6. Education level achieved by women and partners

Characteristics			
Capability to read/write in Kinyarwanda		**n**	**%**
PLW (n=239)	No	47	19.7
	Yes	192	80.3
	don't know	0	0.0
	Total	239	100.0
Husband/partner (n=204)	No	48	23.5
	Yes	156	76.5
	don't know	0	0.0
	Total	204	100.0
Years of schooling completed			
PLW (n=239)	None	14	5.9
	1-5 (uncomplete primary)	105	43.9
	6 (Primary)	78	32.6
	7-11 (Uncomplete Secondary)	29	12.1
	12 (Secondary)	9	3.8
	13-18 (University)	1	0.4
	Don't know	3	1.3
	Total	239	100.0
Husband/Partner (n=239)	None	27	11.3
	1-5 (uncomplete primary)	62	25.9
	6 (Primary)	69	28.9
	7-11 (Uncomplete Secondary)	31	13.0
	12 (Secondary)	6	2.5
	13-18 (University)	0	0.0
	Don't know	44	18.4
	Total	239	100.0

Source : KOICA II Baseline survey primary data, 2018

III.1.8. Occupations of women and husbands or partners

Occupation pattern analysis for women (n=239) and their husbands/partners (n=204) showed that 84.9% of women and 71.1% of their partners are self-employed in agriculture or livestock, (or poultry or aquaculture or fishing), respectively. A percentage of 8.8% of women and 16.2% of their partners had a wage employment as daily workers. 1.3% of women and 2.9% of men were running a business or were small traders. 0.8% of women and 2.9% of men were salaried workers while 3.8% of women and 1.5% of men were not working (Table 7). As reported by the KIIs and participants to the FGDs, the agriculture activities use traditional and archaic farming practices. The respondents expressed the lack of fertilizers so as to have a good production.

"Advocate for us the people in the 1 and 2nd category, so that we are given fertilizers to grow food on the small land we possess". Father of under 5 years' children in Mushubati Sector.

Some men and women get job in tea plantations while other make long distance looking for casual works in construction field labouring.

"Job creation like in VUP is the main solution, so that we have money to purchase the food we don't have. Father in FGD in Mushubati Sector

Table 7. Main occupation of women and husbands or partners

		n	%
PLW **(n=239)**	Not working	9	3.8
	Wage employment (daily worker)	21	8.8
	Business/trader/self-employment	3	1.3
	Salaried worker	2	0.8
	Agriculture or Livestock or Poultry or Aquaculture or Fishing	203	84.9
	Other	1	0.4
	Total	239	100.0
Husband/Partner **(n=204)**	Not working	3	1.5
	Retired	1	0.5
	Wage employment (Daily worker)	33	16.2
	Business/trader/self-employment	6	2.9
	Salaried worker	6	2.9
	Agriculture or Livestock or Poultry or Aquaculture or Fishing	145	71.1
	Other	10	4.9
	Total	204	100.0

Source : KOICA II Baseline survey primary data, 2018

III.1.9 Households economic conditions

With this baseline survey, different aspects of households' conditions were analyzed and these include house status, assets and land ownership and domestic animals rearing.

III.1.9.1 House status and energy-source for cooking

As seen from the table 8 below that among the respondent women (n=218), 81.2% lived in their own house while 10.2% were in a rented house and 7.8% lived for free in a provided house. Of the respondents, 84.9% had the exterior/outer of their houses made of mud or sand as the main material of the wall while 12.8% have their exterior made of cement, and for 0.9% of the houses the exterior was made of bricks with a same percentage of houses that had the exterior made of other cheaper materials; for 0.5% of houses it was made of stones and mud. With regards to the floor inside the house, 81.2% of the houses had the floor made of earth or sand while 11.5 % of the houses had the floor in cement, 1.4% in cow dung, 0.5% in ceramic tiles and 5.5% in other materials not specified during the survey. Regard done to the house's roof, 86.7% of the houses had their roof in tiles, 11.9% in galvanized iron sheets; one house (0.5%) had its roof in cement, one in banana leaves (0.5%) and one (0.5%) in other none specified materials. Most of the houses (61.5%) the respondents lived in were 3 to 4-rooms, 23% of the houses had 5-7 rooms while 15.5% had 1 to 2 rooms. On another vein, 31.2% of the houses had electricity and 96.3% (n=218) of the households reported using firewood as main source of energy for cooking while 3.2% used charcoal and 0.5% other sources.

Table 8. House status and energy-source for cooking (n=218)

		n	%
Living house ownership status	Own	177	81.2
	Rent	22	10.1
	free or provided	17	7.8
	Other	2	0.9
	Total	218	100.0
Main material of the exterior/outer wall	Mud/Sand	185	84.9
	Bricks	2	0.9
	Stone with mud	1	0.5
	Cement	28	12.8
	Other	2	0.9
	Total	218	100.0
Main material of the floor inside the house	Earth/Sand	177	81.2
	Animal dung	3	1.4
	Ceramic tiles	1	0.5
	Cement	25	11.5
	Other	12	5.5
	Total	218	100.0
Main material of the roof	Banana leaf/grass	1	0.5
	Cement	1	0.5
	Galvanized/iron	26	11.9

		n	%
	sheet		
	Tiles	189	86.7
	Other	1	0.5
	Total	218	100.0
Number of rooms in the house	1-2	37	15.5
	3-4	147	61.5
	5-7	55	23.0
	Total	239	100.0
Electricity available in the house	No	148	67.9
	Yes	68	31.2
	Don't know	2	0.9
	Total	218	100.0
Main source of energy for cooking	Firewood	210	96.3
	Charcoal	7	3.2
	Other	1	0.5
	Total	218	100.0

Source : KOICA II Baseline survey primary data, 2018

III.1.9.2. Households assets possession

Household characteristics such as material assets can reflect socioeconomic status and/or purchasing power, which can be important determinants of an individual's ability to access a good wellbeing level, health and nutrition information and services. Respondents were asked if their households possessed the following assets: working radio (wireless), bicycle, refrigerator, television, mobile phones, landline telephone, tape/CD player, bed, mattress, tables and chairs, paraffin lamp, sofa set and sewing machine.

The figure 2 reveals that the majority of respondents reported having beds (69.7%), a mobile phone (56.9%), mattresses (54.6%), and tables and chairs (54.6%) in their households, with low percentages of working radio wireless (22.9%), paraffin lamp (4.6%). Only one household had a television while nobody possessed a refrigerator. Overall, possession of bedding and sitting assets and mobile phone was high, while possession of assets for public communication (radio and television) was low or inexistent in most of the households.

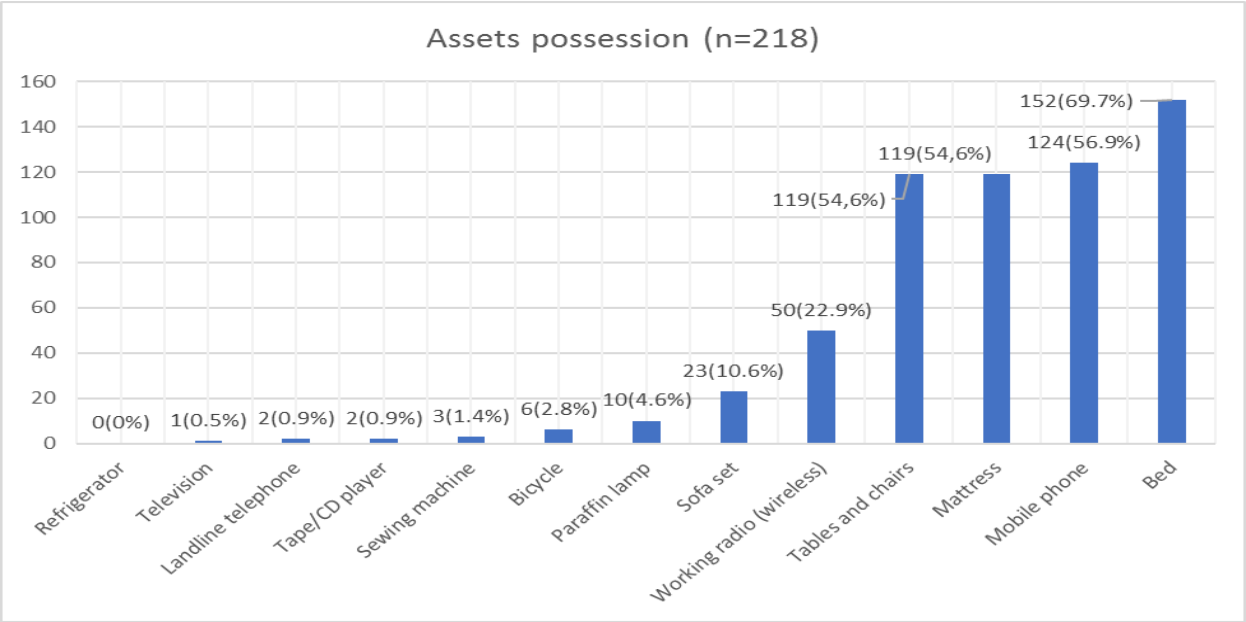


Figure 2. Assets ownership (n=218)

Source : KOICA II Baseline survey primary data, 2018

III.1.9.3. Land possession and use by households

Possessing a land in rural Rwanda embodies likeliness to produce food items and also to get some income. All the project beneficiaries interviewed in this study are in *Ubudehe 1 and 2*, the poorest categories of the national wealth population ranking although land is the main belonging that can boost the wellbeing of families in rural area. The table above shows that among all the respondents (n=218), 158 (72.5%) owned a land and 60 (27.5%) were landless. This seems to explain why 56 (25.7%) used to rent a land for food production. Globally, 183 (83.9%) respondents reported that family members were using the land (owned and rented) to produce food for consumption at the household level. Only 24 (11.0%) respondents said that a certain household member was using lend, either owned or rented, to produce food for sale (Table 9).

According to results from the KIIs and FGDs, the issue of lack or insufficient land coupled with the lack of agriculture inputs and knowledge about modern techniques of farming were mentioned as part of key barriers to fight against malnutrition and to have food at family levels.

"To tell you the truth, we have many problems because of poverty, and malnutrition is difficult to be eradicated! If you have a very small land, and you are renting with difficulties to find money to pay, so what will you feed your children with?" PW in a FGD in Mushubati sector.

Table 9: Land ownership and use (n=218)

Characteristic		**n**	**%**
Any member in the HH owns a land	No	60	27.5
	Yes	158	72.5
	don't know	0	0.0

A member of the HH rents a land	No	161	73.9
	Yes	56	25.7
	don't know	1	0.5
A member of the HH uses land to produce food for the household	No	35	16.1
	Yes	183	83.9
	don't know	0	0.0
A member of the HH uses land to produce food for sale	No	194	89.0
	Yes	24	11.0
	don't know	0	0.0

Source : KOICA II Baseline survey primary data, 2018

III.1.9.4 Grains, fruits and vegetables growing

Grains, vegetables and fruits are good sources of important vitamins and minerals for the human being. It was found that only 50% (n=218) of surveyed households had grown maize within a one-year period preceding the survey, and very few had grown sorghum (7, 3.2%) and wheat (6, 2.8%). With regard to vegetables and fruits, only 126 (57.8%) had grown heavy leafy green vegetables that are good source of important vitamins and minerals while 42(19.3%) and 31 (14.2%) had grown banana fruit and avocados, respectively. Good sources of vitamin A were grown in fewer households: 11 (5%) households grew papaya and carrots and 9 (4.1%) households grew mangoes (Figure 3).

As reported by KIIs and participants to the FGDs for PLW and fathers of under five children, vegetables are more frequent during the rainy season in such a way that even poor people can get them. During the dry season it was noted that it very hard for many households unless they have marshland to grow vegetables. Maize, cassava, Irish potatoes and sweet potatoes among others are found in Mushubati and Gihango sector. Participants reported that the irrigation practice is difficulty because of lack of agriculture equipment (watering can) and water scarcity in the area.

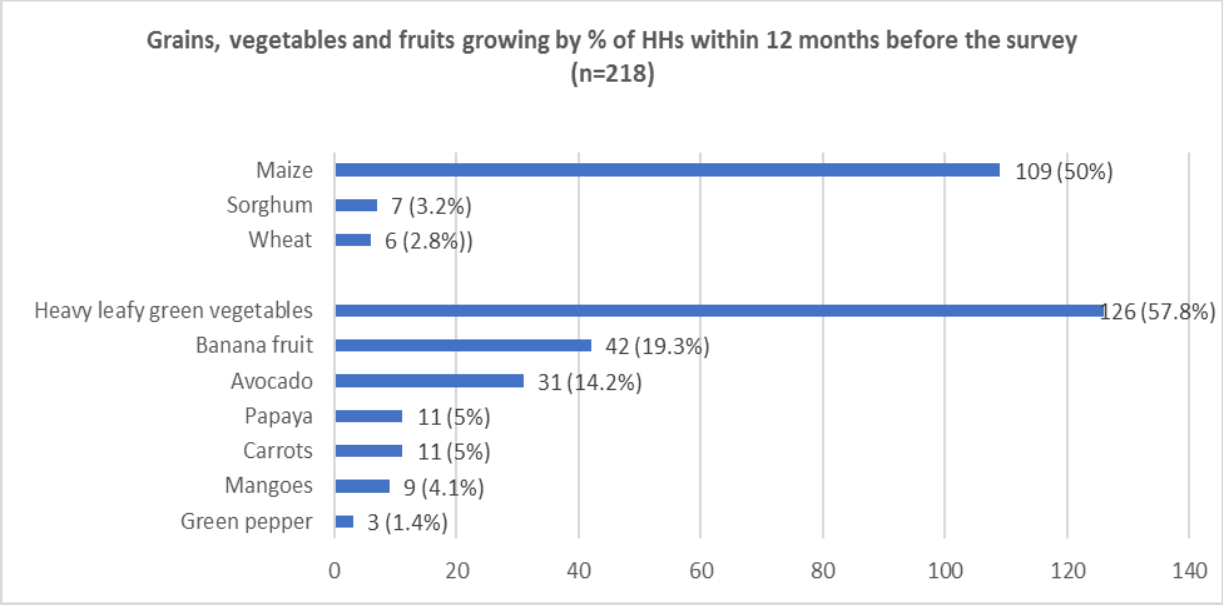


Figure 3. Grains, fruits and vegetables growing (n=218)

Source : KOICA II Baseline survey primary data, 2018

III.1.9.5 Grains, fruits and vegetables production

With regard to the production of grains, it was revealed that 120 households were able to report on quantities of grains they had produced within the 12 months preceding the survey. Among them, 107 (89.2%) had grown maize and very few 7 (5.8%) and 6 (5%) had grown sorghum and wheat, respectively. In terms of quantities of any kind of grain produced, 46 (38.3%) reached a production of 10-29 kilograms and 28 (23.3%) produced 30-49 kilograms and 25 (20.8%) reached 50-69 kilograms. We can also observe that 7 growers (5.8%) reported having produced less than 10 kilograms of any grain and 2 (1.7%) produced 70-99 kilograms while 12 (10%) have achieved a hundred or more kilograms. Overall, it was revealed by summation that a big majority of grains growers, 106 (88.2%) produced less than 70 kilograms of any grain in the one-year period preceding the survey (Table 10).

Table 10. Quantity of grains produced in kilograms by number of growers (n=120)

Quantity in Kg	Maize		Sorghum		Wheat		Total	
	N	%	n	%	N	%	n	%
Less than 10	7	100	0	0	0	0	7	5.8
10-29	38	82.6	4	8.7	4	8.7	46	38.3
30-49	26	92.9	1	3.6	1	3.6	28	23.3
50-69	22	88	2	8	1	4	25	20.8
70-99	2	100	0	0	0	0	2	1.7
100+	12	100	0	0	0	0	12	10
Total	**107**	**89.2**	**7**	**5.8**	**6**	**5.0**	**120**	**100**

Source : KOICA II Baseline survey primary data, 2018

Regarding the production of vegetables (n=128), it was found that heavy leafy green vegetables are the most produced type of vegetables in terms of number of growers, 115 (89.8%) which is a good thing since they are important source of vitamins and minerals. Growers are less likely to produce other types of vegetables and in the case, only 10 (7.8%) and 3 (2.3%) have produced carrots and green pepper, respectively. Most of the growers, 58 (45.3%) produced 10-29 kilograms of any kind of vegetable and 32 (25%) produced less than 10 kilograms within the12 month-period before the survey (Table 11).

Table 11. Quantity of vegetables produced in kilograms by number of growers (n=128)

Quantity in Kg	Heavy leafy green vegetables		Carrots		Green pepper		Total	
	N	%	n	%	n	%	n	%
Less than 10	28	87.5	2	6.3	2	6.2	32	25
10-29	50	86.2	7	12.1	1	1.7	58	45.3
30-49	12	100	0	0	0	0	12	9.4
50-69	20	95.2	1	4.8	0	0	21	16.4
70-99	3	100	0	0	0	0	3	2.3
100+	2	100	0	0	0	0	2	1.6

Quantity in Kg	Heavy leafy green vegetables		Carrots		Green pepper		Total	
	N	%	n	%	n	%	n	%
Total	**115**	**89.8**	**10**	**7.8**	**3**	**2.3**	**128**	**100**

Source : KOICA II Baseline survey primary data, 2018

Growers who have produced fruits (n=89) within the one-year period preceding the survey produced banana fruits, 39 (3.8%), followed by avocados, 29 (32.6%). Vitamin A-rich fruits were produced by fewer growers since 10 (11.2%) produced papaya, 9 (10.1%) produced mangoes and only 2 (2.2%) produced passion fruit. All types of fruits taken together, 28 respondents (31.5%) reported having produced 10-29 kg and 20 (22.5%) produced 100 kilograms or more, these biggest percentages being greatly influenced by the banana fruit and avocado production as shown above. Of the fruits producers, 10 respondents (11.2%) reported having produced less than 10 kilograms during the period (Table 12).

Table 12. Quantity of fruits produced in kilograms by number of growers (n=89)

Quantity in Kg	Banana fruit		Avocado		Papaya		Mangoes		Maracuja (passion fruit)		Total	
	n	%	n	%	n	%	n	%	N	%	n	%
Less than 10	1	10	2	20	3	30	3	30	1	10	10	11.2
10-29	9	32.1	10	35.7	6	21.4	2	7.1	1	10	28	31.5
30-49	7	46.7	7	46.7	0	0	1	6.7	0	0	15	16.9
50-69	8	66.7	2	16.7	0	0	2	16.7	0	0	12	13.5
70-99	4	100	0	0	0	0	0	0	0	0	4	4.5
100+	10	50	8	40	1	5	1	5	0	0	20	22.5
Total	**39**	**43.8**	**29**	**32.6**	**10**	**11.2**	**9**	**10.1**	**2**	**2.2**	**89**	**100**

Source : KOICA II Baseline survey primary data, 2018

III.19.6 Livestock possession by households

The study revealed that among households (n=218), 59 (27.1%) had at least one dairy cow while 38 (17.4%) and 37 (17%) had at least one goat or one chicken, respectively. Smaller numbers of households owned pigs12 (5.5%), rabbits 10 (4.6%), beehives 3(1.4%) or sheep 2(0.9%). Overall, the research shows that less than 30% of household owned any type of livestock, and with regards to small livestock, figures are critically low although it is a fact that animals such as chicken, rabbits are affordable for poor families and can boost the nutritional status of family's members besides of being source of income (Figure 4).

According to the results from KIIs and FGDs, it was reported that the livestock possession comes from various sources either by GoR programme (Gir'inka), efforts of household or by development partner like WVR which supported some families with livestock such as cows, goats and sheep.

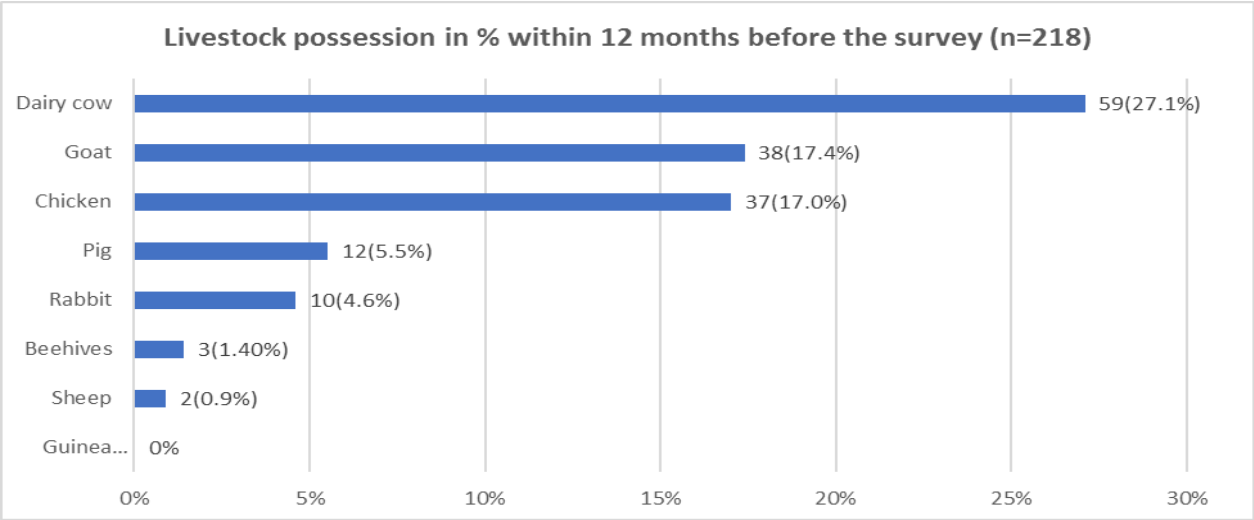


Figure 4. Livestock possession (n=218)
Source : KOICA II Baseline survey primary data, 2018

Of the 59 households owning dairy cows, 51 (86.4%) had only one cow and 7 (11.9%) had 2-3 cows while 1 household (1.7%) owned 8 or more dairy cows. Among the 38 households who owned goats, 23 (60.5%) had only one goat, 13 (34.2%) possessed 2-3 goats and 2 households (5.3%) had 4-7 goats. Out of the 37 households that owned chickens, 17 (45.9%) had 2-3 chickens, 14 (37.8%) had one chicken, 4 (10.8%) had 4-7 chickens and 2 (5.4%) owned 8 or more chickens. Among the 12 households that owned pigs, 10 (83.3%) had only one pig. Among the 10 households that possessed rabbits, 3 (30%) had 1 rabbit, equally for those that had 2-3 rabbits and 2 households (20%) owned 8 or more rabbits. Only 3 households owned beehives of which 2 (66.7%) had one beehive and 1 (33.7%) possessed 4-7 beehives. No household owned a guinea fowl.

Overall and apart from chicken where the bigger number of household possessed 2-3 animals, for any other type of livestock the majority of households owned only one animal or beehive (Table 13).

Table 13. Number of livestock possessed by type of livestock

Livestock	Category number of livestock	n	%
Number of dairy cows (n=59)	1	51	86.4
	2-3	7	11.9
	4-7	0	0.0
	8 or more	1	1.7
	Total	59	
Number of goats (n=38)	1	23	60.5
	2-3	13	34.2
	4-7	2	5.3
	8 or more	0	0.0
	Total	38	
Number of chickens (n=37)	1	14	37.8
	2-3	17	45.9

Livestock	Category number of livestock	n	%
	4-7	4	10.8
	8 or more	2	5.4
	Total	37	
Number of pigs (n=12)	1	10	83.3
	2-3	2	16.7
	4-7	0	0.0
	8 or more	0	0.0
	Total	12	
Number of rabbits (n=10)	1	3	30.0
	2-3	3	30.0
	4-7	2	20.0
	8 or more	2	20.0
	Total	10	
Number of Beehives (n=3)	1	2	66.7
	2-3	0	0.0
	4-7	1	33.3
	8 or more	0	0.0
	Total	3	
Number of sheep (n=2)	1	2	100.0
	2-3	0	0.0
	4-7	0	0.0
	8 or more	0	0.0
	Total	2	
Number of guinea fowl n=0)	1	0	0.0
	2-3	0	0.0
	4-7	0	0.0
	8 or more	0	0.0
	Total	0	

Source : KOICA II Baseline survey primary data, 2018

III.1.9.7. Household income

Wealth, level of income, and purchasing power can influence an individual's access to wellbeing, information, and good nutrition and in this context, a good income gives stability to the household members. As a measure of socioeconomic status, respondents were asked to estimate the level of their total income within the 12-month period preceding the survey, their total income from selling agriculture products within the period as well as the total income during the month before the survey. Among the households who responded to the question (n=218), 28.9% gained in total 50,001-100,000 FRW and 27.1% gained 100,001-300,000 FRW. Very few households, say 3.7% gained 300,001-500,000 FRW and 1.4% gained above 500,000 FRW. Most of the households, 65.6%, were not able to make income from selling agriculture products. this seems to support the assumption that they only produced for household consumption, although smaller numbers of respondents came up with some income from selling agriculture products: 17,9% gained 10,000 FRW or less, 17.8% gained between 10,001 and 30,000 FRW and 4,6% between 30,001 and 50,000 FRW. During the month preceding the survey, 27.9% of the

households gained only between 5,001 and 10,000 FRW and 20.6% gained 10,000-30,000. Few households gained above 30,000 FRW since 5.9% gained 30,001-50,000 FRW and only 3.6% gained more than 50,000 FRW. One household in twenty (5%) did not achieve any income during the month (Figure 5).

In brief and by summation of percentages in Figure 5, it was revealed that 67.9 % of households gained 100,000 FRW or less within the year before the survey. Considering the month preceding the survey, 64.5% of households gained 10,000 FRW or less and 5% of households did not achieve any income within the month. It was also found that most of the households, 65.6%, were not able to make income from selling agriculture products. Overall, it seems that surveyed households rather produce for direct consumption and are less business-oriented, probably because they are not able to be so.

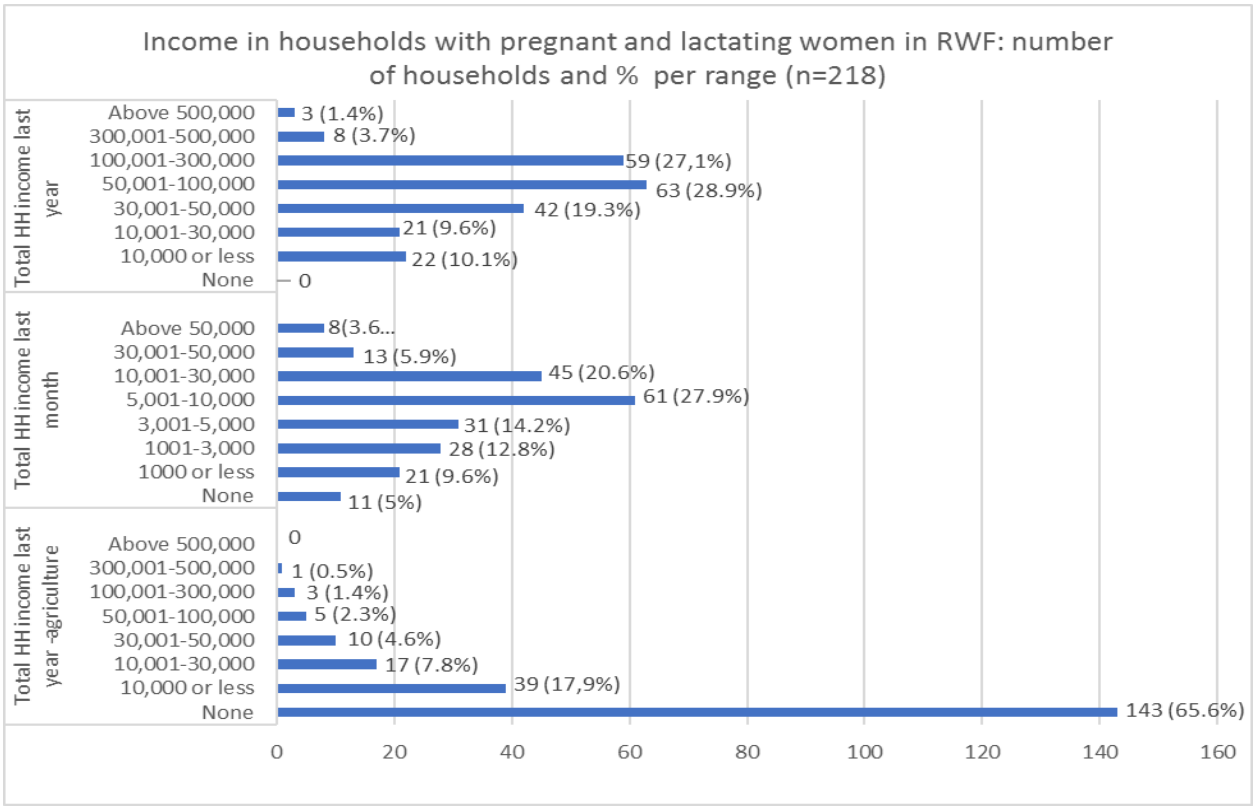


Figure 5. Household income (n=218)

Source : KOICA II Baseline survey primary data, 2018

III.1.9.8. Households food security

Food security is defined as the availability of food and one's access to it. A household is considered food secure when its occupants do not live in hunger or fear of starvation. The World Food Summit of 1996 defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life"[20]

[20] https://www.disabled-world.com/fitness/nutrition/foodsecurity.

During this baseline survey, specific questions were asked to households pertaining on worries about food security they have felt within a 30-day period preceding the survey. These worries were, about the respondent or any other household member the following, all due to lack of resources (money) or food at home: not having enough food, not being able to eat the kinds of foods preferred, having to eat a limited variety of foods, having to eat some foods that one really did not want to eat, having to eat a smaller meal than one felt she/he needed, having to eat fewer meals in a day, not having at all food in the household, going to sleep at night hungry or going a whole day without eating anything.

III.1.9.9 Household food insecurity

Households were asked if they had experienced worries for not having enough food in the 30 days preceding the survey. The big majority of households (86.7%) answered in the affirmative to this question (Figure 6).

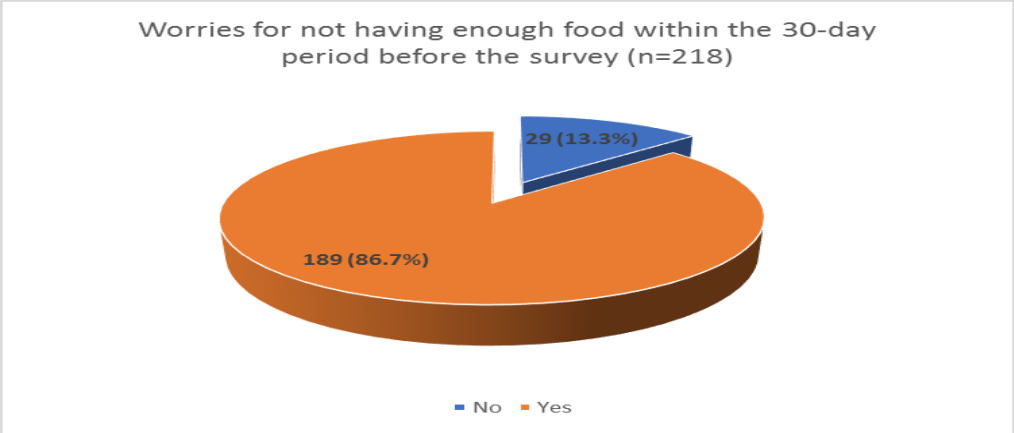


Figure 6. Worry for not having enough food within 30 day-period before the survey (n=218)

Source : KOICA II Baseline survey primary data, 2018

Among the 189 households that experienced the worry of 'not having enough food', 42.9% felt that stress more than 10 times (often), 218 (36%) had the worry 3-10 times (sometimes). When it comes to the availability of food, 75 respondents (31.4%, n=239) even reported that at moments they did not have food at all in the household, of which 16% said that this often happened while the situation occurred sometimes for 54,7% of the households which experienced the issue. On another side, 193 respondents (80.8%, n=239) worried about lack of resources and so being obliged to eat foods out of their preferences, among which 35.8% often worried about this issue and 44% did it sometimes (Table 13).

Households were also obliged to consume a limited variety of foods due to lack of resources. In this situation, 190 respondents (79.5%, n=239) reported having done so. Among them, 28.9% did it often and 51.6% sometimes. We found also that 199 respondents (83.3%, n=239) reported having eaten some foods that they really did not want to eat because of lack of resources. Among them 38.2% had to do so often and 45.7% sometimes (Table 13).

With regards to lack of food and being constrained to eat smaller meals than needed, 191 respondents (79.9%, n=239) reported having experienced that worry, among them 30.9% often worried about it and

21 Often: more than ten times in the 30 days preceding the survey

52.4% did sometimes. The other assessed aspect was about taking fewer meals per day and, in the case, 183 respondents (76.6%, n=239) reported having constrained to do so among which 31,1% had often felt this concern and 49.2% sometimes (Table 13).

The other worry respondents were asked about was the constraint to sleep at night hungry due to lack of food whereby 90 respondents (37.7%. n=239) expressed having worried about this issue, among which 18 (20%) did it often and 47 (52.2%) sometimes. In the same way, 144 respondents (60.3%) declared having been worried about going a whole day and night without eating anything of which 35 (24.3%) expressed having often experienced that issue and 73 (50.7%) sometimes (Table 14).
As reported by the participants to the FGDs and some KIIs, when the households face the issue of lack of food, the available food is given to the children.

"As you know, many families give birth to many children that they can be able to feed, it is a big challenge! If you don't have enough food, the little you have is for the children!" PW in FGD in Mushubati sector.

"In fact, we eat once a day, because of little food we have difficultly manage it, our land is small, there are many issues, you know". Said a PW in a FGD

Table 14. Levels of worries experienced by households about food security

Worry	Yes/No	Worry frequency	Number of HHs	%
Not having enough food (n*[22]=189)	No	-	29	13.3%
	Yes		189	86.7%
		Rarely (1-2 times)	40	21.2%
		Sometimes (3-10 times)	68	36%
		Often (>10 times)	81	42.9%
Not able to eat the kinds of foods preferred (n*=193)	No	-	46	19.2%
	Yes		193	80.8%
		Rarely (1-2 times)	39	20.2%
		Sometimes (3-10 times)	85	44.0%
		Often (>10 times)	69	35.8%
Having to eat a limited variety of foods (n*=190)	No	-	49	20.5%
	Yes		190	79.5%
		Rarely (1-2 times)	37	19.5%
		Sometimes (3-10 times)	98	51.6%
		Often (>10 times)	55	28.9%
Having to eat some foods that one really did not want to eat (n*=199)	No	-	40	16.7%
	Yes		199	83.3%
		Rarely (1-2 times)	32	16.1%
		Sometimes (3-10 times)	91	45.7%
		Often (>10 times)	76	38.2%
Having to eat a smaller meal than one felt he/she needed (n*=191)	No	-	48	20.1%
	Yes		191	79.9%
		Rarely (1-2 times)	32	16.8%
		Sometimes (3-10 times)	100	52.4%
		Often (>10 times)	59	30.9%

[22] The n* all over the table is the number of households who experienced any worry about food security (number of 'Yes').

Having to eat fewer meals in a day (n*=183)	No	-	56	23.4%
	Yes		183	76.6%
		Rarely (1-2 times)	36	19.7%
		Sometimes (3-10 times)	90	49.2%
		Often (>10 times)	57	31.1%
Not having at all food in the household (n*=75)	No	-	164	68.6%
	Yes		75	31.4%
		Rarely (1-2 times)	22	29.3%
		Sometimes (3-10 times)	41	54.7%
		Often (>10 times)	12	16.0%
Going to sleep at night hungry (n*=90)	No	-	149	62.3%
	Yes		90	37.7%
		Rarely (1-2 times)	25	27.8%
		Sometimes (3-10 times)	47	52.2%
		Often (>10 times)	18	20.0%
Going a whole day without eating anything (n*=144)	No	-	95	39.7%
	Yes		144	60.3%
		Rarely (1-2 times)	36	25.0%
		Sometimes (3-10 times)	73	50.7%
		Often (>10 times)	35	24.3%

Source : KOICA II Baseline survey primary data, 2018

Based on the nine questions asked, a score was calculated to classify the households in food security categories. The majority (64.4%) of households were found to be severely food insecure while only 1.3% were food secure (Table 15).

Table 15: HFIAS prevalence

HFIA prevalence	Count	%
Food secure	3	1.3
mildly food insecure	6	2.5
moderately food insecure	49	20.5
severely food insecure	154	64.4

Source : KOICA II Baseline survey primary data, 2018

III.1.9.10. Coping with food insecurity

When households experience a food shortfall, or even the threat for a shortfall, they are faced with choices on how to manage the situation. The range of behavioral choices, are linked to social, cultural and environmental and other factors that suggest households to choose one or more coping ''options''.

Most commonly used coping strategy was *'Taking an in-kind loan from outside household (e.g. shop/boutique)* used by 185 households (84.9%), followed by *'taking low status work out of desperation'* used 163 households (74.8%) and *'taking a cash loan from outside household'* used by 130 households (59.6%). Other coping strategies were also used by relatively fewer households and these include selling livestock used by 16.5% of households or selling household assets expressed by 7.3% and even selling land used by 6.4% households (Table 16).

As reported by KIIs, local leaders conduct community sensitization about agricultures activities instead of sitting without working. Others are encouraged to join saving groups that can contribute to the poverty alleviation and fighting against the malnutrition. As testified by one respondent in KII, Saving and lending groups are likely to boost the family economy.

"I am thankful to WVR for what I achieved because of saving groups. So far, we have our own house, cows, enough food and plot of lands. All these achievements result from the saving groups whereby I borrow money for investment". M.J, KII in Mushubati

Table 16. Coping strategies to food insecurity (n=218)

No	Coping strategy		Nbr of HHs	%
1	Take a cash loan from outside household	No	86	39.4
		Yes	130	59.6
		don't know	2	0.9
2	Take an in-kind loan from outside household (e.g. shop/boutique)	No	31	14.2
		Yes	185	84.9
		don't know	2	0.9
3	Sell assets	No	195	89.4
		Yes	16	7.3
		don't know	7	3.2
4	Sell livestock	No	176	80.7
		Yes	36	16.5
		don't know	6	2.8
5	Taking low status work out of desperation (Guca inshuro)	No	49	22.5
		Yes	163	74.8
		don't know	6	2.8
6	Sell land	No	198	90.8
		Yes	14	6.4
		don't know	6	2.8
7	Give land for hire	No	202	92.7
		Yes	10	4.6
		don't know	6	2.8
8	Give livestock for hire (n=214)	No	204	95.3
		Yes	4	1.9
		don't know	6	2.8

Source : KOICA II Baseline survey primary data, 2018

III.1.9.11. Minimum Dietary Diversity for Women

Minimum Dietary Diversity for Women (MDD-W) is a dichotomous indicator of whether or not women 15-49 years of age have consumed at least five out of ten defined food groups the previous day or night. The proportion of women 15-49 years of age who reach this minimum in a population can be used as a proxy indicator for higher micronutrient adequacy, one important dimension of diet quality[23]

Dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods. Each woman involved in the study was asked to recall all the dishes, snacks, or other foods that she had eaten during this period (regardless of whether the food was eaten inside or outside the home). Women diet diversity scores were calculated based on the number of different food groups as proposed in the Food and Agriculture Organization guidelines for measuring household and individual dietary diversity[24]: (1) starchy staples[25] (food made of grains, white roots and tubers and plantains), (2) pulses (beans, peas and lentils), (3) nuts and seeds, (4) milk and milk products, (5) meat, poultry and fish, (6) eggs, (7) dark green leafy vegetables, (8) Other vitamin A rich fruits and vegetables (9) other vegetables and (10) other fruits.

It was found that 81.6% (n=239) of the women consumed food from white roots, tubers and plantains, 73,6% consumed pulses and 57.7% consumed grains the day before the survey. Dark green leafy vegetables that are local vitamins and minerals-rich vegetables were consumed by 48.1% of women. Also, 44.4% of the women had consumed other vitamin A-rich fruits and vegetables. Animal proteins-source foods were consumed by few women: 21,1% consumed fish, 10% consumed milk or milk products, 2.5% and 1.3% consumed meat or poultry and eggs, respectively (Figure 7).

Among pregnant women and lactating women, only 36.8% (n=106) and 38.3% (n=133) met the minimum dietary diversity (≥ 5 food groups), respectively. Overall only 37.6% (239) met the minimum dietary diversity[26].

As reported by KIIs and participants to the FGDs, it was noted that some PLW face the issue of food nutrition due to the conflicts in families.

"Pregnant and Lactating Women have no adequate food diet in some household with social conflicts. There is a need to provide the training and mobilization about nutrition and health by engaging men in particular". Said KII in Mushubati Sector.

[23] FAO, Minimum Dietary Diversity for Women—A guide to measurement, Rome 2016.

[24] FAO, Minimum Dietary Diversity for Women—A guide to measurement, Rome 2016

[25] FAO has grouped *food made of grains* and *white roots and tubers and plantains* in one group. However, our survey questionnaire stated 2 different groups. They have also put together *meat, poultry* and *fish* while our questionnaire has 2 separate food groups. So, in our study we have 12 groups used to calculate the MDD-W.

[26] https://www.fantaproject.org/monitoring-and-evaluation/minimum-dietary-diversity-women-indicator-mddw

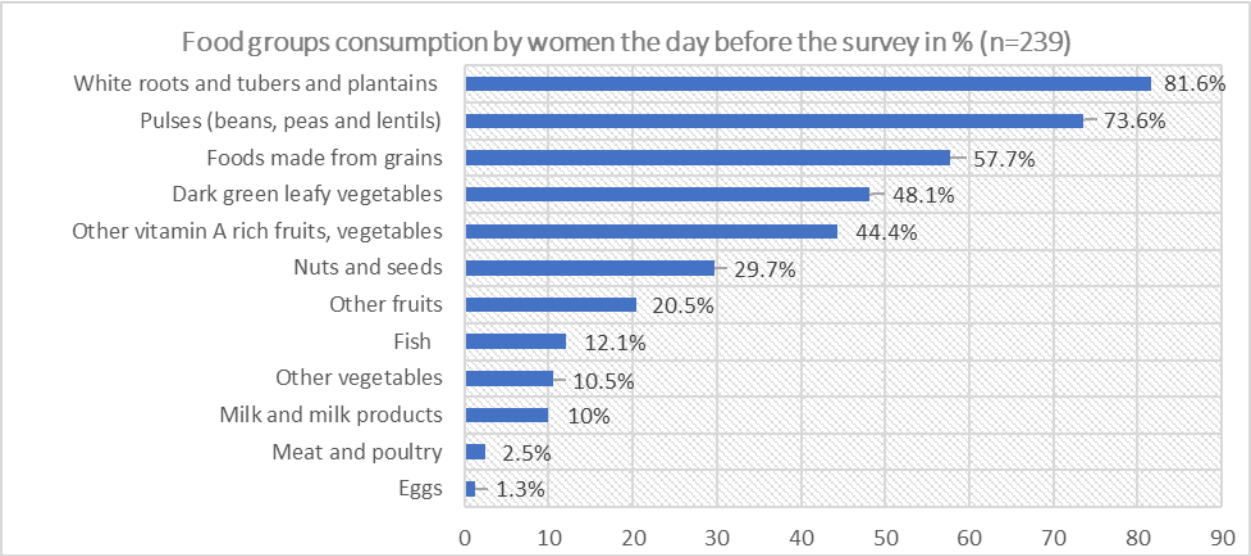


Figure 7. Women's consumption of the food groups on the day before the survey

Source : KOICA II Baseline survey primary data, 2018

III.1.10. Exposure of women to nutrition information

During this baseline survey, women were asked a set of questions to see how much they had been exposed to nutrition information within the 30 day-period preceding the survey. Women could receive information from home visits by community or health workers or other channels, or through their participation to groups activities or PD hearth sessions. As reported by the participants to the FGDs both PLWs and men, other nutrition information channels include the parents evening forums (Umugoroba w'ababyeyi), community radio, HC visit during the ANC services, community meetings such as "umuganda" and "inteko z'abaturage".

III.1.10.1 Getting messages from home visits

Mothers were asked if someone had visited her household to counsel her on ways to feed her young child in the last 30 days. Out of 172 women who responded to the question, only 19 (11%) reported having been visited. Among them, 10 were visited by a CHW and 3 were visited by a mother volunteer, 3 by a non-specified person and 1 by an NGO worker and 1 by a nurse or a midwife.

Topics covered during the home visit are diversified since 18 out of 19 visited women had received messages on exclusive breastfeeding for the first 6 months of the baby's life, all the 19 received information on when to start the complementary feeding (introduction of soft and solid foods), 17 on feeding a variety of foods, 16 on quantity of food to feed a child, 15 on good hygiene, 9 on feeding a sick baby, 8 on how to feed a child with micronutrients powders (MNPs). Overall, we found that home visits by CHWs or health workers or other relevant persons were rare in the intervention area of the project even if essential topics on nutrition were covered (Table 17)

Table 17. Receipt of information from home visits (n=172)

Characteristics		n	%
Someone visited the household to counsel on ways to feed the young child in the 30 days preceding the survey	No	153	89.0
	Yes	19	11.0
	don't know	0	0.0
Person who visited	CHWs	10	52.6
	NGO worker	1	5.3
	Nurse/Midwife	1	5.3
	Health Post Officer	0	0.0
	Mother volunteer	3	15.8
	Other	3	15.8
	Don't know	1	5.3
Type of information received from visitors			
Exclusive breastfeeding for first 6 months	No	1	5.3
	Yes	18	94.7
When to feed soft and solid foods	No	3	15.8
	Yes	16	84.2
Feeding a variety of foods	No	2	10.5
	Yes	17	89.5
How much food to feed child	No	3	15.8
	Yes	16	84.2
Feeding a sick baby	No	10	52.6
	Yes	9	47.4
Good hygiene	No	4	21.1
	Yes	15	78.9
How to feed MNPs (ongerintungamubiri)	No	11	57.9
	Yes	8	42.1
Other	No	17	89.5
	Yes	2	10.5

Source : KOICA II Baseline survey primary data, 2018

III.1.10.2 Receipt of information from group activities

Women were asked if they had participated in any individual or group activity outside the home where they learned about messages on ways to feed a young child. Among 172 women who responded to the question, only 77 (44.8%) reported having participated of which 37 (48.1%) participated in the evening parents' forum (umugoroba w'ababyeyi), 11 (14.3%) in traditional community groups, 5 in mothers' groups, 4 in care groups and 20 (26%) in other none specified groups. Among the 77 women who participated in groups activities, 24 (31,2%) reported having done it occasionally while 21 (27.3%) did it

on a monthly basis, 14 participated weekly, 9 twice a month and the other 9 at any occasions not stated during the survey. Globally, it was revealed that the participation of women in groups activities was low. The most used group mother received messages from was the evening parents' forum. It is important to insist on the fact that, as shown above, almost one woman in three (31,2%) reported having participated in the groups occasionally while we know that those groups use to meet on a regular basis.

It was found that nutrition-related critical topics were discussed at the groups meetings and out of 77 women who participated to groups activities during the month preceding the survey 90,9% reported having received messages on exclusive breastfeeding for first 6 months, 80.5% on when to start the complementary feeding (when to feed soft and solid foods), 93.5% on feeding a variety of foods, 67.5% about the quantity of food to feed a child, 51.9% on feeding a sick baby, 58.4% on how to feed MNPs, 89.6% on good hygiene and 29.9% on other topics.

CHWs were the ones most reported by women for having conducted the groups' activities among other facilitators since reported by 30 women (39%) followed by NGO workers reported by 20 (26%) (Table 18)

Table 18. Receipt of nutrition information from groups' activities (n=172)

Characteristics		**n**	**%**
The mother/caregiver has participated in any individual or group activity outside of the home in the 30 days preceding the survey	No	95	55.2
	Yes	77	44.8
	don't know	0	0
Kind of activity the mother/caregiver participated in	mothers' group	5	6.5
	care group	4	5.2
How often did you participate in the group or in the activity	Weekly	14	18.2
	Twice per month	9	11.7
	Once per month	21	27.3
Type of information received			
Exclusive breastfeeding for first 6 months	No	7	9.1
	Yes	70	90.9
When to feed soft and solid foods	No	15	19.5
	Yes	62	80.5
Feeding a variety of foods	No	5	6.5
	Yes	72	93.5
How much food to feed child	No	25	32.5
	Yes	52	67.5
Feeding a sick baby	No	37	48.1
	Yes	40	51.9
Good hygiene	No	8	10.4

	Yes	69	89.6
How to feed MNPs (Ongerintungamubiri)	No	32	41.6
	Yes	45	58.4
Other	No	54	70.1
	Yes	23	29.9
Person who conducted the activity	Community Health worker	30	39
	NGO worker	20	26
	Nurse/Midwife	5	6.5
	Health Post Officer	9	11.7
	Mother volunteer	3	3.9
	Other	9	11.7
	Don't know	1	1.3

Source : KOICA II Baseline survey primary data, 2018

III.1.10.3. Receiving nutrition information from audio and visual channels

Responding to the question asking if the mother had heard or seen messages that provided information on ways to feed a young child within the month period preceding the survey, among the 172 women who responded to the question, only 50 (29.1%) responded affirmatively. Among them 30 (60%), received information on radio which is the most important source in the case. 22 women (44%) report having been informed at health facility, 4 from reading a product packaging, also 4 from reading/seeing a poster and 1 from a billboard.

We also found out that women received information on nutritional critical topics in the way among the 50 who received messages, 40 (92%) reported having heard or seen information on exclusive breastfeeding, 40 (80%) on when to start the complementary feeding, 44 (88%) on feeding a variety of foods, 36 (72%) on the quantity of food to feed a child, 23 (46% on feeding a sick baby, 38 (76%) on good hygiene, 23 (46%) on how to use MNPs (Table 19).

Table 19. Receipt of information from audio and visual channels (n=172)

Characteristics		**n**	**%**
The mother/caregiver have heard or seen messages that provided information on ways to feed the young child	No	119	69.2
	Yes	50	29.1
	don't know	3	1.7
Source of the information			
Radio	No	20	40.0
	Yes	30	60.0

Characteristics		n	%
Television	No	50	100.0
	Yes	0	0.0
Billboard	No	49	98.0
	Yes	1	2.0
Poster	No	46	92.0
	Yes	4	8.0
Product Packaging	No	46	92.0
	Yes	4	8.0
Health facility	No	28	56.0
	Yes	22	44.0
Other	No	38	76.0
	Yes	12	24.0
Type of information received			
Exclusive breastfeeding for first 6 months	No	4	8.0
	Yes	46	92.0
When to feed soft and solid foods	No	10	20.0
	Yes	40	80.0
Feeding a variety of foods	No	6	12.0
	Yes	44	88.0
How much food to feed child	No	14	28.0
	Yes	36	72.0
Feeding a sick baby	No	27	54.0
	Yes	23	46.0
Good hygiene	No	12	24.0
	Yes	38	76.0
How to feed MNPs (Ongerintungamubiri)	No	27	54.0
	Yes	23	46.0
Other	No	41	82.0
	Yes	9	18.0

Source : KOICA II Baseline survey primary data, 2018

III.1.10. 4. Receiving information from PD Hearth session

Mothers were asked if they had participated to PD Hearth session in the 6 months preceding the survey. Among the 172 women who responded to the question, 37 (21.5%) said 'Yes'. PD hearth is a community approach where children with moderate acute malnutrition receive a 12-day treatment using local nutritious foods available in the community. We can assume that women who participated to the sessions were those who had their children moderately malnourished according to their weight-for-age (located in the yellow corridor of the used child's growth chart). Among the 37 women who attended PD Hearth sessions, 31 (83.8%) reported having received messages on exclusive breastfeeding, 33(89.2%) on when to start the complementary feeding, 35 (94.6%) on feeding a variety of foods, 30

(81.1%) on the quantity of food to feed a child, 25 (67.6%) on feeding a sick baby, 35(91.9%) on good hygiene, 26 (70.3%) on how to use MNPs and 11(29.7%)
(Table 20).

Table 20. Receipt of information from PD Heart sessions (n=172)

Characteristics		**n**	**%**
The mother/caregiver has participated in a PD Hearth session in the 6 months preceding the survey	No	134	77.9
	Yes	37	21.5
	don't know	1	0.6
Type of information received			
Exclusive breastfeeding for first 6 months	No	6	16.2
	Yes	31	83.8
When to feed soft and solid foods	No	4	10.8
	Yes	33	89.2
Feeding a variety of foods	No	2	5.4
	Yes	35	94.6
How much food to feed child	No	7	18.9
	Yes	30	81.1
Feeding a sick baby	No	12	32.4
	Yes	25	67.6
Good hygiene	No	3	8.1
	Yes	34	91.9
How to feed MNPs (ongerintungamubiri)	No	11	29.7
	Yes	26	70.3
Other	No	26	70.3
	Yes	11	29.7

Source : KOICA II Baseline survey primary data, 2018

III.1.10.5. Access to Agriculture Extension Services

Extending agricultural services in rural areas is an important aspect that is likely to boost the development and access to adequate and nutritious foods for families. Agriculture is the main source of livelihood for households in rural areas, and access to information is generally costly and this can hinder the level of spreading information and agriculture services.
The survey has considered and assessed the receipt of information and services by any member of the households. It was revealed that apart from information/services provided on kitchen gardening on which 66.3% (n=172) of the households received either information or services, very few households received information and services on other topics of interest: each of them considered, 33% of households at the maximum received information or services (Figure 8).

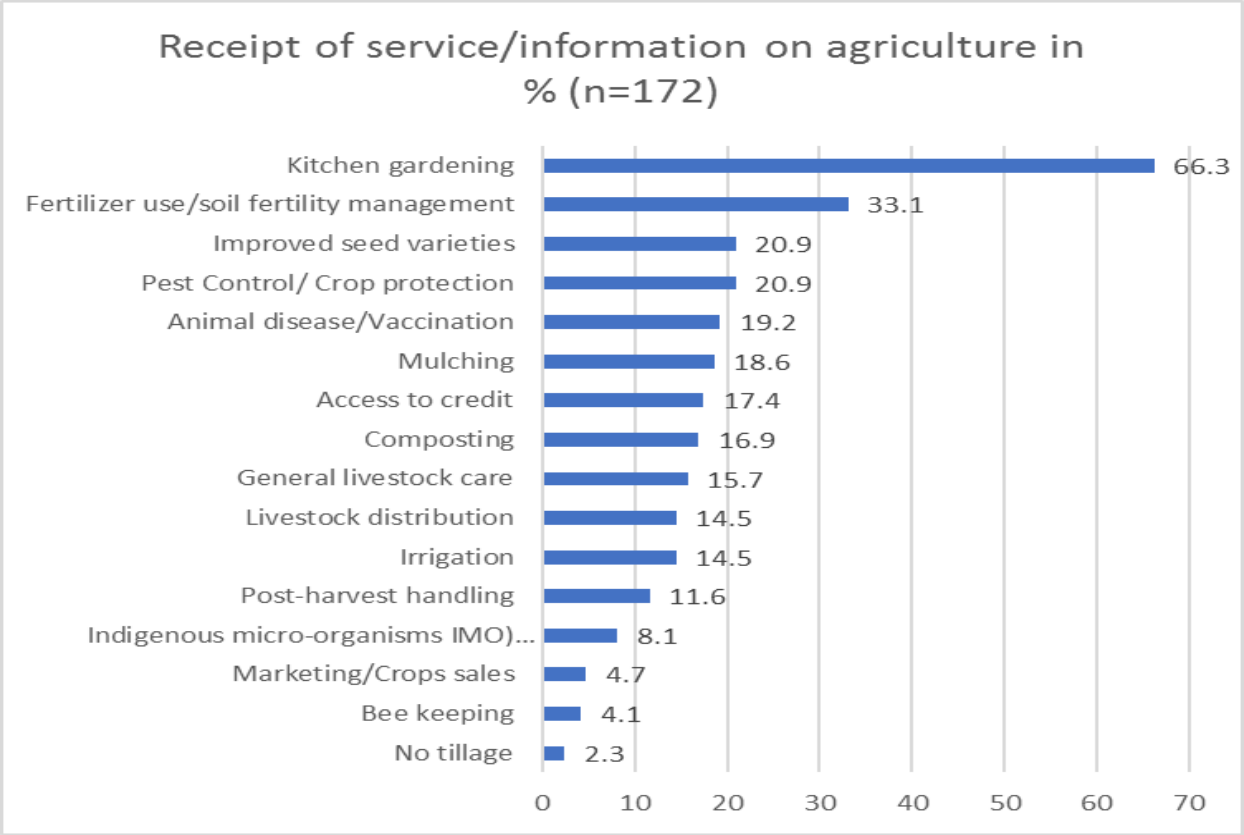


Figure 8. Access of households to information and agriculture services

Source : KOICA II Baseline survey primary data, 2018

III.1.10.6 Sources of information and services in agriculture

Overall, it was found for each type of service/information assessed in the survey, few respondents were able to state about having received any service or information. We found on the other side that households' members received information/services on agriculture, mainly from the governmental structures followed by Agricultural Cooperative/ Farmers Associations and lead farmers. NGOs were less involved in the action (Table 21).

Table 21. Source of information/services in agriculture

Type of service/information	Service/Information Provider							
	Gov.	**NGO**	**Private sector**	**Agricultural Cooperative/ Farmers Association**	**Lead Farmer**	**Other farmer (Neighbor/ Relative)**	**Media (TV, Radio, Handouts, Flyers)**	**Other**
Kitchen gardening (n=114)	64 (56.1%)	8 (7%)	3 (2.6%)	20 (17.5%)	8 (7%)	4 (3.5%)	0 (0%)	7 (6.1%)
Fertilizer use/soil fertility management (n=57)	27 (47.4%)	2 (3.5%)	3 (5.3%)	8 (14.0)	4 (7.0%)	4 (7.0%)	6 (10.5%)	3 (5.3%)
Improved seed varieties (n=36)	17(42.7%)	1 (2.8%)	3 (8.3%)	6 (16.7%)	3 (8.3%)	2 (5.6%)	1 (2.8%)	3 (8.3%)
Pest Control/ Crop protection (n=36)	11 (30.6%)	1 (2.8%)	3 (8.3%)	8 (22.2)	3 (8.3%)	1 (2.8%)	5 (13.9%)	4 (11.1%)
Animal disease/Vaccination (n=33)	16 (48.5%)	1 (3%)	1 (3%)	5 (15.2%)	6 (18.2%)	1 (3%)	1 (3%)	2 (6.1%)
Mulching (n=32)	9 (28.1%)	2 (6.3%)	3 (9.4%)	12 (37.5%)	2 (6.3%)	0 (0%)	0 (0%)	4 (12.5%)
Access to credit (n=30)	20 (66.7%)	1 (3.3%)	3 (10%)	1 (3.3%)	1 (3.3%)	0 (0%)	2 (6.7%)	2 (6.7%)
Composting (n=29)	13 (44.8%)	3 (12.3%)	4 (13.8%)	4 (13.8%)	2 (6.9%)	1 (3.4%)	0 (0%)	2 (6.9%)
General livestock care (n=27)	9 (33,3%)	2 (7.4%)	0 (0%)	6 (22.2%)	7 (25.9%)	1 (3.7%)	1 (3.7%)	1 (3.7%)
Livestock distribution (n=25)	6 (24%)	3 (12%)	2 (8%)	5 (20%)	4 (16%)	2 (8%)	1(4%)	2 (8%)

Type of service/information	**Service/Information Provider**							
	Gov.	**NGO**	**Private sector**	**Agricultural Cooperative/ Farmers Association**	**Lead Farmer**	**Other farmer (Neighbor/ Relative)**	**Media (TV, Radio, Handouts, Flyers)**	**Other**
Irrigation (n=25)	11(44%)	1 (4%)	2 (8%)	4 (16%)	3 (12%)	1 (4%)	1 (4%)	2 (8%)
Post-harvest handling (n=20)	8 (40%)	2 (10%)	1 (5%)	3 (15%)	4 (20%)	1 (5%)	0 (0%)	1 (5%)
Indigenous micro-organisms IMO) fermentation (n=14)	5 (35.7%)	3 (21.4%)	2 (14.3%)	1 (7.1%)	1 (7.1%)	1 (7.1%)	0 (0%)	1 (7.1%)
Marketing/Crops sales (n=8)	1 (12.5%)	1 (12.5%)	1 (12.5%)	1 (12.5%)	1 (12.5%)	0 (0%)	3 (37.5%)	0 (0%)
Bee keeping (n=7)	3 (42.9%)	0 (0%)	2 (28.6%)	1 (14.3%)	0 (0%)	0 (0%)	0 (0%)	1 (14.3%)
No tillage (n=4)	1 (25%)	1 (25%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (25%)

Source : KOICA II Baseline survey primary data, 2018

III.1.10.7 Practicing information received in agriculture

Despite the smallness seen in numbers of households that received information or services in agriculture, we found out that for 13 out of 16 services or information provided, at least 50% of receivers had put into practice new knowledge or skills. The five most practiced information were about 'Improved seeds varieties' (80.6%, n=36), 'Fertilizer use/soil fertility management' (75.4%, n=57)), 'Kitchen gardening' (73.7%, n=114), 'Post harvesting handling' (70%, n=20) and 'Pest control/Crop protection' (69.4%, n=36) (Figure 9).

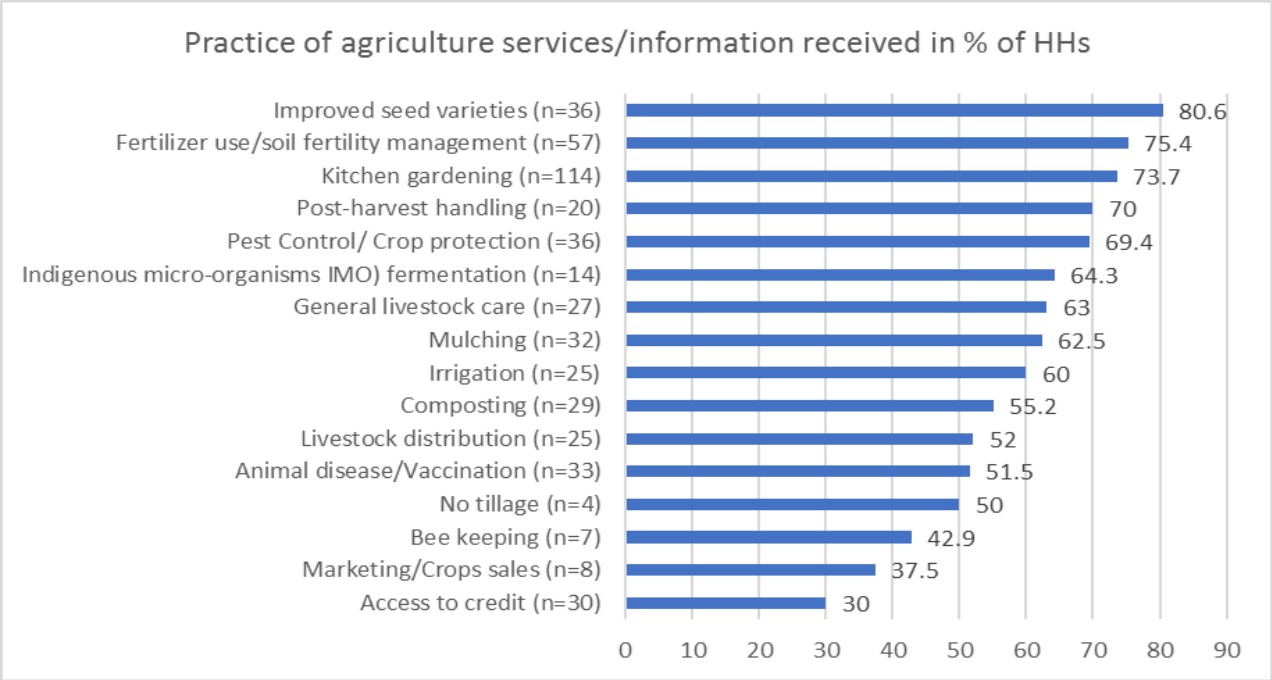


Figure 9. Practicing the information received

Source : KOICA II Baseline survey primary data, 2018

III.1.11 Receipt of supplements and antenatal and postnatal care

Nutrient requirements increase during pregnancy and lactation and this status also requires a particular attention in terms of prevention of some specific diseases. In response, it is recommended dietary supplements during these important periods of the life cycle. There exist some recommendations concerning to take supplements such as iron, folic acid, vitamin A and other preventive measures that need to be taken for the benefit of both the mother and the child, and these include deworming, tetanus vaccine and mosquito net usage.

Some challenges related to the use of antenatal consultation (ANC) services were noted during the FGDs and KIIs.

"We delay to consult for ANC because these services are longer free, as they used to be. Advocacy is needed so that the people in category one and two can be assisted in the payment of Mutuelle de Santé". Pregnant woman in Mushubati sector

"There are young girls who get pregnant, they feel ashamed to consult for ANC. They are stigmatized because they are asked to come with their husbands, and you understand that they cannot have the answer on that question! For us, it is the payment of Mutuelle de Santé that is still a big challenge" Pregnant woman in Mushubati sector

III.1.11.1 Receipt of iron-folic acid supplements

Folic acid support optimal growth and development of the fetus and blood volume expansion and tissue growth of the mother. Among healthy human beings, pregnant women and rapidly growing infants are most vulnerable to iron deficiency[27]. Both groups have to absorb substantially more iron than is lost from the body, and both are at a considerable risk of developing iron deficiency under ordinary dietary circumstances. During pregnancy, more iron is needed primarily to supply the growing fetus and placenta and to increase the maternal red cell mass[28] .

We found that out of the 239 women, 185 (77.4%) had received iron-folic acid supplements during their current or last pregnancy. However, 1 woman in 5 had not received the supplements (Figure 10). Among those who received iron-folic acid supplements, 96.8% received 97 pills or less and 3.2% received 98 pills or more, the national cut-off in Rwanda being 90 pills[29].

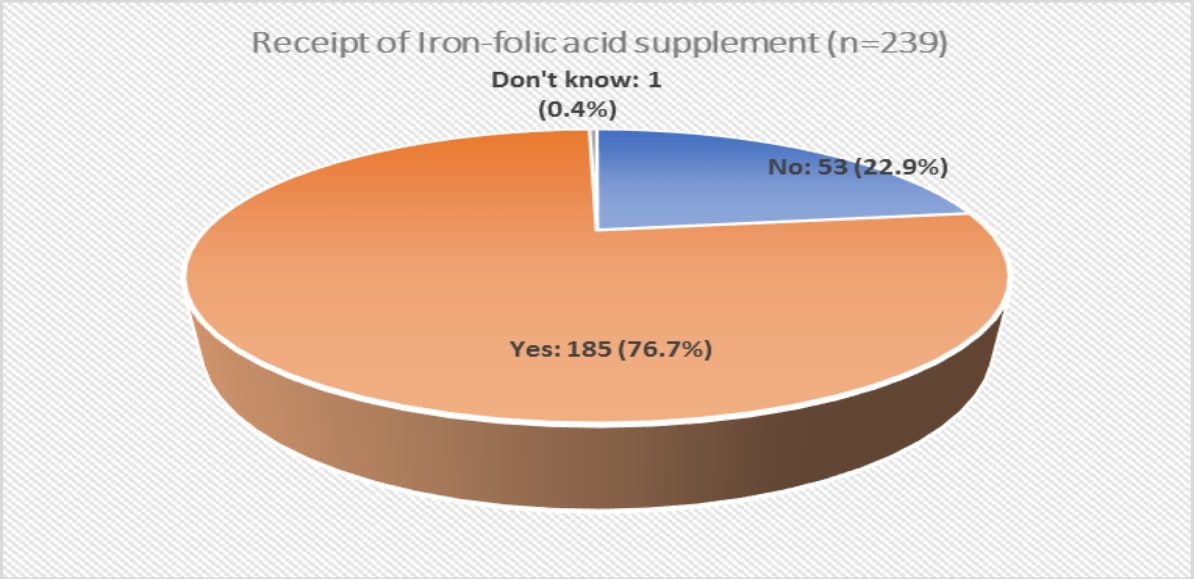


Figure 10. Receipt of iron-folic acid during current/last pregnancy

Source : KOICA II Baseline survey primary data, 2018

[27] Bothwell et al, Iron Metabolism in Man. Blackwell Scientific Publications, Oxford. 576 pp 1979
[28] Hallberg L. and al, Iron absorption in man: ascorbic acid and dose-dependent inhibition by phytate, 1988.
[29] SPRINGS. 2011. A rapid assessment of the distribution and consumption of iron-folic acid tablets through antenatal care in Rwanda at https://www.spring-nutrition.org/publications/briefs/iron-folic-acid-assessment-rwanda

III.1.11.2 Receipt of tetanus injections

The World Health Organization (WHO) recommends tetanus toxoid vaccination for all pregnant women, depending on previous tetanus vaccination exposure, to prevent neonatal mortality from tetanus. If a pregnant woman has not previously been vaccinated, or if her immunization status is unknown, she should receive two doses of a tetanus toxoid vaccine one month apart with the second dose given at least two weeks before delivery. Two doses protect against tetanus infection for 1–3 years in most people[30] .

It was revealed that only 45.9% of mothers (n=239) had completed two doses of tetanus vaccine and 29.1% had received one dose. On the other side, 14.9% had not been at all vaccinated against tetanus while 10.2% did not know whether or not they received the anti-tetanus vaccine (Figure 11).

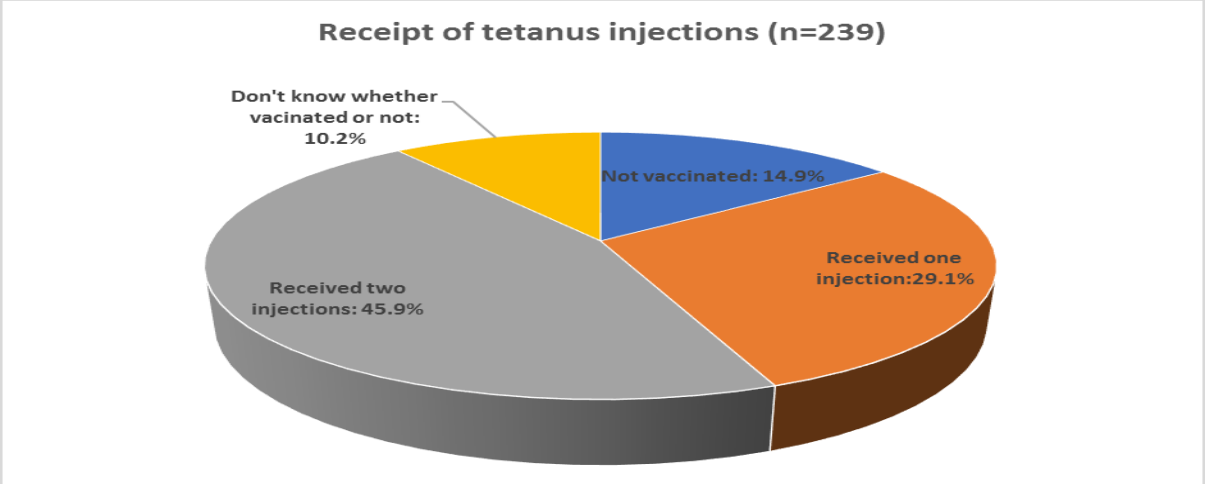


Figure 11. Receipt of tetanus injections during current/last pregnancy

Source : KOICA II Baseline survey primary data, 2018

III.1.11.3. Receipt and intake of deworming pills

Soil-transmitted helminth infections are among the most common infections in humans, caused by a group of parasites commonly referred to as worms. Those living in poverty are most vulnerable to infection which can impair nutritional status by causing internal bleeding which can lead to loss of iron and anemia, intestinal inflammation and obstruction, diarrhea and impairment of nutrient intake, digestion and absorption. Evidence shows that preventive chemotherapy can dramatically reduce the burden of worms caused by soil-transmitted helminth infections[31]

With this survey, it was found that only 133 women out of 239 (54.9%) of women received deworming tablets during their current or last pregnancy of which 130 (97.8%) took the tablets they were given (Figure 12).

[30] https://extranet.who.int/rhl/topics/

[31] https://www.who.int/elena/titles/deworming_pregnancy/en/

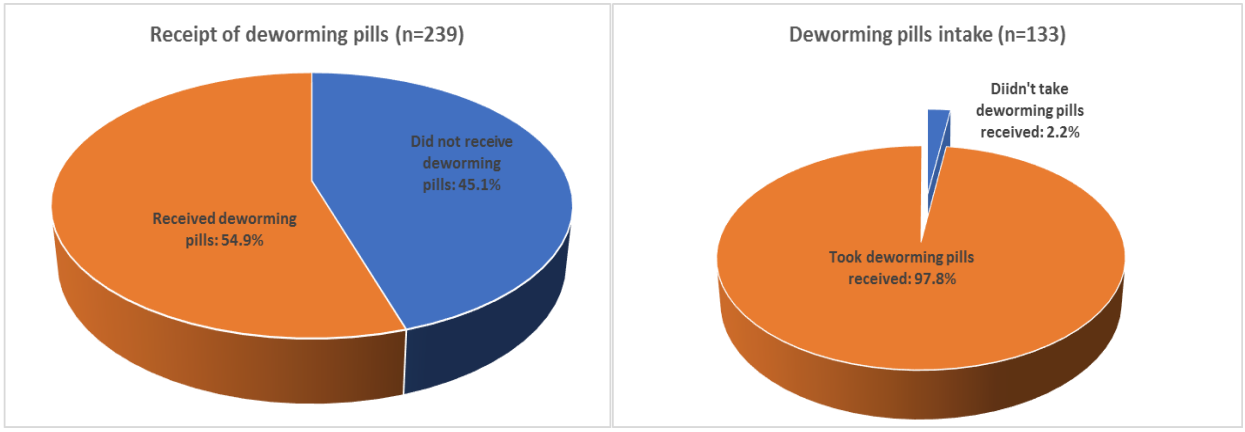


Figure 12. Receipt and intake of deworming pills

Source : KOICA II Baseline survey primary data, 2018

III.1.11.4. Receipt of anti-malaria pills (n=239)

Of the respondents (n=239), only 25 (10.2%) were given anti-malaria pills to keep them from getting malaria during current/last pregnancy. Among those who received malaria prophylactic tablets,21 (84.9%) were given artemisinin-combined therapy (ACT) or 'coartem'. Of those who were given malaria prophylaxis, 18 (62.9%) received 1-2 tablets and 7 (37.1%) received 3 pills or more (Table 22).

Table 22. Receipt of anti-malaria pills (n=239)

Characteristics		**n**	**%**
Received any pills to keep from getting malaria during current/last pregnancy	No	214	89.8
	Yes	25	10.2
	don't know	0	0.0
	Total	239	100.0
If Yes, type of ante-malaria pills taken	Artemisinin-Combined Therapy (ACT)(COARTEM)	21	84.9
	Quinine	1	2.9
	Other	1	6.3
	Don't Know	2	5.9
	Total	25	100.0
Number of ante-malaria pills taken	1-2	18	62.9
	3 or more	7	37.1
	Total	25	100.0

Source : KOICA II Baseline survey primary data, 2018

III.1.11.5 Receipt and intake of vitamin A post-partum

Among the women taken in the survey (n=239), only 77 (31.4%) were given vitamin A post-partum capsules of which 74 (96.1%) reported having taken the vitamin A capsules they received (Figure 13).

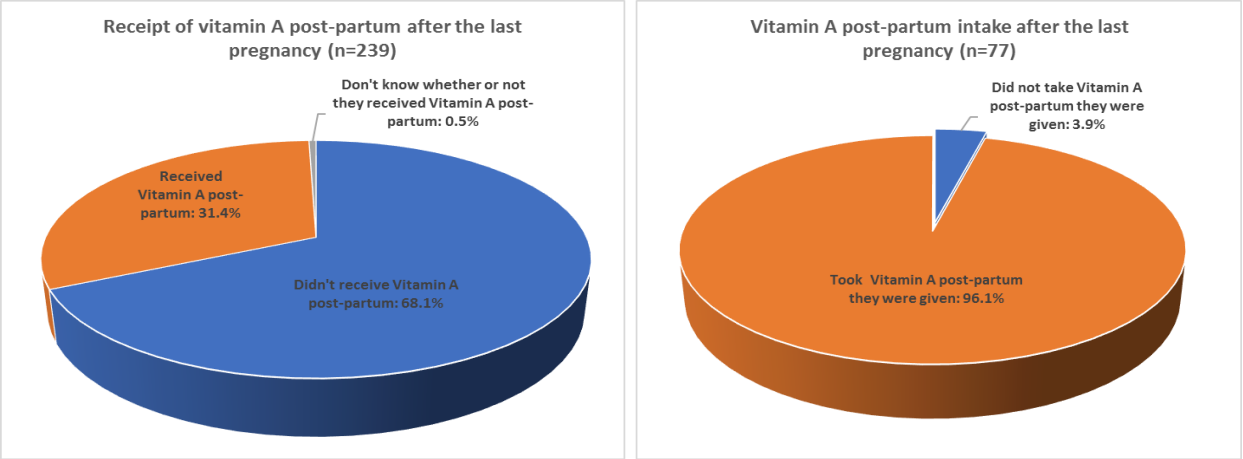


Figure 13. Receipt and intake of vitamin A post-partum (n=239)

Source : KOICA II Baseline survey primary data, 2018

III.1.11.6. Receipt and use of mosquito nets

In total 198 women (82.7%, n=239) reported having mosquito nets in their households that they used while sleeping. Among those who used mosquito nets, 185 (93.4%, n=198) received them within the twelve months preceding the survey. In addition, 193 women among those who had mosquito nets in their households, 97.5% declared their mosquito nets insecticide-treated and again, 96.3% of those having mosquito nets reported having slept under a mosquito net the night preceding the survey (Table 23).
Following the discussions and findings from KIIs and FGDs, it was reported that stagnant waters and bushes around the houses give room to the mosquitos to multiply. Though the prevalence of malaria may vary from one area to another, it was noted that some family members lack knowledge about the proper use of mosquito bed nets.

"People are not aware on how to use mosquito bed nets, even though they may have it. For example, they wake up in the morning, they leave bed nets open, and the mosquitos get inside the net, and they bite the people when they come to sleep". KII Gihango Sector-Congo Nil HC

Table 23. Receipt and use of mosquito nets

Characteristics		n	%
Possession in household of mosquito nets that can be used while sleeping	No	40	17.0
	Yes	198	82.7
	Don't know	1	0.4
	Total	239	100.0
If yes, did you receive the mosquito net in the past twelve months?	No	13	6.6
	Yes	185	93.4
	Don't know	0	0.0

Characteristics		n	%
	Total	198	100.0
Was this mosquito net treated with insecticide?	No	4	2.1
	Yes	193	97.5
	Don't know	1	0.4
	Total	198	100.0
Did you sleep under the mosquito net last night?	No	7	3.7
	Yes	191	96.3
	Total	198	100.0

Source : KOICA II Baseline survey primary data, 2018

III.1.12 Women morbidity within the 30 days preceding the survey

Under this sub-section, women have reported symptoms or illnesses they have experienced during the month preceding the survey as well as the ways they sought for treatment.

1 III.1.12.1 Symptoms or illnesses experienced by women

It was found that 44.7% of women (n=239) reported having suffered from a severe headache within the 30 day-period preceding the survey while 30.1% had malaria or felt nausea. One woman in five (20.5%) expressed having had a productive cough and 14.1% had loose watery stools four or more times per day, a sign of diarrhea (Figure 13). As reported by the participants to the FGDs and KIIs, the major diseases that occurred over 10 past months included diarrhea (mostly for children), malaria, cough and worms. As reported by the respondents, the poor hygiene and sanitation conditions, lack of latrines, ignorance, lack of hygiene habits and poverty were highlighted as the contributing factors to these diseases.

"Hygiene is paramount in everything! When you managed to have a quality diet and you prepare it with hygiene, this prevents from suffering from different diseases among children and adults". LW participant to the FGD in Mushubati sector.

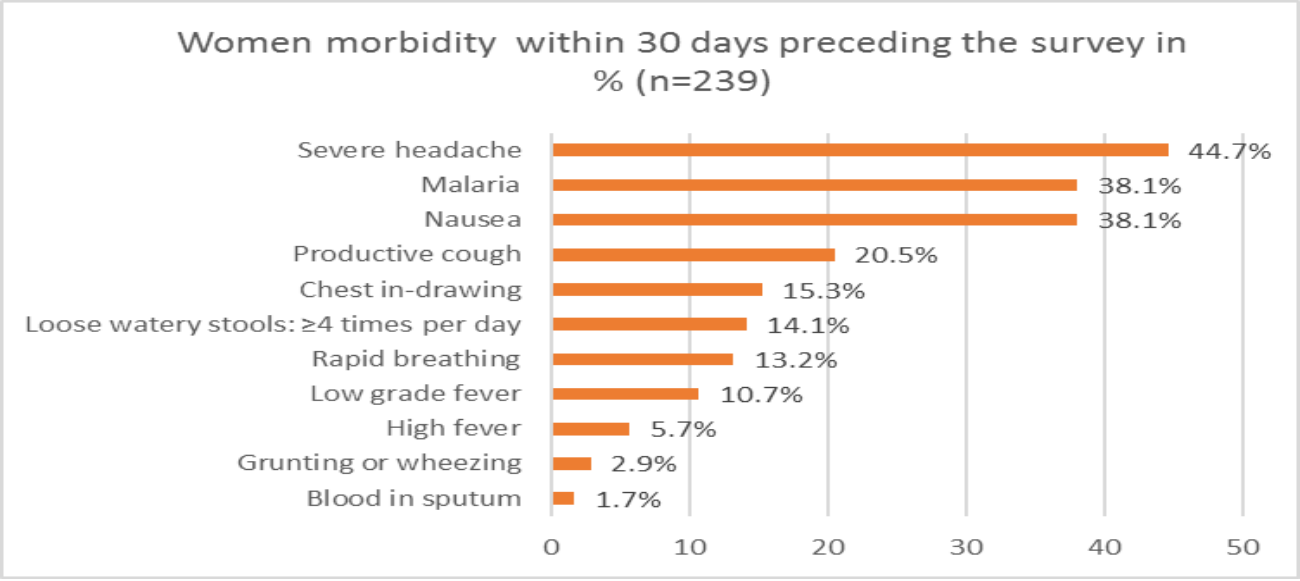


Figure 14. Expressed symptoms and illnesses within 30 days before the survey

Source : KOICA II Baseline survey primary data, 2018

III.1.12.2 Ways of seeking for treatment when sick

It was found that for the first six most prevalent symptoms or illnesses, namely severe headache, nausea, productive cough, low grade fever, loose of watery stools for four times or more times per day (diarrhea) and rapid breathing, big proportions in the range of 41.7% to 70.6% of patients did not seek for treatment for any symptoms experienced within the 30 days preceding the survey. For those who sought for treatment, most of them had referred to trained persons either physician/clinical officer or nurse/midwife (Table 24).

Table 24. Ways of seeking treatment when sick by symptoms or illnesses

Symptom/Illness	*The person from whom they sought for treatment first — n (%)*								
	Did not seek treatment	**Relative/Friend**	**Physician/ Clinical officer**	**Nurse/ Midwife**	**CHWs**	**Patient Attendant**	**Traditional healer**	**Other**	**Don't know**
Severe headache (n=108)	45 (41.7%)	1 (0.9%)	37 (34.3%)	22 (20.4%)	2 (1.9%)	0 (0%)	0 (0%)	1 (0.9%)	0 (0%)
Nausea (n=87)	63 (72.4%)	2 (2.3%)	11 (12.6%)	7 (8%)	0 (0%)	0 (0%)	2 (2.3%)	2 (2.3%)	0 (0%)
Productive cough (n=49)	30 (61%)	0 (0%)	6 (12%)	11 (22%)	1 (2%)	0 (0%)	0 (0%)	1 (2%)	0 (0%)
Low grade fever (37)	22 (59.5%)	0 (0%)	7 (18.9%)	5 (13.5%)	2 (5.4%)	0 (0%)	0 (0%)	1 (2.7%)	0 (0%)
Loose of watery stools, ≥ times/day (n=34)	24 (70.6%)	0 (0%)	4 (11.8%)	4 (11.8%)	0 (0%)	0 (0%)	0 (0%)	2 (5.9%)	0 (0%)
Rapid breathing (n=31)	18 (58.1%)	0 (0%)	6 (19.4%)	4 (12.9%)	2 (6.5%)	0 (0%)	0 (0%)	0 (0%)	1 (3.2%)
High fever (n=26)	6 (23.1%)	0 (0%)	12 (46.2%)	6 (23.1%)	2 (7.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Chest in-drawing (n=20)	14 (70%)	0 (0%)	3 (15%)	2 (105)	0 (0%)	0 (0%)	0 (0%)	1 (5%)	0 (0%)
Malaria (n=14)	0 (0%)	0 (0%)	6 (42.9%)	5 (35.7%)	3 (21.4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Grunting or wheezing (n=7)	3 (42.95)	0 (0%)	3 (42.9%)	1 (14.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Blood in sputum (n=4)	2 (50%)	0 (0%)	0 (0%)	2 (50%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Source : KOICA II Baseline survey primary data, 2018

III.1.13. Water, Sanitation and Hygiene

Under this study, WASH area was assessed on its different aspects including source of drinking water for households' members and its treatment, children's stools disposal, existence of a toilet facility and types and hand washing practice among others.

III.1.13.1 Sources of drinking water

According to WHO, access to safe drinking water is measured by the percentage of the population using improved drinking-water sources. An improved drinking water source is a source that, by nature of its construction, adequately protects the water from outside contamination, in particular from fecal matter[32]. Based on this definition and the classification by WHO vis-à-vis improved and unimproved sources of drinking water, it was found that overall, 34.4% of households used unimproved sources of water, which are considered unhealthy.

Table 25. Distribution of households by source of drinking water (n=218)

Water source	Number of HHs	%
Improved sources		
Piped water – into yard/plot	12	5.5
Communal standpipe	90	41.3
Borehole	2	0.9
Public well protected	3	1.4
Dug well in yard/compound –protected	36	16.5
S/Total healthy sources	*143*	*65.6*
Unimproved sources		
Public well – unprotected	4	1.8
Dug well in yard/compound – unprotected	47	21.6
River/stream	16	7.3
Other	8	3.7
S/Total Unhealthy sources	*75*	*34.4*

Source : KOICA II Baseline survey primary data, 2018

III.1.13.2 Treatment of drinking water

One of the major vehicles of WASH-related disease transmission is contaminated drinking water. Drinking water can be contaminated at the source, during fetching (by dirty water containers), transportation, and poor handling at home. It is important, therefore, to treat water at the household level.

[32] WHO, Water Sanitation and Hygiene at https://www.who.int/water_sanitation_health/monitoring/jmp2012/key_terms/en/

In this study, out of 218 respondents, 93 (42.7%) households reported treating drinking water while 29 (13.3%) said treating it sometimes. The remaining 96 households (44%) declared that they do not treat at all drinking water to make it safe before drinking it. Among the 122 households that treated drinking water all the time and sometimes, 78 (63.9%) used the boiling method, 10 (8.2%) combined boiling and filtering, 10 (8.2%) used a water filter and 4 (3.3%) used to add bleach/chlorine. The other 20 (16.4%) simply let water stand and settled sedimentation.

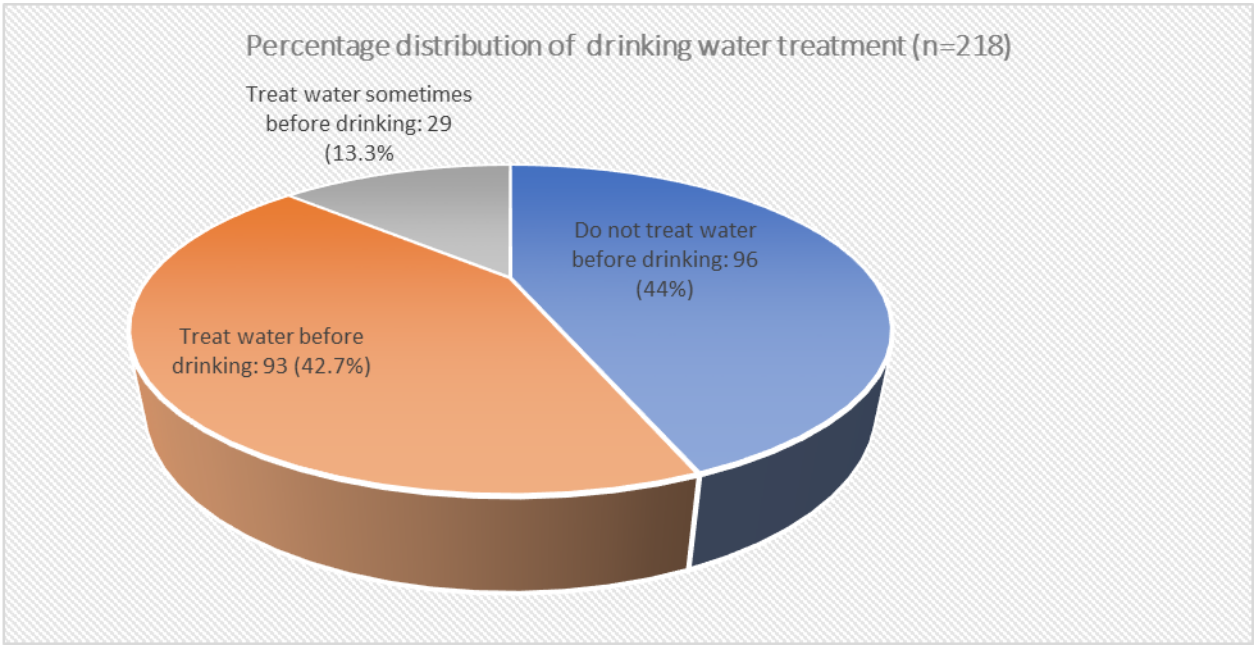


Figure 15. Drinking water treatment

Source : KOICA II Baseline survey primary data, 2018

III.1.13.3 Safe disposal of stools of children aged under 5 years

This WASH aspect was assessed by asking mothers/caregivers about the place where children under-five years old in the household go to defecate. It is well known that child stool disposal is a key WASH indicator and that unsafe stool disposal may cause infectious diseases. In the zone of intervention, most respondents (82.6%, n=46) safely disposed the feces of children who couldn't yet use the toilet by throwing it in their own toilet or neighbor's toilet (4.3%). However, there still remained a not-negligible number of households (8.7%) that used unsafe means of child stool disposal, like letting children going to defecate outdoor near the house, this being an important environment pollutant and source of infections (Table 26). Through the FGDs, it was heard that some families without toilets are likely to deface around in the streets and bushes nearby.

"There are families which don't have toilets and defecate around, or others have just the so-called toilets, so that they show to the leaders that they have toilet, but truly this is not useful at all!" KII interviewee in Gihango sector.

Table 26. Place of defecation or stool disposal for children under-five years (n=46)

Place for defecation/stool disposal	n	%
Own toilet	38	82.6
Neighbor's toilet	2	4.3
Outdoor near the house	4	8.7
Diaper	2	4.3

Source : KOICA II Baseline survey primary data, 2018

III.1.13.4. Access to toilet facilities

A safe environment free from fecal pollutants and vectors of disease transmission largely depends on the status of toilet facilities (latrines). In households with improved sanitation facilities, disease vectors have a very small or no role to play.

The Joint Monitoring Programme for Water and Sanitation (UNICEF/World Health Organization (WHO)) has defined for monitoring that an "improved" sanitation facility is one that hygienically separates human excreta from human contact. It defines improved/unimproved sanitation hardware and in this context, a pit latrine with slab was classified as an improved facility (at a condition that the slab is totally closed and has a cover), while a pit latrine without slab/open pit was considered as an unimproved facility[33].

We found that 5 households (2.3%, n=218) did not have a latrine. Of households that had a toilet (n=213), 183 (83.9%) used an unimproved sanitary facility which is a traditional pit latrine which does not have an appropriate slab nor a cover or a door. Five (5) households (2.3%) had latrines with slabs only (without other accessories), and 18 (8.3%) households used improved pit latrines with slab, cover, roof and door. Only 2 (3.7%) households had flush toilets (Figure 15).

Traditional pit latrines with slabs do not prevent flies and other disease vectors from entering into the latrine. As reported by one the participants to the FGDs and KIIs, poverty and poor mind set of some people were mentioned as one of the factors that are contributing to the lack of toilets.

"Some families are not capable to build a standardized toilet, others are about lack of understanding that having toilets is on their benefits that is why they need more teaching and sensitization". KII in Gihango sector

[33] Ministry of Infrastructure (MININFRA). 2016. National sanitation policy.2016

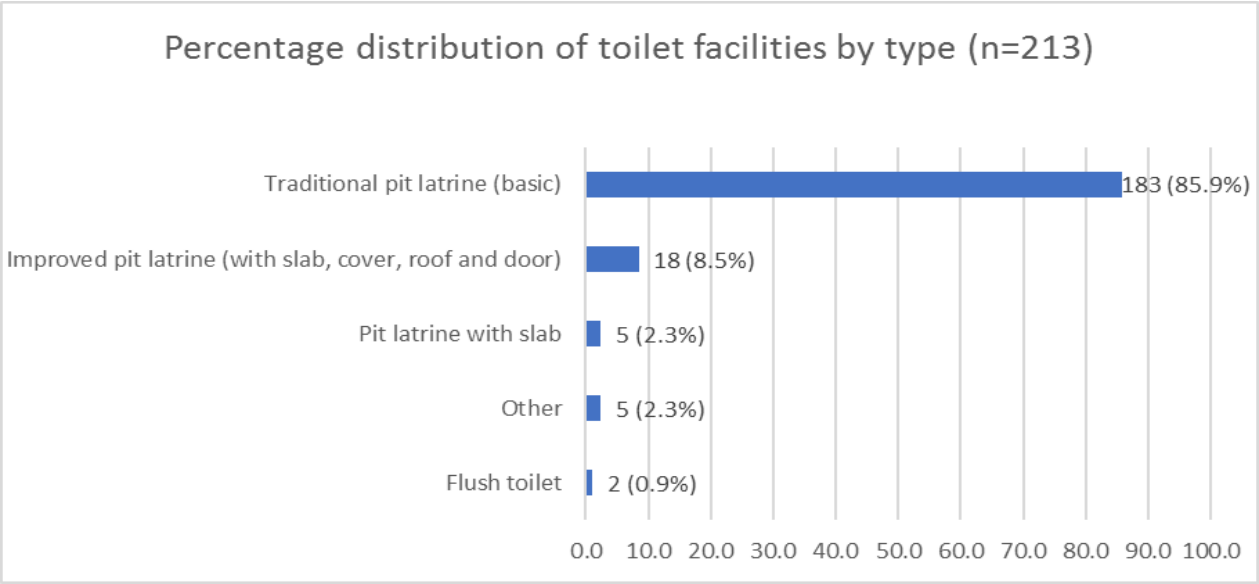


Figure 16. Distribution of toilet facilities by type

Source : KOICA II Baseline survey primary data, 2018

III.1.13.5. Handwashing by caregivers at critical moments

This survey has assessed critical occasions/moments the respondent washed her hands from the morning of the previous day up to the time of interview.

Out of 239 respondents, hand washing before cooking was practiced by 208 (87%), and 173 (72.4%) washed their hands after handling their child's feces or cleaning their child's bottom. Furthermore, 219 (91.6 %) respondents washed their hands before eating, while 171 (71.5%) respondents washed their hands before feeding their child and 194 (81.2%) washed their hands after going to the toilet (Figure 16).

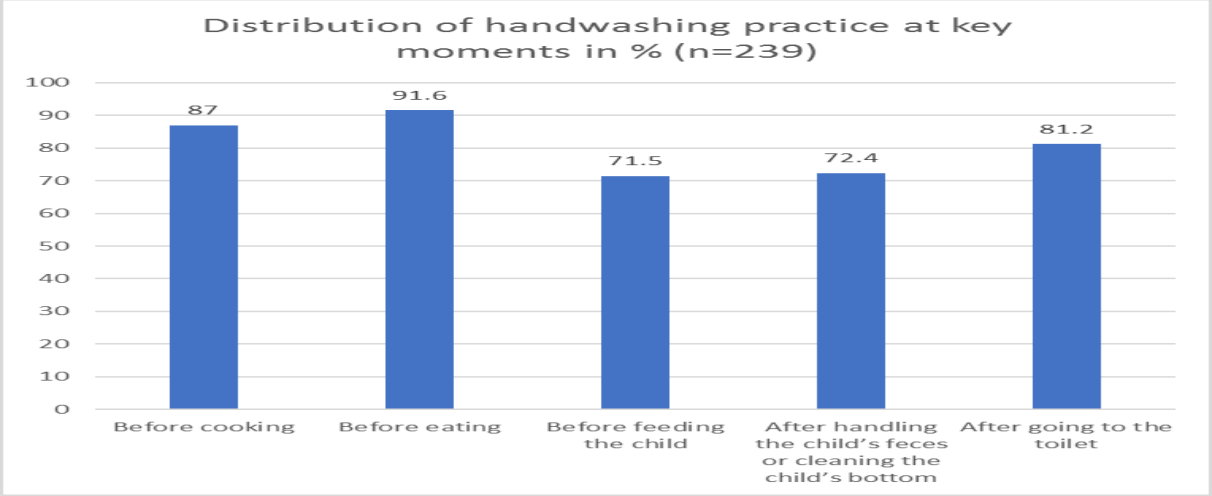


Figure 17. Distribution of handwashing at key moments

Source : KOICA II Baseline survey primary data, 2018

With regard to products used to wash hands at any critical moment, 64% up to 75% of respondents used water and soap at the same time. However, and in the same way, 24% to 34% used water only to wash their hand at critical moments (Table 27).

Table 27. Access to water and soap for hand-washing at key moments

Key moments to hand washing	Product used	Number of respondents	%
Before cooking (n=208)	Water only	51	24.5
	Water and soap	156	75.0
	Don't know	1	0.5
Before eating (n=219)	Water only	67	30.6
	Water and soap	150	68.5
	Don't know	2	0.9
Before feeding the child (n=171)	Water only	59	34.5
	Water and soap	110	64.3
	Don't know	2	1.2
After handling the child's feces or cleaning the child's bottom (n=173)	Water only	48	27.7
	Water and soap	121	69.9
	Don't know	4	2.3
After going to the toilet (n=194)	Water only	54	27.8
	Water and soap	139	71.6
	Don't know	1	0.5

Source : KOICA II Baseline survey primary data, 2018

III.1.13.6. Availability of a separate kitchen and place for keeping livestock

During the survey, it was observed whether or not the household had a separate kitchen for cooking and if domestic animals were kept inside the family house or in the same building where they cook and eat. Out of 218 households, it was found that only 117 (53.7%) households had a kitchen separate from the main house. Among households who had livestock (n=110), we observed that 33 (30%) had their livestock kept in the same house where they cook and family members eat and sleep (Table 28).

Table 28. Access to a separate kitchen and place for keeping livestock

Characteristic	Existence	Number of households	%
The household has a separate kitchen for cooking (n=218)	No	101	46.3
	Yes	117	53.7
Domestic animals are kept inside the family house or in the same building where they cook and eat (n=110)	No	77	70.0
	Yes	33	30.0

Source : KOICA II Baseline survey primary data, 2018

III.1.14. Women nutritional status using MUAC

Identifying the optimal MUAC cut-off to determine undernutrition in pregnant women and lactating women has been always a complex problem. With this study, we used the 1995-WHO cut-offs[34]

Among the 239 women measured, it was found that two pregnant women (1.9%) had moderate acute malnutrition while three lactating mothers (2.3%) were in severe acute malnutrition. Overall, the prevalence of moderate acute malnutrition was 0.9% and the prevalence of severe acute malnutrition was 1.1%. Globally, only five women (2.1%) were malnourished (Table 29).

Table 29. Nutritional status of pregnant and lactating women using MUAC (N=239)

MUAC Measurement in centimeters	Pregnant women (n=106)		Lactating women (n=133)		Total	
	N	%	N	%	n	%
≥ 21.4 cm and ≤22.1 cm: Moderate acute malnutrition	2	1.9	0	0.0	2	0.9
< 21.4 cm: Severe acute malnutrition	0	0.0	3	2.3	3	1.1
>22.1 cm: Good nutritional status	104	98.1	130	97.7	234	97.9

Source : KOICA II Baseline survey primary data, 2018

III.1.15. Factors associated with food availability in households

Food availability[35] was found to be associated with land use (p=0.003), households that used the land they had were likely to get food more than those who did not use it. It was also strongly associated with the household income within the month preceding the survey (p<0.001) as households with an income of 10,000 Rwandan francs or more were prone to getting more foods than those that gained less.

Table 30. Factors associated to food availability

Characteristics	n	Household food availability		
		Yes	No	p-value
Family size				
1-5 members	180	50.0	50.0	0.213
6 or more members	59	59.3	40.7	
Can read/write in Kinyarwanda				
No	47	53.2	46.8	0.892

[34]http://www.foodsecurity.nrc-handbooks.org/assets/nutrition-assessment-table-6.pdf.

[35] 'Food availability' was a created variable to get an idea on how households were likely to access food. It combines other variables, namely household production of one or more crops, possession of livestock (one or more) and an income of at least 10,000 Rwandan francs within the month preceding the survey.

Yes	192	52.1	47.9	
Woman's education category				
None	17	35.3	64.7	0.263
Low category (1-6 years primary level)	183	52.5	47.5	
High (1 secondary year or above)	39	59.0	41.0	
Woman's occupation				
Not working	9	33.3	66.7	0.398
Wage employment (Daily worker)	21	61.9	38.1	
Business/trader/self-employment	3	66.7	33.3	
Salaried worker	2	100.0	0.0	
Agriculture or Livestock or Poultry or Aquaculture or Fishing	203	51.2	48.8	
Other	1	100.0	0.0	
Women's marital status				
Never married	28	32.1	67.9	0.237
Currently married	153	56.2	43.8	
Widowed	4	75.0	25.0	
Divorced	2	50.0	50.0	
Separated	3	66.7	33.3	
Cohabitation	49	49.0	51.0	
Exposure to information				
No	220	51.8	48.2	0.611
Yes	19	57.9	42.1	
Land possession				
No	81	54.3	45.7	0.654
Yes	158	51.3	48.7	
Land use				
No	56	69.6	30.4	0.003*
Yes	183	47.0	53.0	
Livestock possession				
No	129	51.2	48.8	0.703
Yes	110	53.6	46.4	
Household production of last year in Kg				
No production	80	61.3	38.8	0.134
Production below 25 kg	50	44.0	56.0	
Production between 25 and 50 kg	38	42.1	57.9	
Production above 50 kg	71	53.5	46.5	
Household monthly income				
Less than 10 thousand Rwandan francs	114	0.0	100.0	0.000*
At least 10 thousand Rwandan francs	125	100.0	0.0	

Tested by chi-squared test

Source : KOICA II Baseline survey primary data, 2018

PART II: HOUSEHOLDS WITH CHILDREN 6-59 MONTHS OF AGE SURVEY

III.II.1. Socio-demographic characteristics

Socio-demographic indicators presented below are about the relation of the respondent to the child, the family size, the number of family members that are five or older, the child's sex and age. All these characteristics generally can predict a household members' state of well-being and quality of life, and particularly, under this chapter, the child's health and nutritional status when analyzed correlated with some determinant factors.

III.II.1.1 Respondent's relation to the child and distribution of children by sex and age groups

In total, 555 children 6-59 months were taken into the survey, including 284 boys (51.2%) and 271 girls (48.8%). It was found that, both sexes put together, 29.2% of the children were in the 24-35 month-age group which is the most represented group. Proportions of younger and older children are relatively smaller. Younger children in the 6-8- and 9-11-months groups represented only 4.5% and 5%, respectively.

Overall, mothers were the ones who were caring on the child the day of the survey and were the ones who provided information on the child and the household (84.5%) while fathers and grandmothers did so at 9.5% and 4.3%, respectively (Table 31).

Table 31. Respondent's relation to the child and distribution of children by sex and age groups (n=555)

Sex/Age group		n	%
Respondent's relation to the child	Mother	469	84.5
	Father	53	9.5
	Grandmother	24	4.3
	Sister/brother	2	0.4
	Relative	7	1.3
	Other	0	0.0
Child's sex	Male	284	51.2
	Female	271	48.8
Age group of the child (in months)	6-8	25	4.5
	9-11	28	5.0
	12-17	83	15.0
	18-23	81	14.6
	24-35	162	29.2
	36-47	101	18.2
	48-59	75	13.5

Source : KOICA II Baseline survey primary data, 2018

III.II.1. 2 Household population

The survey revealed that 57.8% of the households (n=555) counted 4-6 members while 23.4% had 2-3 members and 18.7% of the households 7 members or more. We also observed that 56.9% of the households had 3 or less members who were 5 years old or older and 34.2 % had 4-6 members. Fewer households (8.8%) counted 7 or more members 5 years old or older. The average family size was 5.1 members while the average number of family members 5 years old or older was 3.6 (Table 32).

Table 32. Number of households members by age groups (n=555)

Characteristics		n	%
Number of household members	2-3	130	23.4
	4-6	321	57.8
	7+	104	18.7
Number of household members 5 years old or older	1-3	316	56.9
	4-6	190	34.2
	7+	49	8.8
Average family size			5.1
Average number of family members 5 years old or older			3.6

Source : KOICA II Baseline survey primary data, 2018

The majority of birthmothers were young since 72% were under 35 years of age while 27% were aged 35-49 years. Only 1% of birthmothers were at least 50 years old. On the other side, we found that 58% of birthfathers were under 35 years old and 33% of them were 35-49 years. Almost one birthfather in ten (9%) was 50 years old or older (Figure 17).

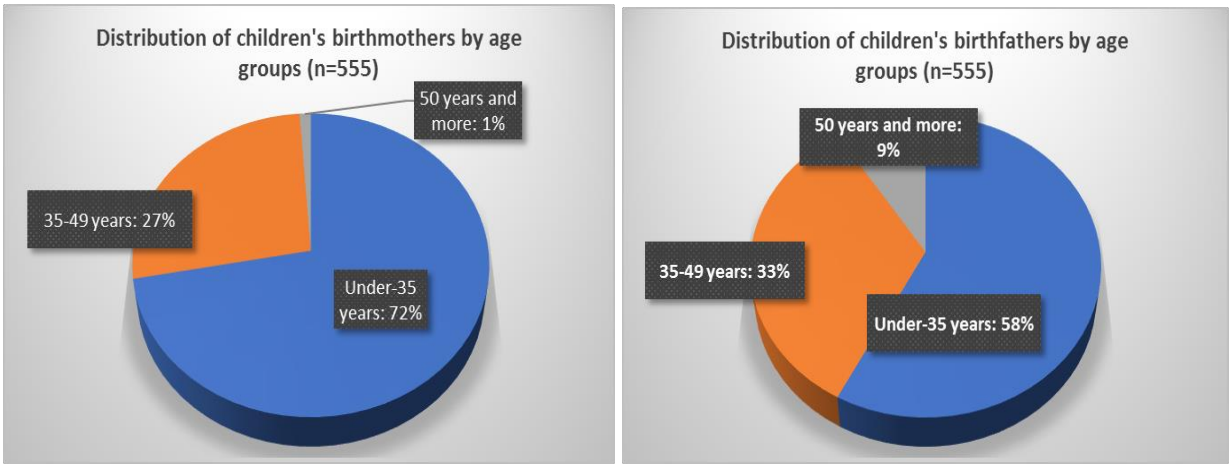


Figure 18. Distribution of birthmothers and birthfathers by age groups (n=555)

Source : KOICA II Baseline survey primary data, 2018

III.II.1. 3 Marital status of children's birthmothers

It was found that 347 (62.5%, n=555) birthmothers were married at the time of the survey while one in six (16%) was just cohabitating with her partner, 82 (14.8%) had never got married and 22 (4%), 12 (2.2%) and 3 (0.5%) were separated, widowed, or divorced, respectively (Table 33).

Table 33. Marital status of birthmothers (n=555)

Marital status	n	%
Never married	82	14.8
Currently married	347	62.5
Widowed	12	2.2
Separated	22	4.0
Divorced	3	0.5
Cohabitation	89	16.0
Total	555	100.0

Source : KOICA II Baseline survey primary data, 2018

III.II.1. 4 Education level of birthmothers and birthfathers

Comparable proportions of birthmothers (74.1%, n=555) and fathers (73.8%, n=526) could read or write in Kinyarwanda, the local language. We also observed that the majority of children's parents had achieved 1 to 5 schooling primary years (uncomplete primary), 44,1% of mothers and 35.4% of fathers and this revealed that there were more mothers than fathers who had not completed primary school. Percentages of mothers and fathers who had completed primary education (6 years) were comparable as 32% of mothers and 34,2% of fathers did so. There were more fathers (55, 11.2%) than mothers (47, 8.6%) who reached an uncompleted secondary education level (7-11 years) while conversely, more mothers (19, 3.5%) than fathers (11, 2.2%) had completed the secondary level education (12 years). Only 3 mothers (0.6%) and 2 fathers (0.4%) had reached the tertiary level (13-18 years). On the other side, 16.5% and 11.2% of fathers and mothers were illiterate or had no education level, respectively (Table 34).

Table 34. Education level achieved by birthmothers and birthfathers

Characteristic		n	%
Capability to read/write in Kinyarwanda			
Birthmothers (n=555)	No	144	25.9
	Yes	411	74.1
	don't know	0	0.0
	Total	555	100.0
Fathers (n=526)	No	130	24.7
	Yes	388	73.8
	don't know	8	1.5
	Total	526	100.0
Years of schooling completed			
Birthmothers	None	61	11.2

Characteristic		n	%
(n=544)	1-5 (uncomplete primary)	240	44.1
	6 (Primary)	174	32.0
	7-11 (Uncomplete Secondary)	47	8.6
	12 (Secondary)	19	3.5
	13-18 (University)	3	0.6
	Total	544	100.0
Birthfathers (n=491)	None	81	16.5
	1-5 (uncomplete primary)	174	35.4
	6 (Primary)	168	34.2
	7-11 (Uncomplete Secondary)	55	11.2
	12 (Secondary)	11	2.2
	13-18 (University)	2	0.4
	Total	491	100.0

Source : KOICA II Baseline survey primary data, 2018

III.II.1. 5 Occupation of birthmothers and birthfathers

The analysis for birthmothers (n=555) and fathers (n=526) showed that 82.7% of mothers and 68.6% of fathers were self-employed in agriculture or livestock (or poultry or aquaculture or fishing), respectively. In addition, 11.4% of mothers and 17.1% of fathers had a wage employment as daily workers while1.6% of mothers and 2.5% of fathers were running a business or were small traders. Furthermore, 0.5% of mothers and 1.5% of fathers were salaried workers. Finally, 1.8% of mothers and 2.1 % of fathers reported that they were not working (Table 35).

Table 35. Main occupation of birthmothers and birthfathers

Characteristics		n	%
Birthmothers (n=555)	Not working	10	1.8
	Retired	0	0.0
	Student	1	0.2
	Non-earning occupation (eg. housewife)	2	0.4
	Wage employment (daily worker)	63	11.4
	Business/trader/self-employment	9	1.6
	Salaried worker	3	0.5
	Agriculture or Livestock or Poultry or Aquaculture or Fishing	459	82.7
	Other	4	0.7
	Don't know	4	0.7
	Total	555	100.0
Birthfathers (n=526)	Not working	11	2.1
	Retired	9	1.7
	Student	1	0.2
	Non-earning occupation (eg. housewife)	0	0.0
	Wage employment (Daily worker)	90	17.1

Characteristics		n	%
	Business/trader/self-employment	13	2.5
	Salaried worker	8	1.5
	Agriculture or Livestock or Poultry or Aquaculture or Fishing	361	68.6
	Other	16	3.0
	Don't know	17	3.2
	Total	526	100.0

Source : KOICA II Baseline survey primary data, 2018

III.II.1. 6 Women fertility

Every mother was asked to respond about the number of children born alive to her in her lifetime and the number of children born to her who were still alive. Among the 555 women who responded, the bigger number of mothers have had 2-3 children in their lifetime, 240 (43.2%), while 155 (27.9%) have had 4-7 children, 139 (25%) 1 child and 21 (3.8%) 8 or more children. In average, 3.1 children were born alive to one mother in the surveyed households while 2.9 children were still alive per one mother (Table 36).

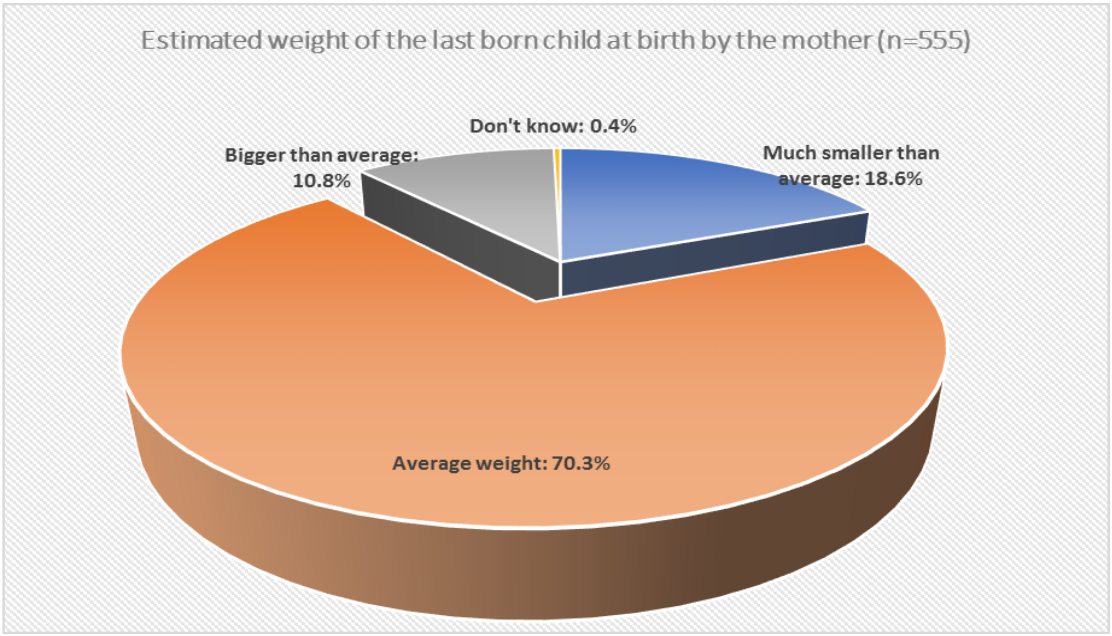
Table 36. Women fertility and children's death (n=555)

Characteristics	Number of children	Number of mothers	%
Number of children born alive to the mother in her lifetime	1	139	25.0
	2-3	240	43.2
	4-7	155	27.9
	8 or more	21	3.8
Number of children born to the mother still alive	1	147	26.5
	2-3	243	43.8
	4-7	152	27.4
	8 or more	13	2.3
Average number of children born alive to a mother			3.06
Average number of children born alive to a mother and still alive			2.88

Source : KOICA II Baseline survey primary data, 2018

III.II.1. 7 Perceived child's weight at birth by respondents

Mothers were asked to estimate the weight of their lastborn child. The way to know how the mother valued her lastborn child's weight was to ask each one how she perceived her child's weight at birth comparing it to the ones of other children at birth in her neighborhood. It was revealed that 390 (70.3%) mothers estimated that their lastborn had an 'average' weight at birth, while 103 (18.6%) estimated their lastborn child at birth 'much smaller' than the average and 60 (10.8%) estimated their child at birth 'bigger' or 'much bigger' than the average (Figure 18).



***Source :* Figure 19. Perceived weight of children at birth by the mothers**

KOICA II Baseline survey primary data, 2018

III.II.1. 8 Child care giving in households

Mothers were asked about who else, apart from them, take care of the child. The majority of mothers (73.5%, n=555) reported getting help from the child's father and 9.5% from the grandmother while 13.3% do not get help from anybody. The majority of mothers reported preparing food for their child (92.3%) and feed the child (92.8%) themselves (Table 37). As reported by KIIs and participants to the FGDs, it was noted that though woman and man can share the responsibilities, the woman is the most to take care of the family nutrition despite the lack of decision making power and limited access to the family property and management.

"For malnutrition-related problems, the husband and wife share the burden, but most of the time, it is the woman who bears the big responsibilities since the woman is the one who takes care of the children and other households matters more than the husband" Said LW in a FGD.

Table 37. Child care giving in households (n=555)

Characteristics		**N**	**%**
Persons who help the mother in taking care of the child	No one	74	13.3
	Father	408	73.5
	Grand mother	53	9.5
	Aunt	7	1.3
	Older child	3	0.5
	Neighbor/friend	1	0.2
	Other family member	9	1.6
Person who usually prepare food for the child	Mother	512	92.3

	Father	9	1.6
	Grand mother	26	4.7
	Aunt	4	0.7
	Older child	3	0.5
	Other family member	1	0.2
Person in the household who usually feeds the child	Mother	515	92.8
	Father	7	1.3
	Grand mother	23	4.1
	Aunt	5	0.9
	Older child	4	0.7
	Other family member	1	0.2

Source : KOICA II Baseline survey primary data, 2018

III.II.2. Households economic conditions

Under this section, a set of aspects of households' conditions were analyzed and these include house conditions, assets and land ownership and domestic animals rearing.

III.II.2.1. House status and energy-source for cooking

Among the respondents (n=548), 84.9% lived in their own house while 7.3% were in a rented house and 6.6% lived for free in a provided house. With regard to the exterior of the house, 90.9% of the houses they lived in had mud or sand as the main material of the exterior/outer wall while 6% have their exterior made of cement. Considering the floor inside the house, 82.5% of the houses had the floor made of earth or sand while 10.6 % of the houses had the floor in cement, 0.9% in cow dung, and 6% in other materials not specified during the survey. Regard done to the house's roof, 89.2% of the houses had their roof in tiles, 8.6% in galvanized iron sheets; one house (0.2%) had its roof in cement, one in banana leaves (0.2%), 2 houses had their roofs in cardboard and 6 (1.1%) in other none specified materials and 2 houses (0.4%) did not have roof at all. Most of the houses (55.7%, n=555) the respondents lived in were 3 to 4-rooms, 22.7% of the houses had 5-7 rooms while 21.4% had 1 to 2 rooms. On another vein, 23.7% of the houses (n=548) had electricity and 97.6% of the households reported using firewood as main source of energy for cooking (Table 38).

Table 38. House status and ernergy-source for cooking

Characteristics		**n**	**%**
Living house ownership status (n=548)	own	465	84.9
	rent	40	7.3
	free or provided	36	6.6
	other	5	0.9
	don't know	2	0.4
	Total	548	100.0
Main material of the exterior/outer wall (n=548)	No walls	1	0.2
	Mud/Sand	498	90.9

Characteristics		n	%
	Bricks	1	0.2
	Stone with Mud	1	0.2
	Reused wood	1	0.2
	Cement	33	6.0
	Other	13	2.4
	Total	548	100.0
Main material of the floor inside the house (n=548)	Earth/Sand	452	82.5
	Animal dung	5	0.9
	Cement	58	10.6
	Other	33	6.0
	Total	548	100.0
Main material of the roof (n=548)	No Roof	2	0.4
	Banana leaf/grass	1	0.2
	Ceramic tiles	0	0.0
	Cement	1	0.2
	Cardboard	2	0.4
	Galvanized/iron sheet	47	8.6
	Tiles	489	89.2
	Other	6	1.1
	Total	548	100.0
Number of rooms in the house (n=555)	1-2	119	21.4
	3-4	309	55.7
	5-7	126	22.7
	8 or more	1	0.2
	Total	555	100.0
Electricity available in the house (n=548)	No	416	75.9
	Yes	130	23.7
	don't know	2	0.4
	Total	548	100.0
Main source of energy for cooking (n=548)	Firewood	535	97.6
	Gas	3	0.5
	Electricity	1	0.2
	Charcoal	4	0.7
	Other	3	0.5
	Don't Know	2	0.4
	Total	548	100.0

Source : KOICA II Baseline survey primary data, 2018

III.II.2.2 Household assets possession

Respondents in the survey were asked if their households possessed a working radio (wireless), bicycle, refrigerator, television, mobile phones, landline telephone, tape/CD player, bed, mattress, tables and chairs, paraffin lamp, sofa set or a sewing machine.

It was found that the most possessed assets in households were beds (62.2%), tables and chairs (56.8%), mattresses (45.3%) and mobile phones (44.9%). Otherwise, other assets were possessed by fewer

households and these include working wireless radio (16.2%) and television (1.5%). Overall, possession of bedding and sitting assets and mobile phone was relatively high, while possession of assets for official communication (radio and television) was low (Figure20).

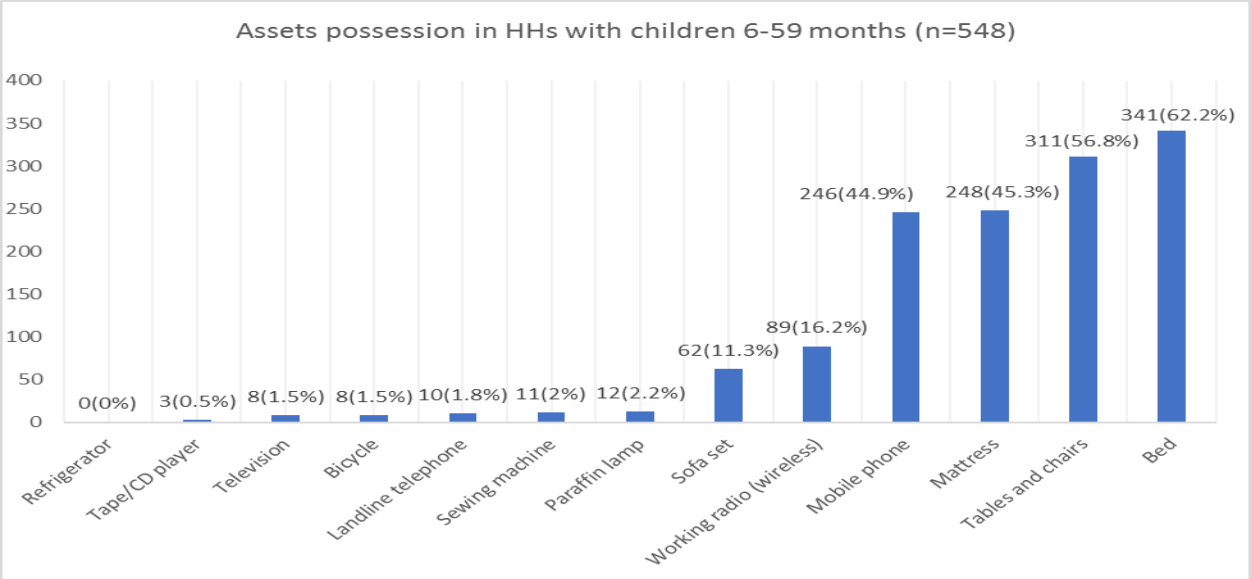


Figure 20. Assets possession (n=548)

Source : KOICA II Baseline survey primary data, 2018

III.II.2.3. Land possession and use

Getting food and income in rural Rwanda is generally dependent on agriculture work, itself dependent on land possession and its use. When it comes to people in *Ubudehe 1 and 2 which* are the poorest categories of the national wealth population ranking, thus the focus of the project, land is rather rare for them or comparatively very small to satisfy households' members needs in foods.

Among the respondents (n=548), 443 (80.8%) owned a land and 104 (19%) — almost 1 person in five — were without land. This could explain in part why 162 households (29.6%) used to rent a land for food production. The study revealed that 486 (88.7%) of households used their land for food production consumed at the household level while only 50 households (9.1%) used the land to produce food for sale (Table 39).

Table 39. Land ownership and use (n=548)

Characteristic		n	%
Any member in the HH owns a land	No	104	19.0
	Yes	443	80.8
	don't know	1	0.2
A member of the HH rents a land	No	385	70.3
	Yes	162	29.6
	don't know	1	0.2
A member of the HH uses land to produce food for the household	No	62	11.3
	Yes	486	88.7

Characteristic		n	%
A member of the HH uses land to produce food for sale	No	498	90.9
	Yes	50	9.1

Source : KOICA II Baseline survey primary data, 2018

III.II.2.3.1Grains, fruits and vegetables growing

Besides being energy-giving foods, grains are good sources of vitamins and minerals for human body along with vegetables and fruits. However, the study found that only 56.8% (n=548) of surveyed households had grown maize within a one-year period preceding the survey, and very few had grown sorghum (3.5%) and wheat (2.6%). With regard to vegetables and fruits, only 62.2% had grown dark leafy green vegetables that are good source of important vitamins and minerals while 20.1% and 15% had grown banana fruit and avocados, respectively. Good sources of vitamin A were grown in fewer households: carrots (7.5%) papaya (5.7%) as well as mangoes (4%) (Figure 20).

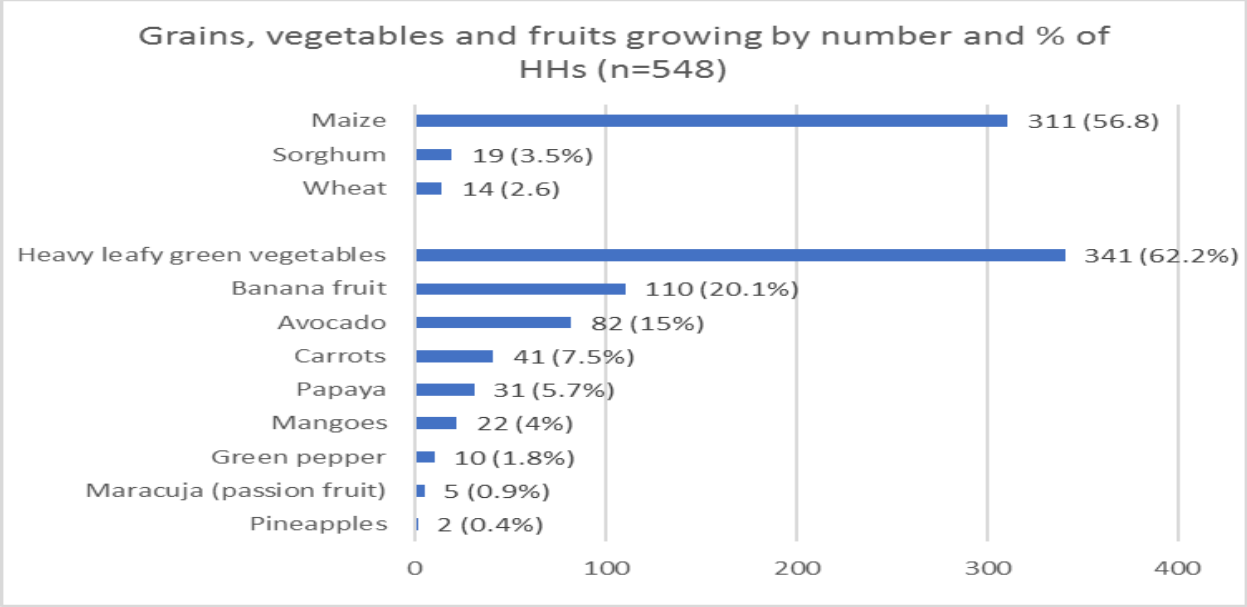


Figure 21. Grains, fruits and vegetables growing (n=548)

Source : KOICA II Baseline survey primary data, 2018

III.II.2.3.2 Grains, vegetables and fruits production

Among the 344 grains growers, 341 were able to report on quantities of grains they had produced within the 12 months preceding the survey, of which 308 (90.3%) had grown maize and very few 19 (5,6%) and 14 (4.1%) had grown sorghum and wheat, respectively. In terms of quantities of any kind of grain produced, 136 (39.9%) reached a production of 10-29 kilograms and 88 (25.8%) produced 30-49 kilograms and 54 (15.8%) reached 50-69 kilograms. We also observed that 16 (4.7%) produced 70-99 kilograms, 31 (9.1%) have achieved a hundred or more kilograms while 16 growers (4.7%) reported having produced less than 10 kilograms of any type of grain. Overall, it is revealed by summation that a

big majority of grains growers, 294 (86,2%) produced less than 70 kilograms in the 12 months preceding the survey (Table 40).

Table 40. Quantity of grains produced in kilograms by number of growers (n=341)

Quantity in Kg	Maize (n=308)		Sorghum (n=19)		Wheat (n=14)		Total (n=341)	
	Number of growers	%	Number of growers	%	Number of growers	%	Number of growers	%
Less than 10	15	4.9	1	5.3	0	0.0	16	4.7
10-29	120	39.0	9	47.4	7	50.0	136	39.9
30-49	76	24.7	6	31.6	6	42.9	88	25.8
50-69	52	16.9	1	5.3	1	7.1	54	15.8
70-99	15	4.9	1	5.3	0	0.0	16	4.7
100+	30	9.7	1	5.3	0	0.0	31	9.1
Total	**308**	**90.3**	**19**	**5.6**	**14**	**4.1**	**341**	**100.0**

Source : KOICA II Baseline survey primary data, 2018

Dark leafy green vegetables were the most produced vegetable in terms of number of growers since they were grown by 308 (86%) households, which is a good thing as long as they are important source of vitamins and minerals. Households were less interested in producing other types of vegetables since only 41 (11.4%) households and 9 (2.5%) have produced carrots and green pepper, respectively. Most of the growers, 171 (47,8%) produced 10-29 kilograms of any kind of vegetable and 89 (24.9%) produced less than 10 kilograms within the12 month-period before the survey (Table 41).

Table 41. Vegetables production in kilograms by number of growers (n=358)

Quantity in Kg	Dark leafy green vegetables (n=308)		Carrots (n=41)		Green pepper (n=9)		Total (n=358)	
	Number of growers	%	Number of growers	%	Number of growers	%	Number of growers	%
Less than 10	71	23.1	12	29.3	6	66.7	89	24.9
10-29	147	47.7	23	56.1	1	11.1	171	47.8
30-49	39	12.7	4	9.8	0	0.0	43	12
50-69	37	12.0	2	4.9	1	11.1	40	11.2
70-99	5	1.6	0	0.0	0	0.0	5	1.4
100+	9	2.9	0	0.0	1	11.1	10	2.8
Total	**308**	**86.03**	**41**	**11.45**	**9**	**2.51**	**358**	**100**

Source : KOICA II Baseline survey primary data, 2018

With regard to the production of fruits within the 12 months preceding the survey, banana was the most produced fruit reported by 103 (44%) households, followed by avocados produced by 77 (32.9%)

households. Vitamin A-source fruits were less produced: papaya by 28 (11.9%) households, mangoes by 21 (8.9%) and passion fruit by 5(2.3%) households. In terms of production and all types of fruits considered together, 73 respondents (31.2%) reported having produced 10-29 kg, and 52 (22.2%) produced 100 kilograms or more, these biggest percentages being greatly influenced by the banana production. In addition, 30 households (12.8%) produced less than 10 kilograms during the period. Overall, 171 households (73.1%) produced less than 70 kilograms along the year (Table 42).

Table 42. Quantity of fruits produced in kilograms by number of growers (n=234)

	Banana fruit (n=103)		**Avocado (n=77)**		**Papaya (n=28)**		**Mangoes (n=21)**		**Maracuja (passion fruit) (n=5)**		**Total**	
Quantity in Kg	**number**	**%**	**number**	**%**	**number**	**%**	**number**	**%**	**Number**	**%**	**number**	**%**
Less than 10	3	2.9	6	7.8	13	46.4	5	23.8	3	60.0	30	12.8
10-29	29	28.2	20	26.0	14	50.0	8	38.1	2	40.0	73	31.2
30-49	18	17.5	10	13.0	0	0.0	3	14.3	0	0.0	31	13.2
50-69	17	16.5	15	19.5	0	0.0	5	23.8	0	0.0	37	15.8
70-99	6	5.8	5	6.5	0	0.0	0	0.0	0	0.0	11	4.7
100+	30	29.1	21	27.3	1	3.6	0	0.0	0	0.0	52	22.2
Total	**103**	44	**77**	**32.9**	**28**	**11.9**	**21**	**8.9**	**5**	**2.3**	**234**	**100**

Source : KOICA II Baseline survey primary data, 2018

III.II.2.4. Livestock possession in households

It was found out that among households (n=548), only 165 (30.1%) had at least one dairy cow while 134 (24.5%) and 108 (19.7%) had at least one goat or one chicken, respectively. Smaller numbers of households owned other types of livestock since 25 (4.6%) had rabbits, 23 (4.2%) owned pigs, 14 (2.6%) had sheep and 5 (0.9%) owned beehives. Overall, the research shows that at the maximum, 30% of households owned any type of livestock and, with regards to small livestock, figures are critically low although it is a fact that animals such as chicken, rabbits are affordable to poor families and can boost the nutritional status of family's members besides of being source of income (Figure 22).

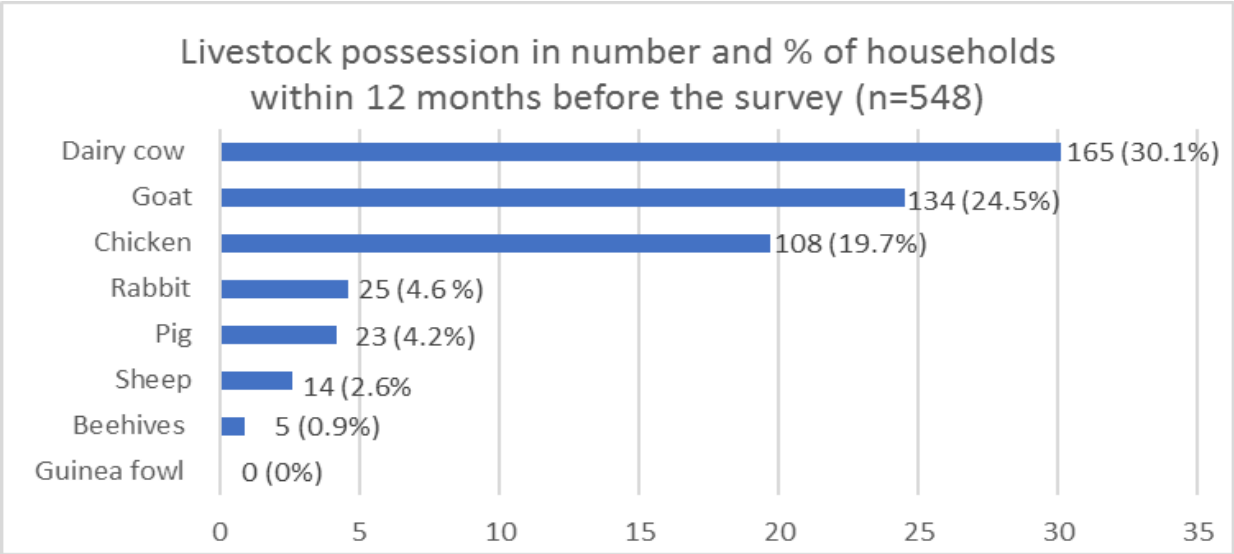


Figure 22. Livestock possession (n=548)

Source : KOICA II Baseline survey primary data, 2018

Among the 165 households owning dairy cows, 142 (86.1%) had only one cow and 23 (13.9%). Of the 134 households who owned goats, 91 (67.9%) had only one goat, 41 (30.6%) possessed 2-3 goats and 2 households (1.5%) had 4-7 goats. Out of the 108 households that owned chickens, 51(47.2%) had 1 chicken, 40 (37.0%) had 2-3 chickens, 12 (11.1%) had 4-7 chickens and 5 (4.6%) owned 8 or more chickens. Among the 12 households that owned pigs, 10 (83.3%) had only one pig. Of the 25 households that possessed rabbits, 11 (44%) had 2-3 rabbits, 9 (36%) had 1 rabbit, 3 households (12%) owned 4-7 rabbits and 2 households (8%) had 8 or more rabbits. Among the 23 households that were rearing pigs, 19 (82.6%) had 1 pig and 4 (17.4%) owned 2-3 pigs. Out of the 14 households that have sheep, 7 (50%) owned 1 sheep, 4 (28.6%) had 2-3 sheep and 3 (21.4%) owned 4-7 sheep. Only 5 households owned beehives of which 2 (40%) had one beehive, equally for those who owned 4-7 beehives, while 1 household (20%) possessed 2-3 beehives. No household owned a guinea fowl.

Overall and apart from chickens and rabbits where numbers of animals owned were comparably dispatched between 1 animal and 2-3 animals or 1 and 4-7 for beehives, for any other type of livestock the majority of households owned only one animal (Table 43).

Table 43. Number of livestock possessed by type of livestock

Livestock	Category number of livestock	n	%
Number of dairy cows (n=165)	1	142	86.1
	2-3	23	13.9
	4-7	0	0.0
	8 or more	0	0.0
	Total	165	
Number of goats (n=134)	1	91	67.9
	2-3	41	30.6

Livestock	Category number of livestock	n	%
	4-7	2	1.5
	8 or more	0	0.0
	Total	134	
Number of chickens (n=108)	1	51	47.2
	2-3	40	37.0
	4-7	12	11.1
	8 or more	5	4.6
	Total	108	
Number of rabbits (n=25)	1	9	36.0
	2-3	11	44.0
	4-7	3	12.0
	8 or more	2	8.0
	Total	25	
Number of pigs (n=23)	1	19	82.6
	2-3	4	17.4
	4-7	0	0.0
	8 or more	0	0.0
	Total	23	
Number of sheep (n=14)	1	7	50.0
	2-3	4	28.6
	4-7	3	21.4
	8 or more	0	0.0
	Total	14	
Number of Beehives (n=5)	1	2	40.0
	2-3	1	20.0
	4-7	2	40.0
	8 or more	0	0.0
	Total	5	
Number of guinea fowls (n=0)	1	0	0.0
	2-3	0	0.0
	4-7	0	0.0
	8 or more	0	0.0
	Total	0	0.0

Source : KOICA II Baseline survey primary data, 2018

III.II.2.5. Households income

Respondents were asked to estimate the level of their total income within the 12-month period preceding the survey, their total income from selling agriculture products within the period as well as the total income during the month before the survey.

It was found that within the year preceding the survey, 138 (25.2%) households gained 100,001 up to 300,000 FRW and135, (24.5%) had 50,001 up to100,000 FRW. Very few households gained more than 300,000 FRW since 19 (3.5%) reported having gained 300,001 up to 500,000 FRW. Lesser households

achieved above 500,000 FRW (12, 2.2%). Overall, 244 households (44.5%) gained less than 50,000 FRW across the year and one household reported not having gained money during the period.

It was found also that 363 (66.2%) households were not able to make income from selling agriculture products meaning that those who had been using land for food production did it exclusively for household consumption. Smaller numbers of respondents came up with some income from selling agriculture products: 99 (18,1%) households gained 10,000 FRW or less, 46 (8.4%) gained between 10,001 and 30,000 FRW. Only 7 households gained 100,001 up to 500,000 FRW. Globally, it was revealed that surveyed households produced rather for consumption and were less able to get an extra production to sell.

During the month preceding the survey, 204 (37.2%) households gained only between 5,001 and 10,000 FRW. Few households gained above 10,000 FRW since only 41 (7.5%) gained 10,001 up to 30,000 FRW and only 30 (5.5%) reached 30,001 up to 50,000 FRW. No household gained more than 50,000 FRW. The other 28 households (5.1%) did not achieve any income during the month before the survey (Figure 22).

In brief and by summation of percentages in Figure 22, it was revealed that 69.1 % of households gained 100,000 FRW or less within the year before the survey. With regard to the month preceding the survey, 81.3% of households gained 10,000 FRW or less and 5.1% of households did not achieve any income within the month. It was also found that most of the households, 66.2%, were not able to make income from selling agriculture products. Overall, it seems that surveyed households rather produce for direct consumption and are less business-oriented, probably because they are not able to be so.

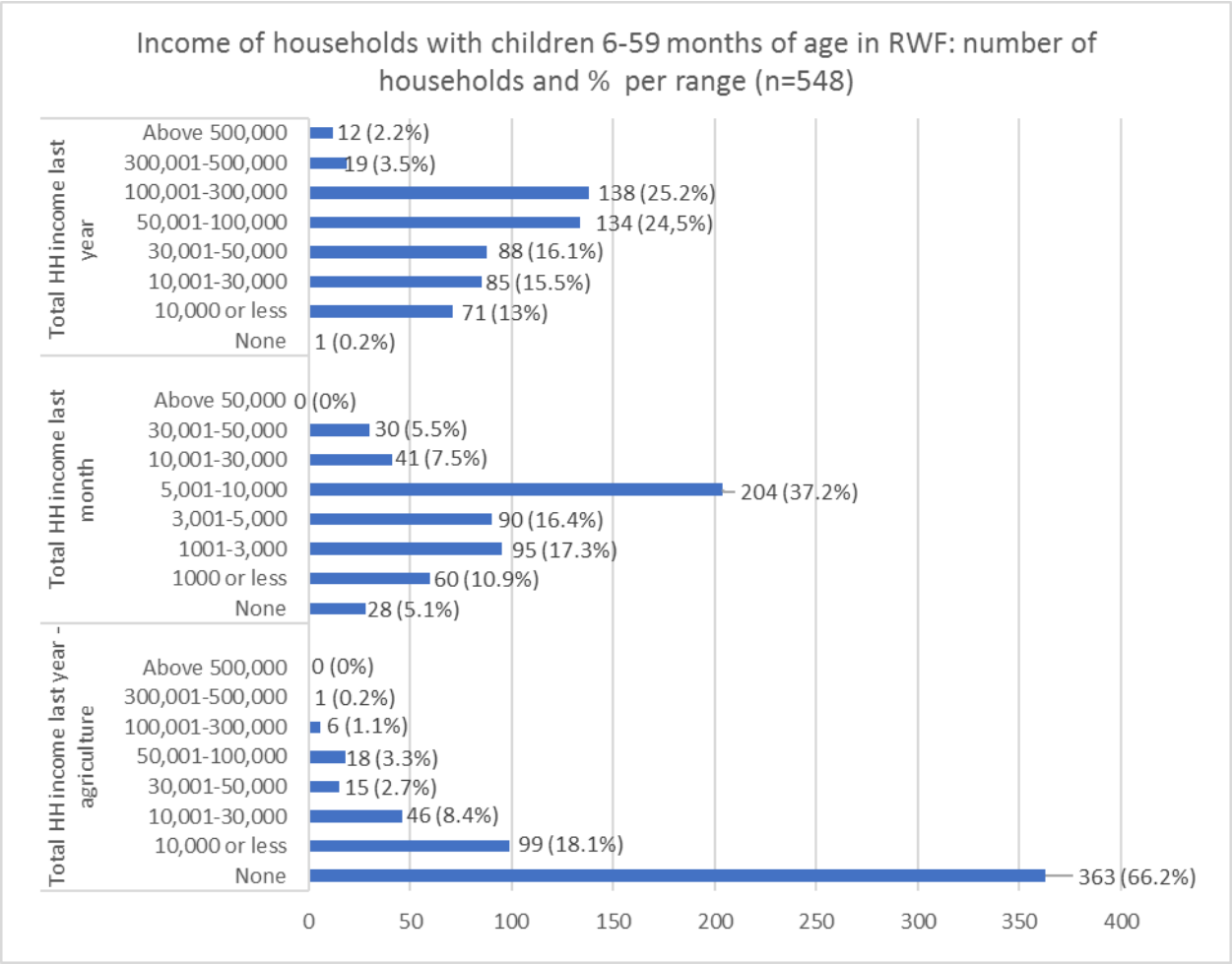


Figure 23. Household income (n=548)

Source : KOICA II Baseline survey primary data, 2018

III.II.3. Households food security

A set of questions were asked to households about worries they might had experienced around food security within 30 days before the survey. The worries respondents were asked about were in line with lacking food at home or resources to buy it and are the following: not having enough food, not being able to eat the kinds of foods preferred, having to eat a limited variety of foods, having to eat some foods that one really did not want to eat, having to eat a smaller meal than one felt she/he needed, having to eat fewer meals in a day, not having at all food in the household, going to sleep at night hungry or going a whole day without eating anything.

III.II.3.1. Household food insecurity

Assuming that 'Not having enough food' could be the most stressing worry households can experience in Rwanda rural areas, it was found that the big majority of households (93.4%) experienced such a stress (Figure 24).

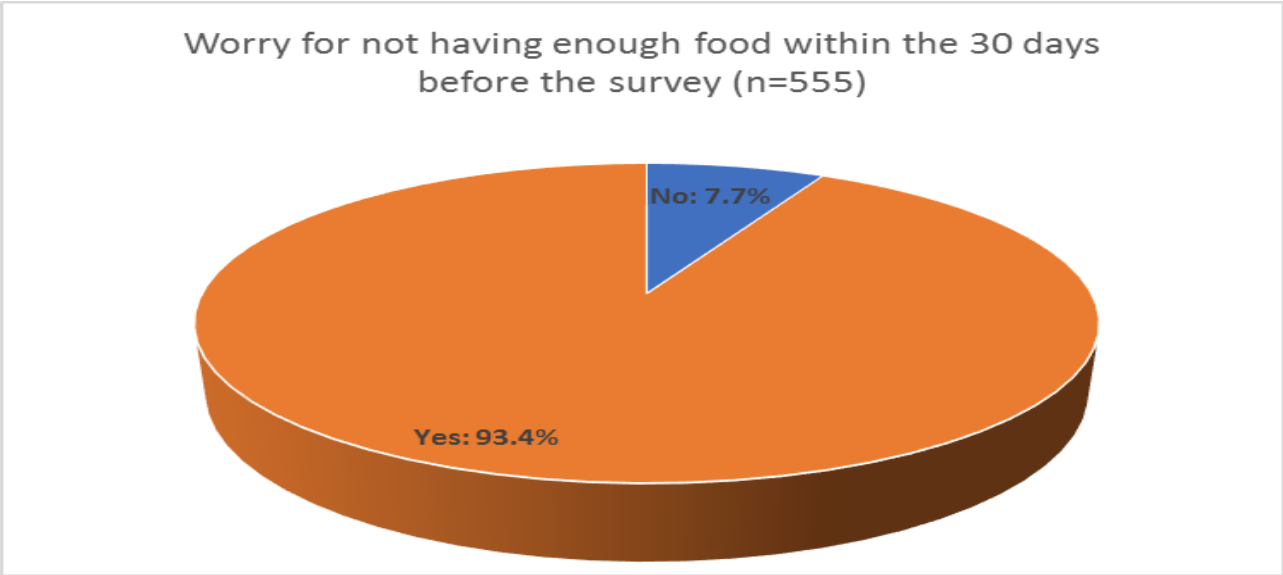


Figure 24. Worry for not having enough food in 30 days before the survey (n=555)

Source : KOICA II Baseline survey primary data, 2018

With regards to the frequency of worry experienced, it was found that among the 512 respondents who reported having worried about 'not having enough food', 52.1% did it often[36] and 33.4% sometimes[37]. When it comes to the availability of food, 235 respondents (42.3%, n=555) reported that at moments they did not have food at all in the household, of which 26% said that this often happened while the situation occurred sometimes for 46% of the households which experienced the issue. On another side, 505 respondents (91.0%, n=555) worried about lack of resources and so being obliged to eat foods out of their preferences, among which 43.6% often worried about this issue and 42.4% did it sometimes (Table 36).

Respondent reported they were also constrained to consume a limited variety of foods due to lack of resources. In this situation, 503 respondents (90.6%, n=555) said having done so. Among them, 41.7% did it often and 43.9% sometimes. We found also that 520 respondents (93.7%, n=555) reported having eaten some foods that they really did not want to eat because of lack of resources. Among them 52.3% had to do so often and 35.6% sometimes (Table 36).

Regarding the lack of food and being constrained to eat smaller meals than needed, 507 respondents (91.4%, n=555) reported having experienced that worry, among them 44.0% often worried about it and 43% did sometimes. The other assessed aspect was about taking fewer meals per day and, in the case, 484 respondents (87.2%, n=555) reported having constrained to do so among which 41.7% had often felt this concern and 44.6% sometimes (Table 44).

The other worry respondents were asked about was the constraint to sleep at night hungry due to lack of food whereby 284 respondents (51.2%. n=555) expressed having worried about this issue, among which 23.6% did it often and 45.8% sometimes. Considering another aspect, 400 respondents (72.1%) declared having been worried about going a whole day and night without eating anything of which 34.8% expressed having often experienced that issue and 45% sometimes (Table 44).

[36] Often: more than ten times in the 30 days preceding the survey

[37] Sometimes: three to ten times in the past four weeks

Table 44. Levels of worries experienced by households about food security

Worry	Yes/No	Worry frequency	Number of HHs	%
Not having enough food (n*[38]=512)	No	-	43	7.7
	Yes		512	92.3
		Rarely (1-2 times)	74	14.5
		Sometimes (3-10 times)	171	33.4
		Often (>10 times)	267	52.1
Not able to eat the kinds of foods preferred (n*=505)	No	-	50	9.0
	Yes		505	91.0
		Rarely (1-2 times)	71	14.1
		Sometimes (3-10 times)	214	42.4
		Often (>10 times)	220	43.6
Having to eat a limited variety of foods (n*=503)	No	-	52	9.4
	Yes		503	90.6
		Rarely (1-2 times)	72	14.3
		Sometimes (3-10 times)	221	43.9
		Often (>10 times)	210	41.7
Having to eat some foods that one really did not want to eat (n*=520)	No	-	35	6.3
	Yes		520	93.7
		Rarely (1-2 times)	63	12.1
		Sometimes (3-10 times)	185	35.6
		Often (>10 times)	272	52.3
Having to eat a smaller meal than one felt he/she needed (n*=507)	No	-	48	8.6
	Yes		507	91.4
		Rarely (1-2 times)	66	13.0
		Sometimes (3-10 times)	218	43.0
		Often (>10 times)	223	44.0
Having to eat fewer meals in a day (n*=484)	No	-	71	12.8
	Yes		484	87.2
		Rarely (1-2 times)	66	13.6
		Sometimes (3-10 times)	216	44.6
		Often (>10 times)	202	41.7
Not having at all food in the household (n*=235)	No	-	320	57.7
	Yes		235	42.3
		Rarely (1-2 times)	66	28.1
		Sometimes (3-10 times)	108	46.0

[38] n*= number of households who experienced any worry about food security (number of 'Yes').

		Often (>10 times)	61	26.0
Going to sleep at night hungry (n=284)	No	-	271	48.8
	Yes		284	51.2
		Rarely (1-2 times)	87	30.6
		Sometimes (3-10 times)	130	45.8
		Often (>10 times)	67	23.6
Going a whole day without eating anything (n*=400)	No	-	155	27.9
	Yes		400	72.1
		Rarely (1-2 times)	81	20.3
		Sometimes (3-10 times)	180	45.0
		Often (>10 times)	139	34.8

Source : KOICA II Baseline survey primary data, 2018

Based on the nine questions asked, a score was calculated to classify the households in food security categories. The majority (79.5%) of households were found to be severely food insecure while only 0.3% were food secure (Table45).

Table 45: HFIAS prevalence

HFIA prevalence	**Count**	%
Food secure	2	0.4
mildly food insecure	11	2.0
moderately food insecure	108	19.5
severely food insecure	441	79.5

Source : KOICA II Baseline survey primary data, 2018

III.II.3.2. Coping with food insecurity

Households were asked to state about proposed coping strategies to food insecurity they had been experiencing within the 30 days preceding the survey. The following table presents measures they had taken to handle the situation.

It was found that the most commonly used coping strategy was *'Taking an in-kind loan from outside household (e.g. shop/boutique)* used by 478 households (87.2%), followed by *'taking low status work out of desperation'* used 422 households (77%) and *'taking a cash loan from outside household'* used by 303 households (55.3%). Other coping strategies were also used by relatively fewer households and these include selling livestock used by 83 (15.1%) households, selling household assets used by 53 (9.7%) households and even selling land which was done by 30 (5.5%) households (Table 46).

As reported by KIIs and FGDs, the family planning is likely to contribute to the efforts of coping with food insecurity. According to the respondents, it is difficult to feed many children and consequently teachings and sensitization on family planning are a real need.

"As you know, many families give birth to many children that they can't be able to feed, it is a big challenge! If you don't have enough food, the little you have is for the children!" Said PW in FGD.

Table 46. Coping strategies to food insecurity (n=548)

No	Coping strategy		Nbr of HHs	%
1	Take a cash loan from outside household	No	237	43.2
		Yes	303	55.3
		don't know	8	1.5
2	Take an in-kind loan from outside household (e.g. shop/boutique)	No	64	11.7
		Yes	478	87.2
		don't know	6	1.1
3	Sell assets	No	477	87.0
		Yes	53	9.7
		don't know	18	3.3
4	Sell livestock	No	446	81.4
		Yes	83	15.1
		don't know	19	3.5
5	Taking low status work out of desperation (Guca inshuro)	No	113	20.6
		Yes	422	77.0
		don't know	13	2.4
6	Sell land	No	500	91.2
		Yes	30	5.5
		don't know	18	3.3
7	Give land for hire	No	509	92.9
		Yes	21	3.8
		don't know	18	3.3
8	Give livestock for hire	No	516	94.7
		Yes	10	1.8
		don't know	19	3.5

Source : KOICA II Baseline survey primary data, 2018

III.II.4. Exposure of mothers/caregivers to nutrition information

The survey sought to know how much mothers/caregivers had been exposed to nutrition information within the 30 day-period before the survey. They could receive information from home visits by community or health workers or other channels, or through their participation to groups activities or PD hearth sessions. As reported by the participants to the FGDs and KIIs, the nutrition information passes through various channels including but not limited to the CHWs activities, village cooking demonstration sessions, parents evening forum, community radios, community work (umuganda), "inteko z'abaturage", "amasibo" and NGO activities such as World Vision Rwanda.

"The World Vision Programs are very helpful! They reach out to the people and teach them on several items, namely nutrition, hygiene, food production, among many others. Teaching was found very important, because there are families with malnourished kids, though they have enough food, and they could change with teachings. The financial support is needed, and teaching is definitely among long-term strategies that need to be put in place" Staff in charge of nutrition at Congo Nil HC

III.II.4.1. Receiving messages from home visits

Mothers/caregivers were asked if they had had someone visiting their households to counsel on ways to feed the young child in the last 30 days. Out of 528 mothers/caregivers who responded to the question, only 74 (14%) reported having been visited. Among them, 62 were visited by a CHW (83.8%) and 4 were visited by an NGO worker (5.4%), also 4 (5.4%) were visited by a non-specified person while 2 (2.7%) were visited by a nurse or a midwife and 2 (2.7%) by a mother volunteer (Table 47).

Topics covered during the home visit were diversified since 59 out of 74 (79.7%) visited mothers/caregivers had received messages on exclusive breastfeeding for the first 6 months of the baby's life, 67 (90.5%) received information on when to start the complementary feeding (introduction of soft and solid foods), 71 (95.9%) on feeding a variety of foods, 64 (86.5%) on the quantity of food to feed a child, 64 (86.5%) on good hygiene, 49 (66.2%) on feeding a sick baby, 46 (62.2%) on how to feed a child with micronutrients powders (MNPs). 14 mothers/caregivers (18.9%) received information on other topics. Overall, we found out that home visits by CHWs or health workers or other relevant persons were rare in the intervention area of the project even if essential topics on nutrition were covered (Table 47)

Table 47. Receipt of information from home visits

Characteristics		**n**	**%**
Someone visited the household to counsel on ways to feed the young child in the 30 days preceding the survey (n=528)	No	454	86.0
	Yes	74	14.0
	don't know	0	0.0
Person who visited (n=74)	CHWs	62	83.8
	NGO worker	4	5.4
	Nurse/Midwife	2	2.7
	Health Post Officer	0	0.0
	Mother volunteer	2	2.7
	Other	4	5.4
	Don't know	0	0.0
Type of information received from visitors (n=74)			
Exclusive breastfeeding for first 6 months	No	15	20.3
	Yes	59	79.7
When to feed soft and solid foods	No	7	9.5
	Yes	67	90.5

Characteristics		n	%
Feeding a variety of foods	No	3	4.1
	Yes	71	95.9
How much food to feed child	No	10	13.5
	Yes	64	86.5
Feeding a sick baby	No	25	33.8
	Yes	49	66.2
Good hygiene	No	10	13.5
	Yes	64	86.5
How to feed MNPs (ongerintungamubiri)	No	28	37.8
	Yes	46	62.2
Other	No	60	81.1
	Yes	14	18.9

Source : KOICA II Baseline survey primary data, 2018

III.II.4.2. Information received from mother's participation in group activities

Findings are that 319 mothers/caregivers (60.4%, n=528) responded having participated within the 30 days preceding the survey in any individual or group activity outside the home where they got messages on ways to feed a young child. Among them, 144 (45.1%) participated in the parents evening forum (umugoroba w'ababyeyi), 78 (24.5%) in traditional community groups, 21 (6.6%) in care groups, 12 (3.8%) in mothers' groups, and 64 (20.1%) in other none specified groups. Most of the 319 mothers/caregivers who participated in groups activities reported having done it once per month (96, 30.1%) while 83 (26%) did it occasionally, 75 (23.5%) participated weekly, 39 (12.2%) twice a month and 26 (8.2%) participated at any other frequencies not stated during the survey. Globally, we see that the participation of mothers/caregivers in groups activities is low. The most used group mothers/caregivers received messages from is 'umugoroba w'ababyeyi'. The bigger proportion of mothers/caregivers were those who participated in the groups on a monthly basis and a non-neglectable proportion are those who reported having participated occasionally (Table 48).

It was found that nutrition-related critical topics were discussed at the groups meetings and out of 319 mothers/caregivers who participated to groups activities during the month preceding the survey 88.1% reported having received messages on exclusive breastfeeding for first 6 months, 84% on when to start the complementary feeding (when to feed soft and solid foods), 94.3% on feeding a variety of foods, 79% about the quantity of food to feed a child, 58.9% on feeding a sick baby, 66.8% on how to feed MNPs, 89.3% on good hygiene and 20.7% on other topics (Table 48).

Community Health Workers (CHWs) were the most reported actors who facilitated the groups' activities (185, 58%) followed by NGO workers (35, 11%) (Table 48).

Table 48. Receipt of information from groups' activities

Characteristics		n	%
The mother/caregiver has participated in any individual or group activity outside of the home	No	208	39.4
	Yes	319	60.4

Characteristics		n	%
where she/he learned about messages on ways to feed the young child in the last 30 days (n=528)	don't know	1	0.2
Type of activity she/he participated in (n=319)	mothers' group	12	3.8
	care group	21	6.6
	Traditional community group	78	24.5
	Parent forum	144	45.1
	Other	64	20.1
How often did she/he participate in the group or in the activity? (n=319)	Weekly	75	23.5
	Twice per month	39	12.2
	Once per month	96	30.1
	Occasionally	83	26.0
	Other	26	8.2
Type of information received (n=319)			
Exclusive breastfeeding for first 6 months	No	38	11.9
	Yes	281	88.1
When to feed soft and solid foods	No	51	16.0
	Yes	268	84.0
Feeding a variety of foods	No	17	5.3
	Yes	302	94.7
How much food to feed child	No	67	21.0
	Yes	252	79.0
Feeding a sick baby	No	131	41.1
	Yes	188	58.9
Good hygiene	No	34	10.7
	Yes	285	89.3
How to feed MNPs (ongerintungamubiri)	No	106	33.2
	Yes	213	66.8
Other	No	253	79.3
	Yes	66	20.7
Person who conducted the activity (n=319)	Community Health worker	185	58.0
	NGO worker	35	11.0
	Nurse/Midwife	22	6.9
	Health Post Officer	24	7.5
	Mother volunteer	22	6.9
	Other	28	8.8
	Don't know	3	0.9

Source : KOICA II Baseline survey primary data, 2018

III.II.4.3. Receiving nutrition information from audio and visual channels

Responding to the question asking if the mother/caregiver had heard or seen messages that provided information on ways to feed a young child within the month period preceding the survey, among the 528 mothers/caregivers who responded to the question, only 171 (32.4%) responded affirmatively. Radio is the most important source of information (69, 40.4%) for mothers/caregivers followed by health facilities (95, 55.6%) and posters (9, 5.3%). Fewer mothers/caregivers were informed from other sources such as product packaging (3 mothers/caregivers), television or billboard (1 mother/caregiver for each) whilst 39 (22.8%) mothers/caregivers were informed from other non-specified sources (Table 46).

It was also found that women received information on nutritional critical topics in the way among the 171 who received messages, 154 (90.1%) reported having heard or seen information on exclusive breastfeeding, 145 (84.8%) on when to start the complementary feeding, 158 (92.4%) on feeding a variety of foods, 133 (86%) on the quantity of food to feed a child, 106 (62%) on feeding a sick baby, 147 (76%) on good hygiene, 111 (64.9%) on how to use MNPs and 29 (17%) on other non-specified topics (Table 49).

Table 49. Receipt of information from audio and visual channels (n=528)

Characteristics		n	%
The mother/caregiver has heard or seen messages that provided information on ways to feed a young child (n=528)	No	340	64.4
	Yes	171	32.4
	don't know	17	3.2
Source of the information (n=171)			
Radio	No	102	59.6
	Yes	69	40.4
Television	No	170	99.4
	Yes	1	0.6
Billboard	No	170	99.4
	Yes	1	0.6
Poster	No	162	94.7
	Yes	9	5.3
Product Packaging	No	168	98.2
	Yes	3	1.8
Health facility	No	76	44.4
	Yes	95	55.6
Other	No	132	77.2
	Yes	39	22.8
Type of information received (n=171)			
Exclusive breastfeeding for first 6 months	No	17	9.9
	Yes	154	90.1
When to feed soft and solid foods	No	26	15.2
	Yes	145	84.8
Feeding a variety of foods	No	13	7.6

Characteristics		n	%
	Yes	158	92.4
How much food to feed child	No	38	22.2
	Yes	133	77.8
Feeding a sick baby	No	65	38.0
	Yes	106	62.0
Good hygiene	No	24	14.0
	Yes	147	86.0
How to feed MNPs (ongerintungamubiri)	No	60	35.1
	Yes	111	64.9
Other	No	142	83.0
	Yes	29	17.0

Source : KOICA II Baseline survey primary data, 2018

III.II.4.4. Receiving information from PD Hearth session

Mothers/caregivers were asked if they had participated to PD Hearth session in the 6 months preceding the survey. Among the 528 women who responded to the question, 244 (46.2%) said 'Yes'. PD hearth being a community approach where children with moderate acute malnutrition receive a 12-day treatment, we have assumed that women who participated to the sessions were those who had their children in moderate acute malnutrition at the time. Among the 244 women who attended PD Hearth sessions, 208 (85.2%) reported having received messages on exclusive breastfeeding, 209 (85.7%) on when to start the complementary feeding, 237 (97.1%) on feeding a variety of foods, 208 (85.2%) on the quantity of food to feed a child, 162 (66.4%) on feeding a sick baby, 230 (941.3%) on good hygiene, 166 (68%) on how to use MNPs and 53 (21.7%) on other non-specified topics (Table 50).

Table 50. Receipt of information from PD Heart sessions

Characteristics		n	%
The mother/caregiver has participated in a PD Hearth session in the 6 months preceding the survey (n=528)	No	273	51.7
	Yes	244	46.2
	don't know	11	2.1
Type of information received (n=244)			
Exclusive breastfeeding for first 6 months	No	36	14.8
	Yes	208	85.2
When to feed soft and solid foods	No	35	14.3
	Yes	209	85.7
Feeding a variety of foods	No	7	2.9
	Yes	237	97.1
How much food to feed child	No	36	14.8
	Yes	208	85.2
Feeding a sick baby	No	82	33.6

Characteristics		n	%
	Yes	162	66.4
Good hygiene	No	14	5.7
	Yes	230	94.3
How to feed MNPs (ongerintungamubiri)	No	78	32.0
	Yes	166	68.0
Other	No	191	78.3
	Yes	53	21.7

Source : KOICA II Baseline survey primary data, 2018

III.II.5. Access to Agriculture Extension Services

Agriculture is the main source of livelihood for households in rural areas in Rwanda. On another side, food production is generally dependent on access to agriculture information and services which implies costs and consequently this can hinder the extent at which people reach desired results.

The survey has considered and assessed the receipt of information and services **in the last 12 months** by any members of the households. It was revealed that apart from information/services provided on 'kitchen gardening' on which 72,8% (n=530) of the households received either information or services, followed by 'fertilizer use/soil fertility management', topic on which 41.7% of households were also given information/services, very few households received information and services on other topics of interest: each of them considered, 27.7% of households at the maximum received information or services on agriculture (Figure 25).

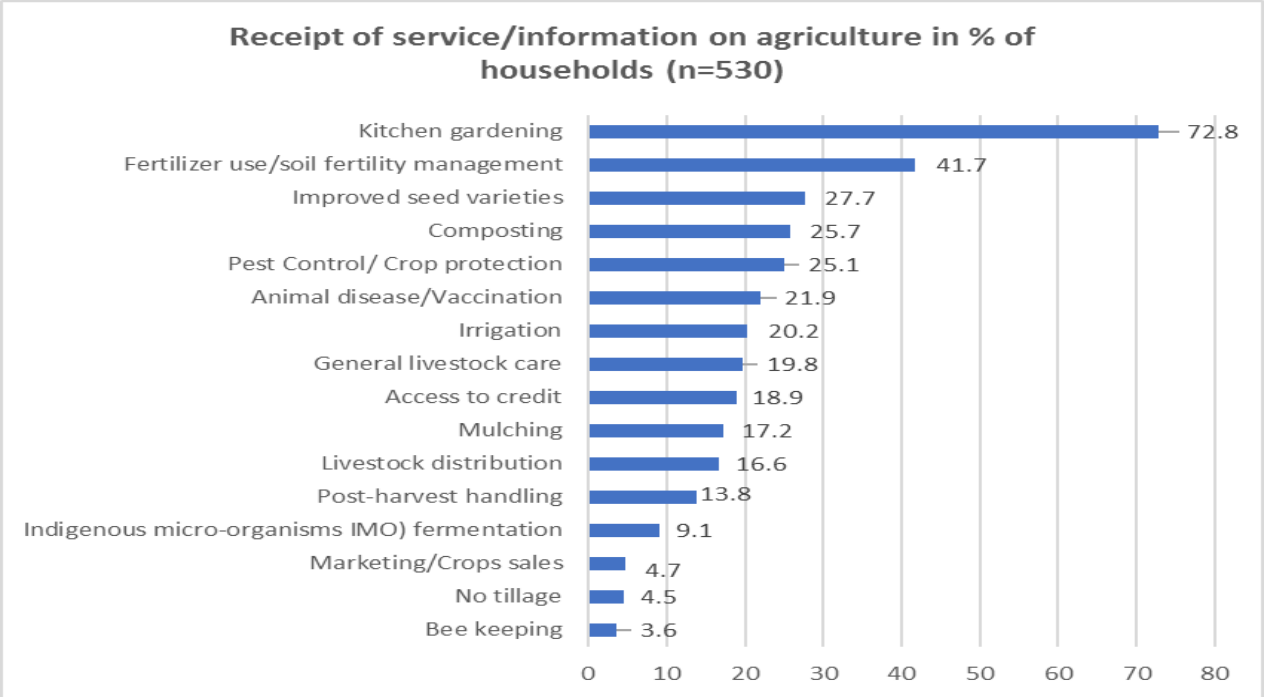


Figure 25. Access of households to information and agriculture services
Source : KOICA II Baseline survey primary data, 2018

III.II. 5.1. Sources of information and services in agriculture

Globally and as shown with the figure above, it was revealed that apart from 'kitchen gardening' aspect, for each other type of service/information assessed in the survey, less than 50% of respondents stated having received any service or information on agriculture. Furthermore, by going through the table above, it was found that households' members received information/services on agriculture, mainly from the governmental structures followed by Agricultural Cooperative/ Farmers Associations and lead farmers. NGOs seemed less involved in the action (Table 51).

According to the findings from the FGDs and KIIs, other information channels about the services in agriculture include the parents evening forum (Umugoroba w'ababyeyi), farmer promotors, "inteko z'abaturage", community work "umuganda" and community radios.

Table 51. Source of information/services in agriculture for HHs with Children 6-59 months of age

Type of service/information	Service/Information Provider							
	Gov.	**NGO**	**Private sector**	**Agricultural Cooperative/ Farmers Association**	**Lead Farmer**	**Other farmer (Neighbor / Relative)**	**Media (TV, Radio, Handouts, Flyers)**	**Other**
Kitchen gardening (n=386)	215 (55.7%)	17 (4.4%)	12 (3.1%)	52 (13.5%)	28 (7.3%)	33 (8.5%)	4 (1%)	22 (5.7%)
Fertilizer use/soil fertility management (n=221)	94 (42.5%)	8 (3.6%)	14 (6.3%)	36 (16.3%)	29 (13,1%)	11 (5%)	18 (8.1%)	11 (5%)
Improved seed varieties (n=147)	56 (38.1%)	8 (5.4)	17 (11.6%)	31 (21.1%)	14 (9.5%)	5 (3.4%)	6 (4.1%)	9 (6.1%)
Pest Control/ Crop protection (n=133)	42 (31.6%)	5 (3.8%)	7 (5.3%)	30 (22.6%)	18 (13.5%)	7 (5.3%)	14 (10.5%)	10 (7.5%)
Animal disease/Vaccination (n=116)	45 (38.8%)	4 (3.4%)	4 (3.4%)	16 (13.8%)	28 (24.1%)	7 (6%)	2 (1.7%)	10 (8.6%)
Mulching (n=91)	27 (29.7%)	10 (11%)	3 (3.3%)	17 (18.7%)	14 (15.4%)	7 (7.7%)	4 (4.4%)	9 (9.9%)
Access to credit (n=100)	62 (62%)	5 (5%)	4 (4%)	4 (4%)	0 (0%)	4 (4%)	9 (9%)	11 (11%)
Composting (n=136)	56 (41.2%)	9 (6.6%)	8 (5.9%)	31 (22.8%)	19 (14%)	6 (4.4%)	2 (1.5%)	5 (3.7%)
General livestock care (n=105)	37 (35.2%)	8 (7.6%)	6 (5.7%)	13 (12.4%)	25 (23.8%)	6 (5.7%)	2 (1.9%)	8 (7.6%)

Type of service/information	**Service/Information Provider**							
	Gov.	**NGO**	**Private sector**	**Agricultural Cooperative/ Farmers Association**	**Lead Farmer**	**Other farmer (Neighbor / Relative)**	**Media (TV, Radio, Handouts, Flyers)**	**Other**
Livestock distribution (n=88)	27 (30.7%)	10 (11.4%)	7 (8.0%)	13 (14.8%)	19 (21.6%)	5 (5.7%)	3 (3.4%)	4 (4.5%)
Irrigation (n=107)	35 (32.7%)	11 (10,3%)	2 (1.9%)	18 (16.8%)	14 (13.1%)	9 (8.4%)	7 (6.5%)	10 (9.3%)
Post-harvest handling (n=73)	26 (35.6%)	4 (5.5%)	2 (2.7%)	12 (16.4%)	15 (20.5%)	4 (5.5%)	5 (6.8%)	5 (6.8%)
Indigenous micro-organisms IMO) fermentation (n=48)	18 (37.5%	5 (10.5%)	4 (8.3%)	2 (4.2%)	13 (27.1%)	3 (6.3%)	1 (2.1%)	2 (4.2%)
Marketing/Crops sales (n=25)	8 (32%)	2 (8%)	2 (8%)	1 (4%)	3 (12%)	0 (0%)	8 (32%)	1 (4%)
Bee keeping (n=19)	4 (21.1%)	2 (10.5%)	2 (10.5%)	6 (31.6%)	2 (10.5%)	0 (0%)	3 (15.8%)	0 (0%)
No tillage (n=24)	5 (20.8%)	6 (25%)	2 (8.3%)	4 (16.7%	4 (16.7%)	1 (4.2%)	0 (0%)	2 (8.3%)

Source : KOICA II Baseline survey primary data, 2018

III.II.5.2. Practicing the information received on agriculture

Out of 16 services/information types received, 10 were put into practice by at least 50% of households for each one. The five most practiced information were about 'Fertilizer use/soil fertility management' (78.3%), 'Kitchen gardening' (76.7%), 'Irrigation' (70.1%), 'Pest controls/crop protection' (69.9%) and 'Improved seeds varieties' (69.4%). At the other extreme, there were topics relatively less practiced: not only few households had received information about them, but also limitedly practiced by receivers and these include 'animal disease/vaccination' (49.1%), 'livestock distribution' (46.6%) and 'access to credit' (22%) (Figure 25).

As reported by KIIs and participants to the FGDs, a number of factors were reported as barriers to practicing the information received on agriculture: limited number of farmer promotors, lack or insufficient land, lack of fertilizers and climate change

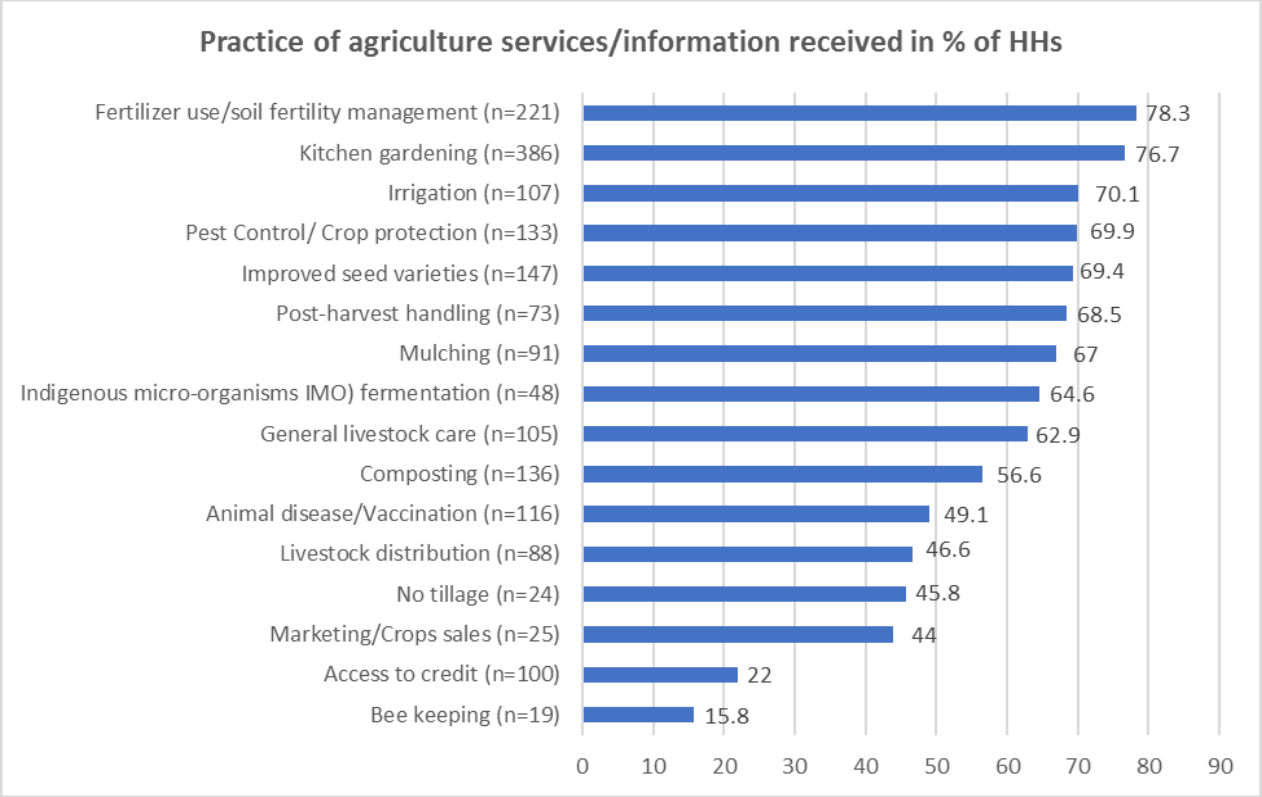


Figure 26. Practicing the information received

Source : KOICA II Baseline survey primary data, 2018

III.II.6. Water, Sanitation and Hygiene

WASH area was assessed on its different aspects including source of drinking water for households' members and its treatment, children's stools disposal, existence of a toilet facility and types and hand washing practice among others.

During FGDs and KIIs participants showed that they understood the importance of hygiene buy they also said poverty could be a barrier to good hygiene.

"Hygiene is paramount in everything! When you managed to have a quality diet and you prepare it with hygiene, this prevents from suffering from different diseases among children and adult". Lactating woman in Mushubati sector.

"The poverty is the first reason: you don't have soap, you don't have water, people cannot wash their cloths, they cannot wash their hand properly". Lactating woman in Mushubati sector.

III.II.6.1. Sources of drinking water

WHO defines access to safe drinking water by the proportion of the population using improved drinking-water sources. An improved drinking water source is a source that adequately protects the water from outside contamination, especially from fecal matter[39] In this context, it was revealed that overall, 33.9% of households used unimproved sources of water, which are considered unhealthy (Table 52).

Table 52. Distribution of households by source of drinking water (n=546)

Water source	Number of HHs	%
Improved sources		
Piped water – into dwelling	1	0.2
Piped water – into yard/plot	17	3.1
Communal standpipe	209	38.1
Borehole	9	1.6
Public well protected	3	0.5
Dug well in yard/compound – protected	123	22.4
S/Total healthy sources	*362*	*66.1*
Unimproved sources		
Public well – unprotected	9	1.6
Dug well in yard/compound – unprotected	135	24.6
Tanker Truck	1	0.2
River/stream	34	6.2
Other	7	1.3
S/Total Unhealthy sources	*186*	*33.9*

Source : KOICA II Baseline survey primary data, 2018

III.II.6.2. Treatment of drinking water

It was also found that 234 (42.7%) households reported treating drinking water while 44 (8%) said treating it sometimes. On the other side, 270 households (49.3%) do not treat at all drinking water to make it safe before drinking it. Those who treated drinking water all the time and sometimes (278) used different methods such as boiling used by 186 (66.9%) households, 46 (16.5%) used a water filter,

[39] (WHO, Water Sanitation and Hygiene at https://www.who.int/water_sanitation_health/monitoring/jmp2012/key_terms/en/).

13 (4.7%) used to add bleach/chlorine while 5 (1.8%) used boiling and filtering at the same time. Other 27 remaining households (9.7%) simply let water stand and settled sedimentation (Figure 27).

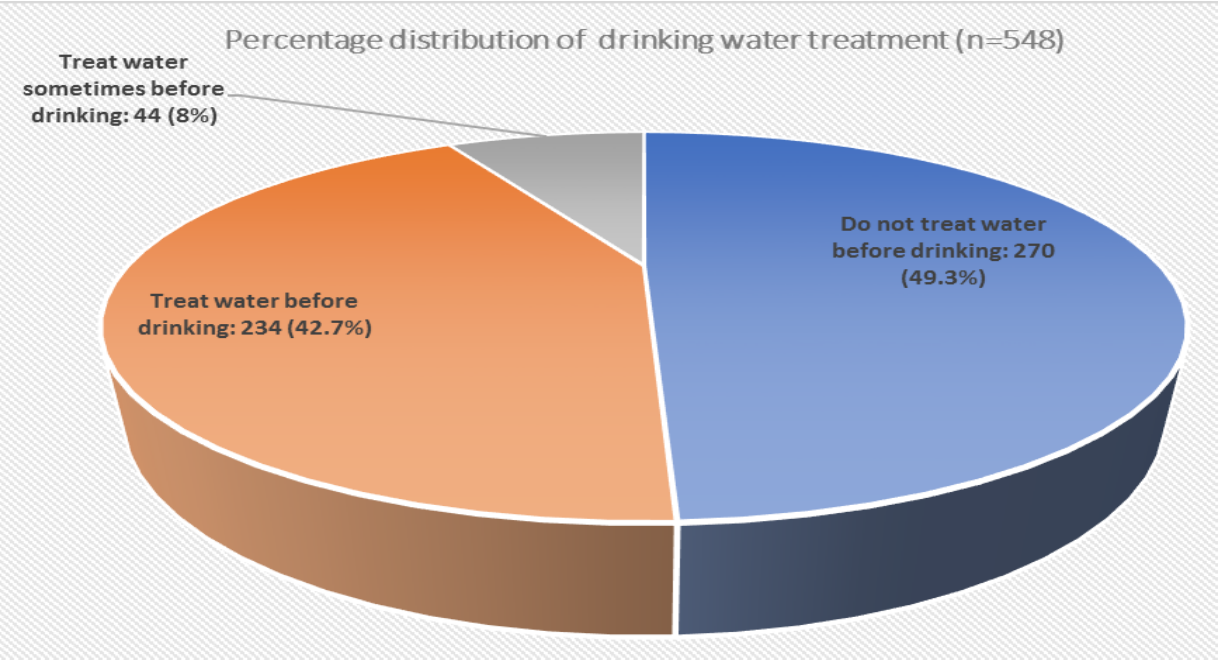


Figure 27. Drinking water treatment
Source : KOICA II Baseline survey primary data, 2018

III.II.6.3. Safe disposal of stools of children aged under 5 years

This WASH aspect was assessed by asking mothers/caregivers about the place where children under-five years old in the household go to defecate. In the zone of intervention, most respondents (82.8%, n=528) safely disposed the feces of children who couldn't yet use the toilet by throwing it in their own toilet or in the neighbor's toilet (5.3%). However, there still remained a not-negligible number of households (3.8%) that used unsafe ways of child stool disposal, like letting children going to defecate outdoor near the house, this being an important environment pollutant and source of infections (Table 53).

Table 53. Place of defecation or stool disposal for children under-five years (n=528)

Place for defecation/stool disposal	n	%
Own toilet	437	82.3
Neighbor's toilet	28	5.3
Outdoor near the house	20	3.8
Diaper	34	6.4

Place for defecation/stool disposal	n	%
River/pool	1	0.2
Other	8	1.5

Source : KOICA II Baseline survey primary data, 2018

III.II.6.4. Access to toilet facilities

The status of toilet facilities (latrines) is determinant of the safety level of environment and the vectors of disease transmission capability. The more latrines are improved, the less is the transmission of fecal-oral diseases.

It was found that 12 households (2.2%, n=548) did not have a latrine. Of households that had a toilet (n=536), 451 (82.3%) used an unimproved sanitary facility which is a traditional pit latrine (basic latrine), most of the time not having an appropriate slab nor a cover or a door. 4 households (0.7%) had latrines with slabs, and 56 (10.2%) households used improved pit latrines with slab, cover, roof and door. Only 2 (0.4%) households had flush toilets (Figure 28).

Traditional pit latrines with slabs do not prevent flies and other disease vectors from entering into the latrine

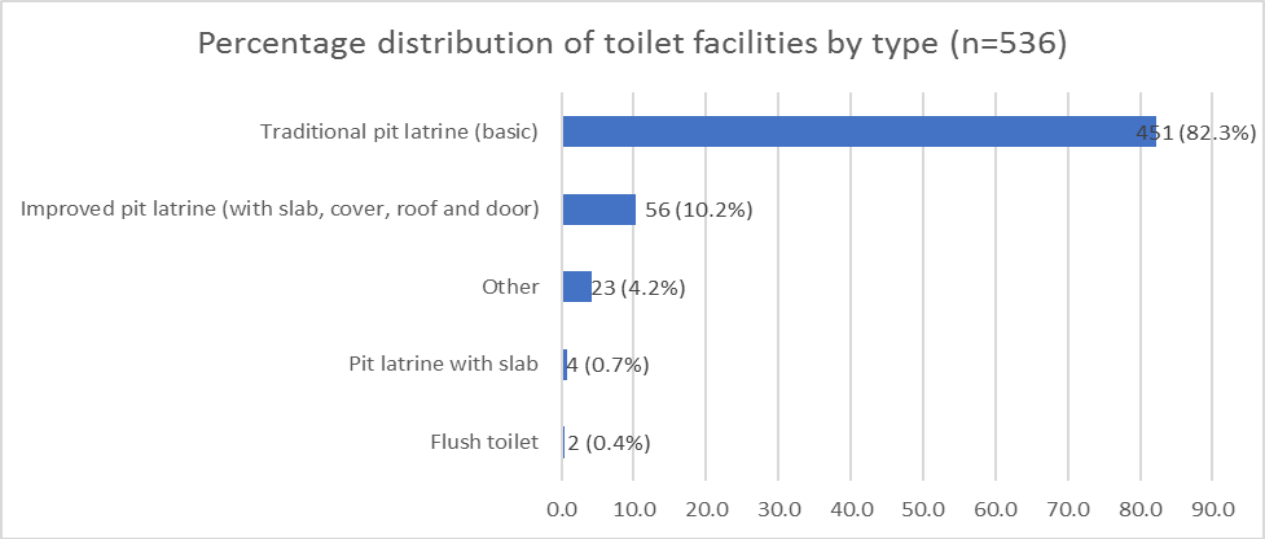


Figure 28. Distribution of toilet facilities by type

Source : KOICA II Baseline survey primary data, 2018

III.II.6.5. Handwashing at critical moments

The survey sought to know key occasions/moments the respondent washed their hands from the morning of the previous day up to the time of interview.

Hand washing 'before cooking' was the most practiced behavior (89.5%) followed by 'before cooking' (85.9%) and 'before feeding the child' (85%). However, less respondents reported washing their hands 'after going to the toilet' (74.1%) (Figure 28).

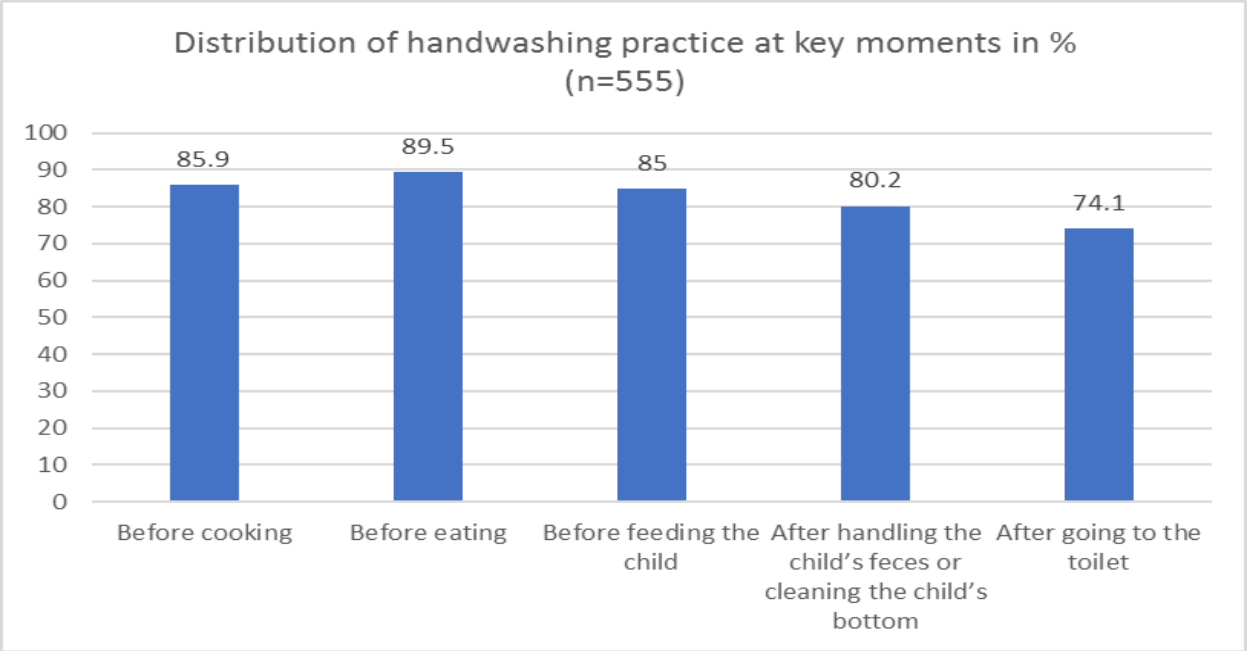


Figure 29. Distribution of handwashing at key moments

Source : KOICA II Baseline survey primary data, 2018

At any critical moment requiring hand washing, 58% up to 66.7% of respondents used water and soap at the same time. However, 32% to 38.5% used water only to wash hands at critical moments. Very few respondents 1-4 or 0.2% to 0.8% used water and ash (Table 54).

Table 54. Access to water and soap for hand-washing at key moments

Key moments to hand washing	Product used	Number of respondents	%
Before cooking (n=477)	Water only	160	33.5
	Water and soap	313	65.6
	Water and ash	2	0.4
	Don't know	2	0.4
Before eating (n=497)	Water only	204	41.0
	Water and soap	290	58.4
	Water and ash	1	0.2
	Don't know	2	0.4
Before feeding the child (n=472)	Water only	182	38.6
	Water and soil or mud	1	0.2
	Water and soap	283	60.0
	Water and ash	4	0.8
	Don't know	2	0.4

Key moments to hand washing	Product used	Number of respondents	%
After handling the child's feces or cleaning the child's bottom (n=445)	Water only	155	34.8
	Water and soap	287	64.5
	Don't know	3	0.7
After going to the toilet (n=411)	Water only	134	32.6
	Water and soap	274	66.7
	Water and ash	1	0.2
	Don't know	2	0.5

Source : KOICA II Baseline survey primary data, 2018

III.II.6.6. Availability of a separate kitchen and place for keeping livestock

During the survey, it was observed whether or not the household had a separate kitchen for cooking and if domestic animals were kept inside the family house or in the same building where they cook and eat. It was found that only 262 (47.8%) households had a kitchen separate from the main house. Among households who had livestock (n=327), we observed that 115 (35.2%) had their livestock kept in the same house where they cook and family members eat and sleep (Table 55).

Table 55. Access to a separate kitchen and place for keeping livestock

Characteristic		Number of households	%
The household has a separate kitchen for cooking (n=548)	No	286	52.2
	Yes	262	47.8
Domestic animals are kept inside the family house or in the same building where they cook and eat (n=327)	No	211	64.5
	Yes	115	35.2
	Don't know	1	0.3

Source : KOICA II Baseline survey primary data, 2018

III.II.7. Health and nutrition services for the child

The community-based health and nutrition services that reached most of the children were the distribution of insecticide treated mosquito nets, deworming pills and vitamin A, while micronutrient powders were received by only 46.1% of the children under five years. Supplementary feeding services (distribution of 'Shishakibondo' and 'Inyange' milk) which are targeted services for the most vulnerable children (Ubudehe I category) and children suffering from Moderate Acute Malnutrition (MAM) had been accessed. 31% of surveyed children received 'Shishakibondo' within the three months preceding the survey.

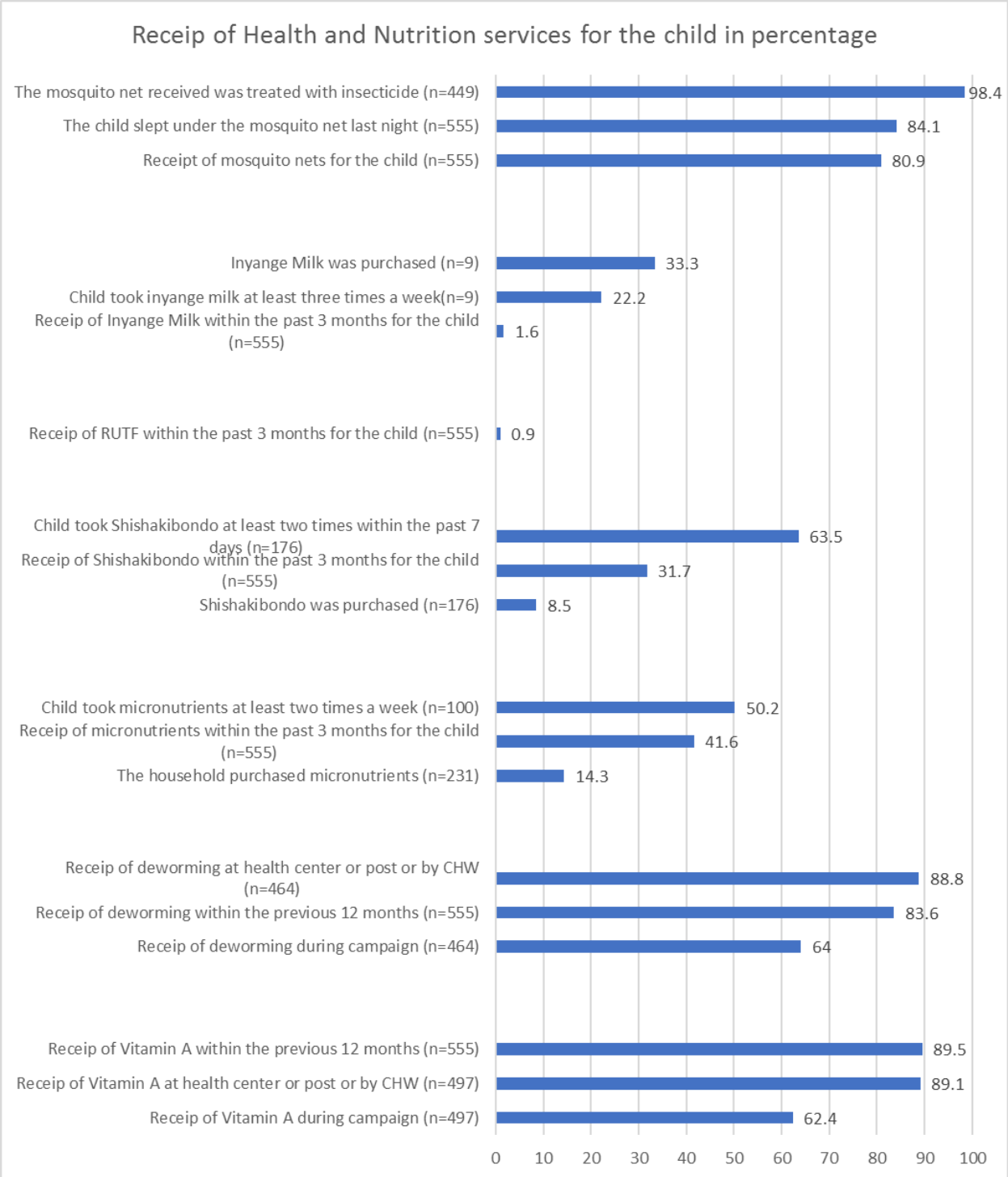


Figure 30. Receipt of health and nutrition services for the child

Source : KOICA II Baseline survey primary data, 2018

III.II.8. Child morbidity history and treatment

Under this sub-section, mothers, fathers or caregivers reported symptoms or illnesses their children have experienced during the month preceding the survey as well as the ways they sought for treatment.

However, some fathers noted they were not very familiar with child illnesses.

"we do not know many child illnesses because women are the most ones who are in charge of child care and management". **Said** one father in men FGD

III.II.8.1. Symptoms or illnesses experienced by children

Productive cough was the most common illness among children with a percentage of 35% of the surveyed children. Chest-in drawing was the less common with only 4.3% of the children (Figure 31).

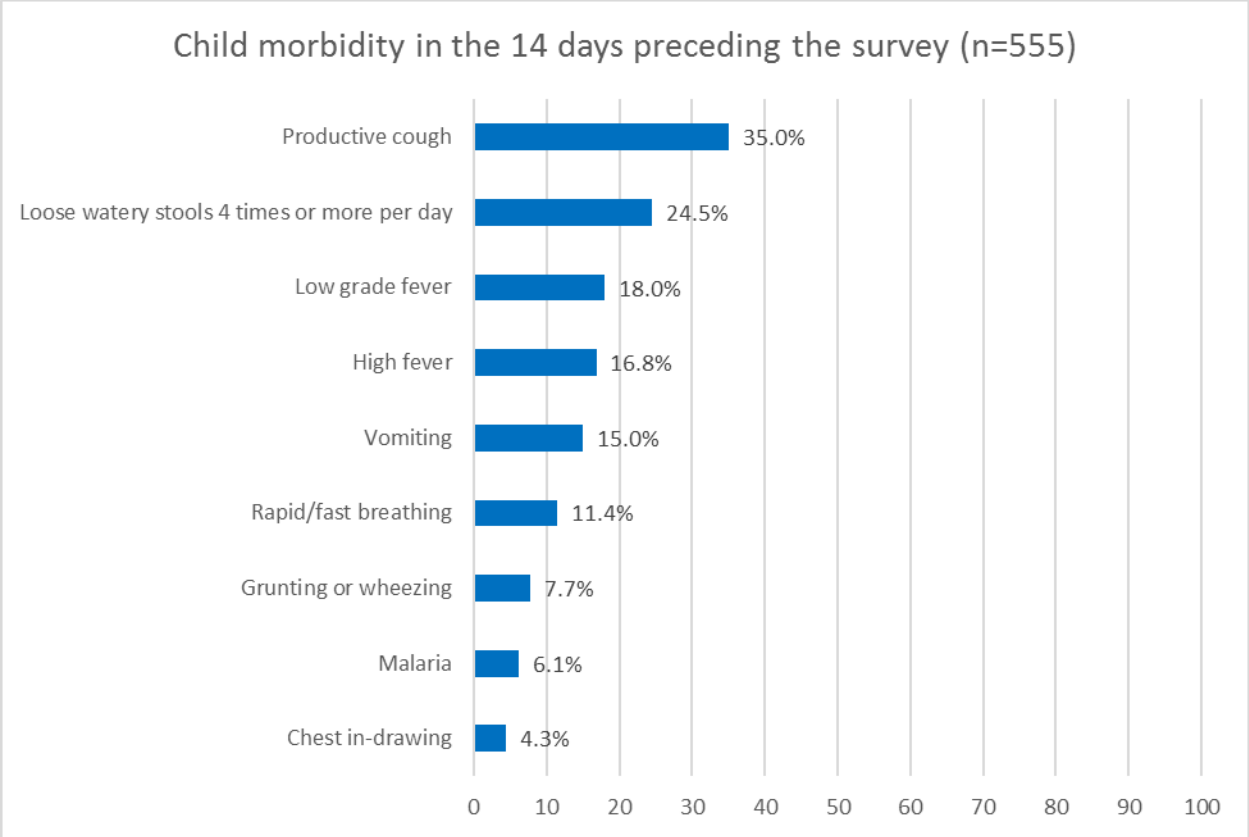


Figure 31: Child morbidity in the 14 days preceding the survey

Source : KOICA II Baseline survey primary data, 2018

III.II.8. 2. Ways of seeking for treatment when the child is sick

As shown in Table 53, among the children with a productive cough, about half (45.9%) of the caregivers did not seek treatment. While a small percentage of caregiver sought treatment from a traditional healer for all the other illnesses, malaria shows an exception with none of the caregivers reporting they sought treatment from a traditional healer. In general caregivers sought treatment from Community Health

Workers (CHWs) for all the types of illnesses/ symptoms. As reported by the participants to the FGDs, apart from the support given by the CHWs, the community members use health posts, Health Centers and hospital of Murunda. Traditional healers were mentioned as key players in providing medicine to some specific health issues for adults and children. The lack of health insurance card was reported by KIIs and the participants to the FGDs as one of the challenges to access health care services.

"There is a need to mobilize the community to get the mutuelle on time. The acquisition of health insurance is challenged by the big number of family members. Some mothers prefer seeking traditional medicine instead of visiting CHW and HCs". Said KII.

Table 56. Caregivers n (%) who sought treatment for different types of morbidities

	Productive cough (n=194)	Loose watery stools 4 times or more per day (n=136)	Low grade fever (n=100)	High fever (n=93)	Vomiting (n=83)	Rapid/fast breathing (n=63)	Grunting or wheezing (n=43)	Malaria (n=34)	Chest in-drawing (n=24)
Did not seek treatment	89 (45.9)	42 (30.9)	30 (30)	24 (25.8)	21 (25.3)	23 (36.5)	18 (41.9)	1 (2.9)	14 (58.3)
Relative/Friend	1 (0.5)	1 (0.7)	1 (1)	1 (1.1)	1 (1.2)	0 (0)	1 (2.3)	0 (0)	0 (0)
Physician/Clinical officer	40 (20.6)	35 (25.7)	24 (24)	27 (29.0)	29(34.9)	14 (22.2)	12 (27.9)	9 (26.5)	2 (8.3)
Nurse/Midwife	22 (11.3)	18 (13.2)	14 (14)	15 (16.1)	12(14.5)	11 (17.5)	3 (7.0)	10 (29.4)	3 (12.5)
CHWs	23 (11.9)	28 (20.6)	22 (22)	16 (17.2)	15(18.1)	8 (12.7)	3 (7.0)	13 (38.2)	4 (16.7)
Patient Attendant	0 (0)	0 (0)	0 (0)	0 (0)	0 (0.0)	0 (0)	0 (0.0)	0 (0)	0 (0)
Traditional healer	10 (5.2)	8 (5.9)	8 (8)	6 (6.5)	2 (2.4)	6 (9.5)	5 (11.6)	0 (0)	1 (4.2)
Don't know	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other	9 (4.6)	4 (2.9)	1 (1)	4 (4.3)	2 (2.4)	1 (1.6)	1 (2.3)	1 (2.9)	0 (0)

Source : KOICA II Baseline survey primary data, 2018

III.II.9. Infant and Young Child Feeding Practices

During the survey data was collected to calculate eight indicators for assessing Infant and Young Child Feeding (IYCF) practices. The eight indicators used are those proposed by the World Health Organization (Appendix 2).

III.II.9.1. Early initiation of breastfeeding

The Early initiation of breastfeeding is a historic recall by mothers of children born in the last 24 months who were put to the breast within one hour of birth. In this regard, almost all (99.8%) of the caregivers had breastfed their lastborn children and early breastfeeding was high with 86.1% of the children put to the breast in the first hour after birth (Table 57). However, 18 caregivers (3.1%) out of 554 had been given their lastborn children other liquids in their first seven days of life.

Table 57. Length of time to put the child to the breast after birth

Length of time	N	%
Within first hour	477	86.1
After first hour, on first day	51	9.2
Two or more days	11	2
Don't know	15	2.7
Total	554	100

Source : KOICA II Baseline survey primary data, 2018

Figure 31 shows that among children who had given other liquids (n=18), 45% were given plain/sugar water. Although 11% had given animal milk, none of the caregivers had given Infant formula.

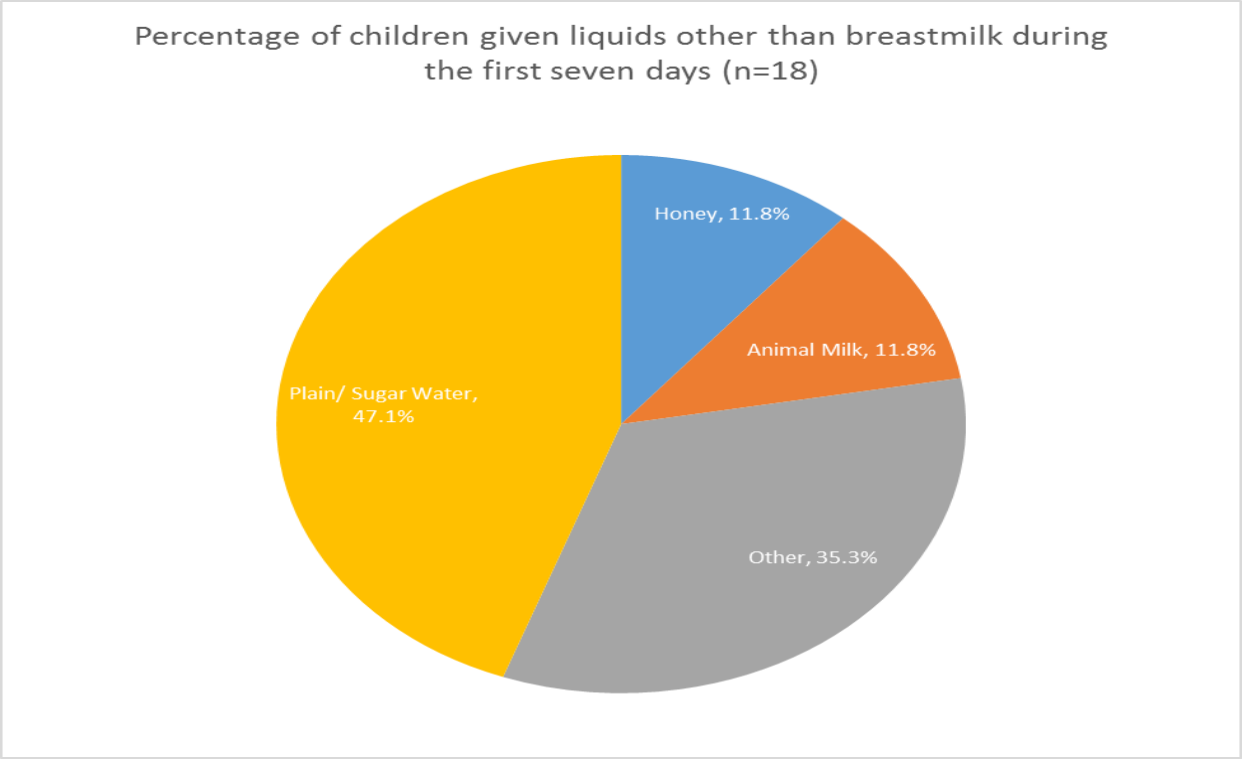


Figure 32. Other liquids given to children in the first seven days of life
Source : KOICA II Baseline survey primary data, 2018

All the children were still breastfed at 6 to 11 months of age. Thereafter, 84% of the children aged between 12 and 23 months were breastfed (Figure 33).

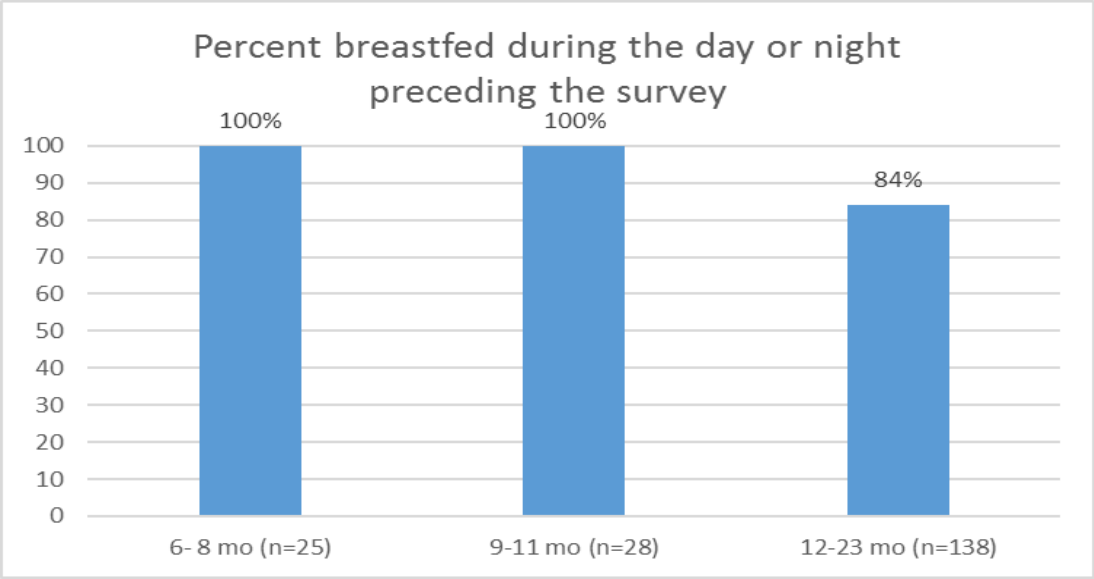


Figure 33. Percent breastfed during the day or night preceding the survey

Source : KOICA II Baseline survey primary data, 2018

III.II.9.2. Exclusive breastfeeding

Exclusive breastfeeding (EBF) is recommended for the first six months of the child's life. EBF for six months was practiced by 74.7% of the mothers (Table 58).

Table 58. Duration of exclusive breastfeeding (n=554)

Duration of exclusive breastfeeding (months)	Children exclusively breastfed n (%)
0-5	105 (18.9)
6	414 (74.7)
7-12	33 (6)
>=13	2 (0.4)

Source : KOICA II Baseline survey primary data, 2018

The age of introduction of food and liquids other than breastmilk was found to be six months for 49.9% of the children (Table 59), while a high proportion (40%) of children were introduced to food and liquids other than breastmilk later than the recommended age of six months (Table 59).

Table 59. Age of introduction of food or liquids besides breastmilk (n=555)

Age in months	Children introduced to food or liquid besides breastmilk n (%)
0	3 (0.5)
1	1 (0.2)
2	1 (0.2)
3	5 (0.9)
4	9 (1.6)
5	40 (7.2)
6	274 (49.4)
7-12	222 (40)

Source : KOICA II Baseline survey primary data, 2018

Through the FGDs and KIIs, the participants reported that the mother needs a good and enabling psychosocial environment while breastfeeding the child. Though the respondents mentioned that a proper nutrition should be available to the mother, the issue of poverty and limited knowledge about the preparation of a balanced diet were pointed out.

"The main issue is the lack of proper nutrition, for them to breastfeed the child properly. It is the poverty and you know that it is not easy!" Father under five years children in a FGD in Mushubati Sector

III.II.9.3. Child food consumption

As shown in Figure 33, less children aged 6 to 11 months had consumed food in comparison to children aged 12 to 23 months.

All of the children aged 12 to 23 months had consumed meat, as opposed to none of the children between 6 and 11 months. Processed dairy products such as cheese and yogurt were not consumed by none of the children in the survey.

The most frequently food groups that were consumed by children aged 6 to 8 months were orange fleshed fruits (mangoes, papayas) and eggs, both food groups at a percentage of 33.3%.

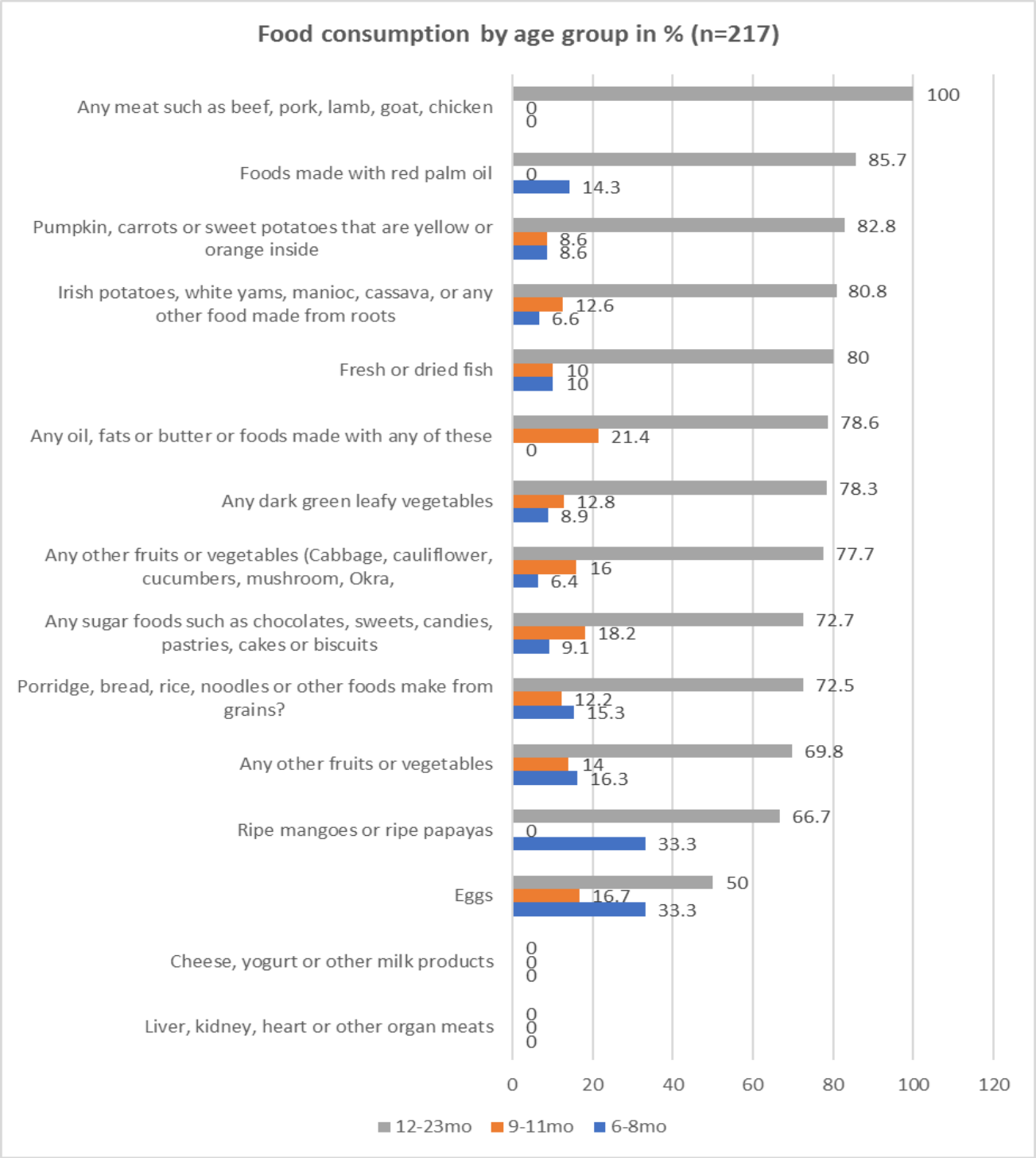


Figure 34. Child food groups items' consumption

Source : KOICA II Baseline survey primary data, 2018

As per the figure 35, all of the children aged 12 to 23 months consumed juices or juice drinks, as opposed to none of the children aged 6 to 11 months. Plain water was consumed by majority (92.6%) of the children aged 12 to 23 months, while less than 10% of the children among children aged 6 to 12

months had been given water. Infant formula. Juice or juice drinks were consumed by all the children aged 12 to 23 months, while none of the children aged 6 to 12 months had consumed it.

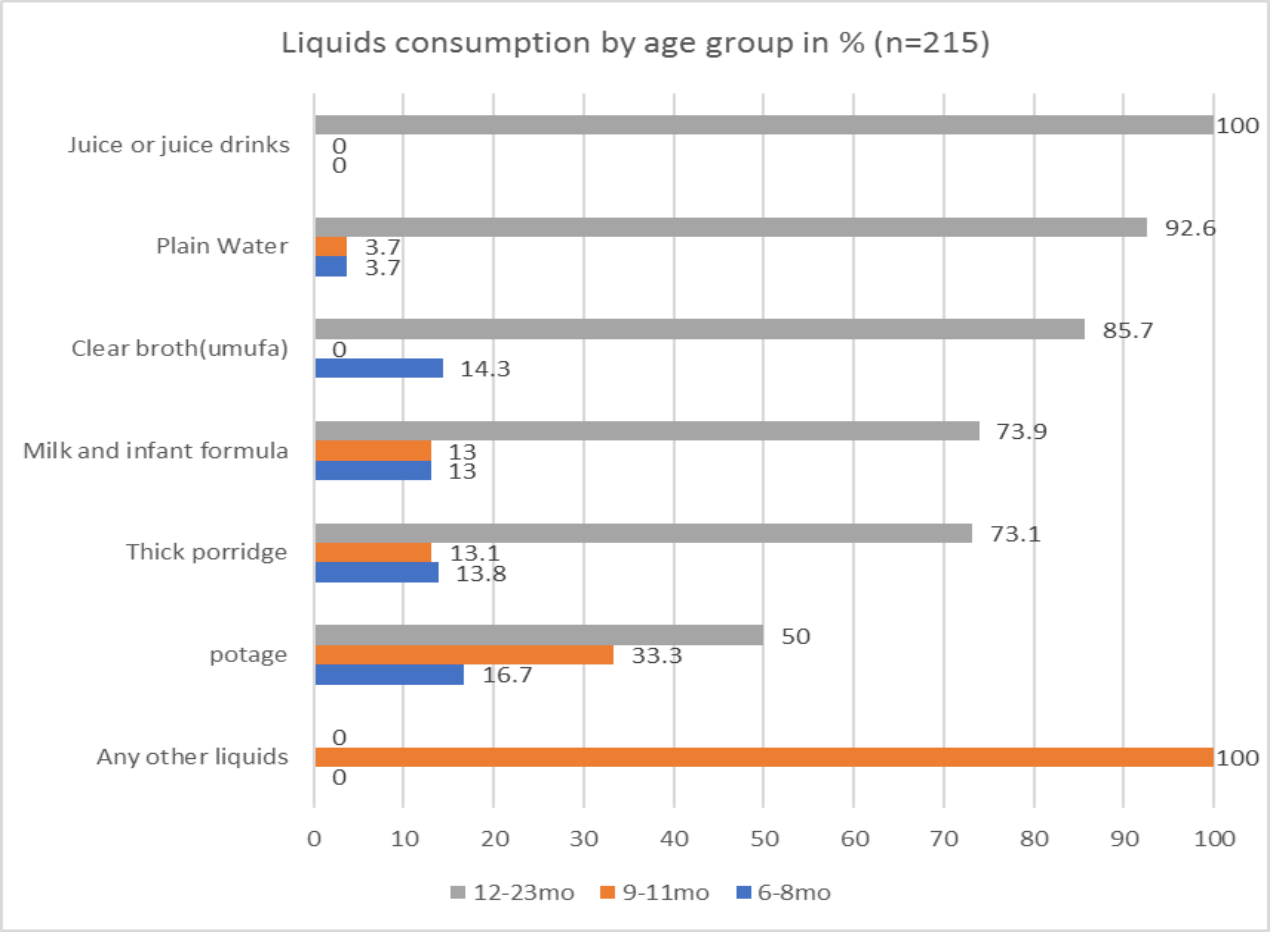


Figure 35. Liquids consumption by age group

Source : KOICA II Baseline survey primary data, 2018

III.II. 9.4. Minimum dietary diversity

The minimum dietary diversity (MDD) is the proportion of children aged 6–23 months who receive foods from four or more food groups from a total of seven food groups: (1) infant formula, milk other than breast milk, and cheese or yogurt or other milk products, (2) foods made from grains, roots, and tubers, including porridge and fortified baby food from grains, (3) vitamin A-rich fruits and vegetables (and red palm oil), (4) other fruits and vegetables, (5) eggs, (6) meat, poultry, fish and shellfish, and organ meats and, (7) legumes and nuts.

Overall, 19% of children 6-23 months reached the MDD. At national level, the 2014-15 demographic and health survey showed that 30.1% of the children aged 6-23months had the MDD (NISR, 2015), The percentage of children who reached the Minimum Dietary Diversity (MDD) was low in all age groups but it increased slightly with age passing from16% in children 6-8 months to 17.9% in those 9-11 months and finally to 19.8% in children 12-23 months (Figure 36).

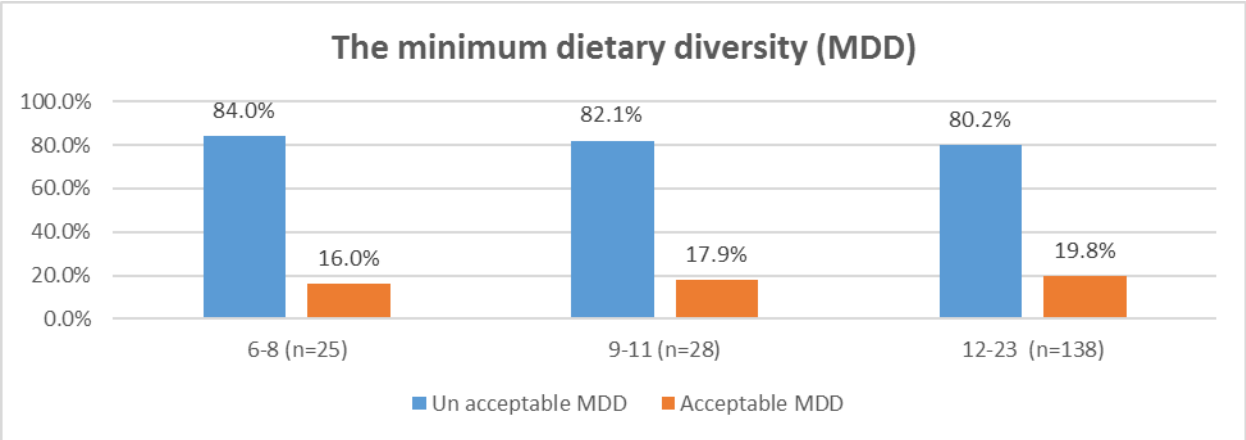


Figure 36: Minimum Dietary Diversity (MDD) per age
Source : KOICA II Baseline survey primary data, 2018

III.II.9.5. Minimum meal frequency (MMF)

Minimum meal frequency is intended to capture information on the frequency of feeding solid, semi-solid, or soft foods. This indicator represents the proportion of children aged 6–23 months who receive solid, semi-solid, or soft foods the minimum number of times or more in a day. Breastfed infants aged six to eight and nine to 23 months must have received solid, semi-solid or soft foods at least twice and three times, respectively, in the previous day to achieve the MMF. Non-breastfed children aged six to 23 months must have received solid, semi-solid or soft foods or milk feeds at least four times in the previous day to achieve the MMF.

The MMF was reached by 88.7% of the children aged 6-23 months. At national level, the 2014-15 demographic and health survey showed that 47.2% of the children aged 6-23 months had the MMF (NISR, 2015). The Minimum Meal Frequency (MMF) was reached by a high percentage of children in all age groups (Table 60). All of the breastfed children aged 6 to 8 months, reached the minimum meal frequency. However, about 20% of non-breastfed children aged 12-23 months did not reach the MMF (Table 60).

Table 60.Distribution of the Minimum Meal Frequency (MMF) indicator across age groups and breastfeeding status

Children who were breastfed the day before the survey during the day or at night (n=191)						Children who were not breastfed the day before the survey during the day or at night (n=23)	
6-8 months (n=25)		9-11months (n=28)		12-23 months (n=138)		12-23 (n=23)	
N	%	n	%	n	%	n	%

		Children who were breastfed the day before the survey during the day or at night (n=191)						Children who were not breastfed the day before the survey during the day or at night (n=23)	
		6-8 months (n=25)		9-11months (n=28)		12-23 months (n=138)		12-23 (n=23)	
		N	%	n	%	n	%	n	%
Breastfed children who received solid, semi-solid or soft foods the minimum number of times or more during the previous day	2 times or more	25	100.0						
	3 times or more			25	89.3	122	88.4		
Non-breastfed children who received solid, semi-solid or soft foods or milk feeds the minimum number of times or more during the previous day	4 times or more							18	78.3

Source : KOICA II Baseline survey primary data, 2018

III.II.9.6. Minimum acceptable diet (MAD)

The composite indicator of Minimum acceptable diet (MAD) represents the proportion of children who reach at the same time the MDD and the MMF. Overall, among children aged 6-23 months, the MAD was reached by 19% of the children. Nationally, the 2014-15 demographic and health survey showed that 18.6% of the children aged 6-23months met the MAD (NISR, 2015). The percentage of children who had a minimum acceptable diet was low (11.1%) among children aged 6 to 8 months, and it increased with age. All of the non-breastfed children aged 12-23 months had reached the MAD indicator (Table 61).

Table 61. Distribution of Minimum Acceptable Diet (MAD) indicator across age groups and breastfeeding status

	Breastfed children						Non-breastfed children	
	6-8mo		9-11mo		12-23mo		12-23mo	
	n	%	N	%	n	%	n	%
Did not reach the MAD	21	14.0	22	14.7	107	71.3	18	100.0

	Breastfed children						Non-breastfed children	
	6-8mo		9-11mo		12-23mo		12-23mo	
	n	%	N	%	n	%	n	%
Reached the MAD	4	11.1	5	13.9	27	75.0	5	100.0

Source : KOICA II Baseline survey primary data, 2018

III.II.10. Nutritional status of children 6-59 months of age

The nutritional status of children was calculated using growth standards published by the World Health Organization (WHO, 2006). Three internationally accepted indices were used to establish the nutritional status of children: height-for-age to assess the stunting or chronic malnutrition, weight-for-height for wasting and weight-for-age to assess the underweight.

The height-for-age index is an indicator of linear growth retardation and cumulative growth deficits. Children whose height-for-age Z-score is below minus two standard deviations (-2 SD) from the mean of the reference population are considered short for their age (stunted). Children who are below minus three standard deviations (-3 SD) from the mean of the reference population are considered severely stunted.

The weight-for-height index measures body mass in relation to body height and describes current nutritional status. Children whose Z-scores are below minus two standard deviations (-2 SD) from the mean of the reference population are considered thin (wasted) for their height and are acutely malnourished. Wasting represents the failure to receive adequate nutrition in the period immediately preceding the survey and may be the result of inadequate food intake or a recent episode of illness causing loss of weight and the beginning of malnutrition. Children whose weight-for-height is below minus three standard deviations (-3 SD) from the reference population mean are considered severely wasted.

Weight-for-age is a composite index of height-for-age and weight-for-height. It takes into account both acute and chronic malnutrition. Children whose weight-for-age is below minus two standard deviations (-2 SD) from the mean of the reference population are classified as underweight. Children whose weight-for-age is below minus three standard deviations (-3 SD) from the reference population mean are considered severely underweight.

A total of 555 children 6-59 months of age were eligible to be measured for weight and height, and 551 had complete and valid age and height data for the height-for age index, 547 valid anthropometric data

for the weight-height index and 548 had complete valid data for age and weight for the weight-for-age index.

As per Table 59, 48.1% of children 6-59 months of age were stunted, 30.3% were moderately stunted while 17.8% were severely stunted as shown by the table above. Considering the situation by age group and sex, stunting increased with the age of the child untill the child is 35 months old, rising from 12.0% among children age 6-8 months to 59.5% among children aged 24-35 months and then declines progressively to become 49.2% among children between 48-59 months of age. Overall, younger children (under 18 months) were less stunted than older ones. Overall, 50% of boys and 46.1% of girls were stunted.

With regards to wasting, 1.6% of children 6-59 months old were wasted, 1.5% were moderately wasted and 0.2% severely wasted. The wasting prevalence is relatively high among children 6-8 months (4%); this period is where most of the Rwandan children commence to receive other liquids or foods as complementary feeding to breastmilk, noting that in Rwanda only close to 6 in 10 children age 6-8 months (57%) consume solid, semisolid, or soft foods, meaning that other received inappropriately the complementary feeding earlier or later (Rwanda DHS, 2015). There was no substantial difference in wasting between boys and girls (1.8 and 1.5% respectively). Overall, 7.5% of children 6-59 months of age were overweight or obese (weight-for-height more than +2 SD). Children 24-35 months were mostly affected (11.6%). Boys and girls were equally overweight/obese (7.5% for each sex). Overall, 7 children (4 boys and 3 girls) were found with bilateral oedema and were so considerered as severely acutely malnourished (Table 62).

The table shows that 13% of children 6-59 months were underweight (low weight-for-age), 11.7% were moderately underweight and 1.3% were severely underweight.. Underweight is higher in children 36-47 months and 24-35 months, 17.8% and 14.1%, respectively. It has been regularly increasing from children 6-8 months (4%) up to children 36-47 months (17.8%) to later decrease in older children 47-59 months (10.9%). However there is no clear relationship between the age of the children and being underweight. Boys are more subject to underweight (13.6%) than girls (12.3%). Overall, 0.7% of children 6-59 months were overweigt or obese (weight-for-age more than +2 SD) and gilrs were likely to be overweight/obese than boys (1.1% versus 0.4%) (Table 62).

Table 62. Nutritional Status for Children 6-59 months of age

Background Characteristics	*Height-for-age (n=551; M=282, F=269)*			*Weight-for-Height (n=554; M=284, F=270)*				*Weight-for-age (n=548; M=280, F=268)*			
	% *below -3 SD (Severely stunted)*	% *above or equal to -3 SD and below -2 (Moderately stunted)*	% *below -2 SD (All stunted children)*	% *below -3 SD(Severely wasted)*	% *above or equal to -3 and below -2 (Moderately wasted)*	% *below -2 SD (All wasted children)*	% *above +2 SD(Overweight/obesity)*	% *below -3 SD(Severe underweight)*	% *above or equal to -3 SD and below -2 SD (Moderate underweight)*	% *below -2 SD (All underweight children)*	% *Above +2 SD (Overweight/obese)** [40]
Age in months											
6-8	4	8	12.0	0	4	4	8	4	0	4.0	4.0
9-11	10.3	6.9	17.2	3.4	0	3.4	6.9	3.6	3.6	7.1	3.6
12-17	11	26.8	37.8	0	2.4	2.4	4.9	0	11	11.0	1.2
18-23	17.4	33.7	51.2	0	2.3	2.3	3.5	0	12.8	12.8	0.0
24-35	20.9	38.6	59.5	3.1	1.2	4.3	11.8	1.9	12.2	14.1	0.0
36-47	23.1	29.6	52.8	0.9	0.9	1.9	6.5	0.9	16.8	17.8	0.0
48-59	19	30.2	49.2	1.6	0	1.6	6.3	1.6	9.4	10.9	1.6
Total	17.8	30.3	48.1	1.4	1.4	2.9	7.4	1.3	11.7	13.0	0.7
Sex											
Male	20.2	29.8	50	1.4	1.8	3.2	7.4	1.4	12.1	13.6	0.4
Female	15.2	30.9	46.1	1.5	1.1	2.6	7.4	1.1	11.2	12.3	1.1

Source : KOICA II Baseline survey primary data, 2018

[40] It is recommended to refer also to weight-for-height before concluding whether or not the child is overweight or obese.

From Figure 37, it is revealed that the prevalence of stunting has slightly increased by 1.1% between KOICA I end-evaluation and the KOICA II baseline' times, August 2017 and November 2018, respectively. In the same way, the underweight prevalence has increased by 2.2% within the one year and 3 month-period. Instead, the prevalence of wasting has impressively sloped down 4.5% within the period. Explanation on those observed changes should be sought in the package beneficiaries have benefiting so far. Nevertheless, the prevalence found out through the 3 step-research remain comparable to the Rwanda DHS's ones in 2014-15 in Rutsiro District in the general population[41], at least for two indices, stunting (45.8%) and underweight (11.6%). Only the prevalence rates of wasting found during the three studies have always been higher than the DHS one (2.7%) (Rwanda DHS-2014-15) and it is good news that it has always been impressively declining across the time.

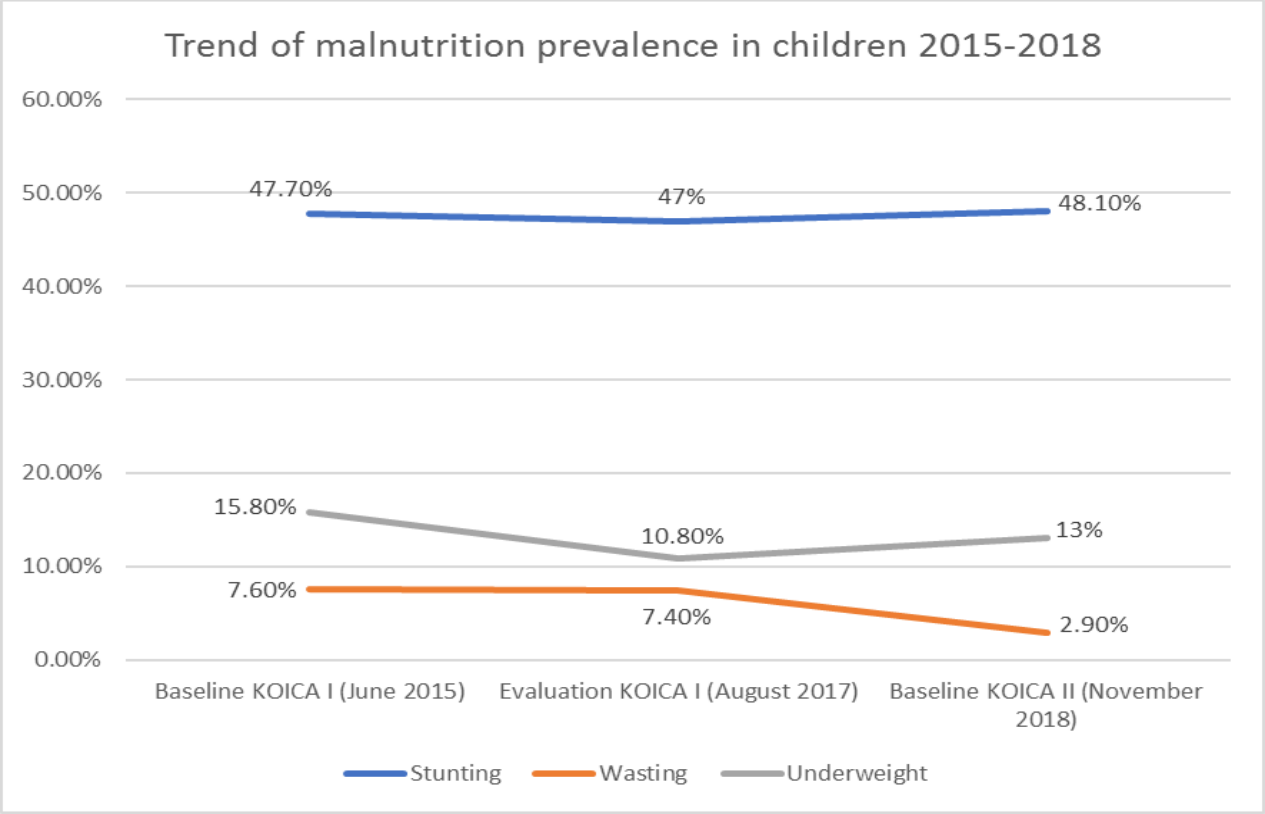


Figure 37. Trend of malnutrition in children in the area of intervention 2015-2018
Source: KOICA I Baseline (2015) and Evaluation (2017) Reports and KOICA II Baseline survey primary data, 2018

III.II.11. Factors associated with stunting

Child's stunting was found to be associated with the capacity of mother to read and write Kinyarwanda, the local language (p=0.001). In contrary, it was not found to be associated with any other socio-demographic or economic characteristics of the household (Table 63).

[41] The three studies have assessed only categories 1 and 2 of Ubudehe, the national wealth categorization of the population, categories 1 and 2 being the poorest ones.

Table 63. Factors associated to child's stunting

Characteristics	Stunting			
	n	Yes	No	
		%	%	p-value
Sex				
Male	282	20.2	79.8	0.127
Female	269	15.2	84.8	
Age of the child (in months)				0.161
6-8	25	4.0	96.0	
9-11	28	10.7	89.3	
12-17	83	12.0	88.0	
18-23	81	16.0	84.0	
24-35	159	20.8	79.2	
36-47	101	22.8	77.2	
48-59	74	20.3	79.7	
Reading/writing Kinyarwanda for mother				
No	143	26.6	73.4	0.001*
Yes	408	14.7	85.3	
Woman's education category				
None	61	10.2	11.3	0.869
Low (1-6 years primary education)	410	76.5	74.0	
High (1 year secondary level and above)	80	13.3	14.8	
Marital status of mother				
Never married	81	22.2	77.8	0.045
Currently married	344	13.7	86.3	

Characteristics	Stunting			
	n	Yes	No	
		%	%	p-value
Widowed	12	25.0	75.0	
Separated	22	27.3	72.7	
Divorced	3	33.3	66.7	
Cohabitation	89	25.8	74.2	
Exposure to nutrition information				
No	478	17.2	82.8	0.322
Yes	73	21.9	78.1	
Land possession				
No	111	19.8	80.2	0.531
Yes	440	17.3	82.7	
Land use				
No	68	19.1	80.9	0.759
Yes	483	17.6	82.4	
Household with one or more crop				
No	113	19.5	80.5	0.600
Yes	438	17.4	82.6	
Livestock possession				
No	227	19.8	80.2	0.531
Yes	324	16.4	83.6	
Monthly income for household				
Less than 10 thousand Rwandan francs	322	19.3	80.7	0.285
At least 10 thousand Rwandan francs	229	15.7	84.3	

Characteristics	Stunting			
	n	Yes	No	
		%	%	p-value
Household production within the year preceding the survey in Kg				
No production	118	19.5	80.5	0.401
production under 25 kg	129	21.7	78.3	
Production between 25 and 50 kg	113	16.8	83.2	
Production above 50 kg	191	14.7	85.3	
Family size				
2-5 members	364	70.4	65.1	0.316
6 or more members	187	29.6	34.9	

Tested with Chi-square test

Source : KOICA II Baseline survey primary data, 2018

IV.CONCLUSION AND RECOMMENDATIONS

IV.1 Conclusion

KOICA II Baseline Survey intended to measure the nutritional status among children 6 to 59 months of age in Gihango and Mushubati Sectors in Rutsiro District; the utilization of nutritious foods, health-seeking behaviors by PLW and caregivers, and food security at the household level through sustainable livelihoods.

According to the baseline findings, insufficient food production and access pose major public health problems. At least one household in five do not have land (19%-27.5%). The production of grains (86%-88% of HHs produced less than 70 kgs in the year preceding the survey), vegetables and fruits are at their lower levels to satisfy families' foods needs in a one-year period**.** Less than 30% of households owned any type of livestock. Most of the households, 67%-69% gained 100,000 FRW or less within the year before the survey. Also, most of the households (86%-93%) experienced stress of not having enough food due to lack of food or money to buy food in the 30 days preceding the survey. Two in five women (43.2%) had low dietary diversity (≤3 food groups). Almost one in five (19%) of children 6-23 months reached the MMD.

Households have received limited services and information on agriculture. Apart from information/services provided on kitchen gardening, other topics were poorly covered and consequently put into practice. Home visits to households by health workers for nutrition messaging were found very limited as only 11%-14% of households reported having been visited in the 30 days preceding the survey.

Maternal supplements during antenatal and postnatal periods are of low coverages particularly for tetanus vaccine (45.9%), deworming (54.9%), malaria prophylaxis (10.2%) and vitamin A post-partum (31.4%). Women do not seek for treatment when sick in the range of 41.7% to 70.6% for any kind of symptoms seen/felt or illness.

A third of the households (34%) used unimproved sources of water, which are considered unhealthy and 57.3% of the households do not treat drinking water to make it safe before drinking it.

Indicators of households' practices on key hygiene, sanitation, and water issues were encouraging in terms of hand washing at critical moments. However, access to improved toilets facilities was an issue since 82%-84% of the households used an unimproved traditional pit latrine which can't prevent flies and other disease vectors from entering into the latrine. Only 48%-54% of the households had a kitchen separate from the main house, this implies that the remaining part (almost 50%) cook inside the house. On another side, 30% of the households had their livestock kept in the same house where they cook and family members eat and sleep, this being a situation of potential transmission of illnesses from animals to human beings.

The prevalence of stunting in children under-five in the zone of intervention remains very high, 48%, above the WHO's high severity threshold (30%). In the same way, the prevalence of underweight is also

high, 13% and above the WHO's severity threshold (10%). In contrast, the prevalence of wasting in children has drastically dropped down across the time, reaching 2.9% from 7.6% three years ago.

IV.2 Recommendations

Referring to the results of the project baseline, the following recommendations are formulated:

- Inform and train women and their husbands on bio-intensive agriculture techniques (BIATs) supported with substantial and consistent information and skills creation to cope with land scarcity by increasing production per surface unit and put a big emphasis on follow-up to check that the information knowledge is translated into attitude and behavior (practices).
- Help and coach people in the zone of intervention, especially households in category 1 &2 of Ubudehe and those without land to create off-farm jobs.
- Educate the entire community members and encourage the production and consumption of diversified nutritious crops for a better nutrition, especially for under five children, pregnant and lactating women.
- Increase the nutritional content of food items consumed, through nutrition education and increased accessibility to nutrients-rich food, especially vitamin A-, protein- and iron-rich food, by providing families with improved seeds of nutritious crops and small livestock such as poultry and rabbits.
- Encourage and motivate health workers, CHWs and other specialized community volunteers such as agriculture volunteers (farmer promoters) to conduct regular and frequent home visits to coach households on promotional activities.
- Boost WASH practices, motivate the creation of Community Health Clubs (CHC) whose all communities' members will be called upon for membership. The existing national Community-Based Environmental Health Promotion Program (CBEHPP) would be implemented through those communities' clubs and will help to improve sanitation and hygiene conditions.
- Building capacities of households to install a hand-washing station near the toilet and equip it with soap and clean water.
- Continue to educate the population about crucial hand-washing times and the importance of hand washing at each of these times; increase their economic capacity to get soap and water.
- Educate communities about the importance of the proper treatment of drinking water.
- Motivate pregnant women to access antenatal-care services including iron-folic acid, vitamin A and deworming tablets intake. This would be boosted through home visits conducted by relevant health officers and CHWs.

Appendices

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Appendix 2: List of KIIs

NO	Title	Name	Sex	Contact
Gihango sector				
1	Health Centre staff who is in charge of CHWs- Congo Nil Health Center	Uwimana Constance	F	0788 842 651
2	Health Centre staff who is in charge of CHWs-Kibingo HC	Nkinzehwiki Emmanuel	M	0783 073 397
3	Staff in charge of nutrition at Kibingo health centre	Akingeneye Cadeau	F	0782 523 043
4	Staff in charge of nutrition at Congo Nil Health Center	Uwimana Tabitha	F	0788 844 368
5	Church leader	Nzabahimana Naphal	M	0782 929 535
6	CBO representative/agriculture cooperative	Yampaye Gabriel	M	0782 930 497
7	Executive Secretary -Murambi	Murebwayire M Claire	F	0786 201 807
8	Sector officer in charge of social affairs	Ukurikiyeyezu Jean Claude	M	0788 884 168
9	Agronomist	Jean Bapatiste	M	0784 153 788
10	WVR staff	Aline Niyonambaza	F	0788 559 621
11	Cell executive secretary-Mataba	Mediatrice	F	0786201806
12	CHW	Mukangoga Claire	F	0788422187
13	Farmer	Gasana Jean	M	0789615447
14	CHW	Mbahungirehe Gaspard	M	0782930488
15	CHW	Nyirabazarama Xaverine	F	0782930498
Mushubati sector				
1	Health Centre staff who is in charge of CHW	Bagiyumugambi Joseph	M	0783 171 674
2	Health Center – nutrition officer	Alice Dufatanye Ingabire	F	0788 254 718
3	Church leader	Pasteur Vincent	M	0788 580 763
4	CBO representative/Agriculture cooperative	Mukandayisenga Josiane	F	0783 837 848
5	SEDO-Cyarusera cell	Seraphine	F	0787 419 055

NO	Title	Name	Sex	Contact
6	Sector officer in charge of social affairs	Bernadette	F	0788 843 394
7	Agronomist or veterinary	Nsabimana Theogene	M	0784 010 290
8	WVR staff	Paul Ndizihiwe	M	0788 689 393
9	Priest-Mushubati Parish	Vincent	M	0783256871
10	Head of Mushubati HC	Damascene	M	0788828977
11	Cell executive secretary	Christine	F	0788681076
12	CHW	Uwimana M.Therese	F	0722685627
13	CHW	Vestine Nyirarekayabo	F	0783022273