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HOUSEHOLD FOOD PRODUCTION, DIETARY PRACTICES, AND NUTRITIONAL STATUS OF UNDER-FIVE CHILDREN IN THE IMBO REGION OF BURUNDI

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ABSTRACT

This study investigated food production, dietary practices and nutritional status of children under five within households in Burundi's Imbo region. Burundi, a small African country, has struggled with persistent malnutrition since the 1990s due to low food production and poverty. Burundians heavily rely on agriculture for their livelihoods, with small farms and mixed cropping systems. Staple crops, including cassava, beans, sweet potatoes and Irish potatoes, constitute the primary food sources for household security. Rainfall deficits have intensified vulnerabilities, leaving young children particularly exposed to acute food insecurity and persistent malnutrition. The study employed a cross-sectional design with a stratified cluster sample of 411 households in 2025. Findings were analysed for descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS) version 25. About 80.8% of children fell short of their Minimum Dietary Diversity (MDD), placing them at risk of undernutrition. Food availability issues were evident, with staple cereals such as maize and rice unavailable in over 81.1% of households. Regarding wasting, 86.3% of children under five were normal in terms of weight-for-height, whilst 5.9% were severely wasted and 5.6% moderately wasted (total wasting prevalence 11.5%). Additionally, 69.9% of children were classified as underweight. Stunting rates were of concern, with 29.2% severely stunted, 28.0% moderately stunted, and only 41.2% exhibiting normal growth. The study revealed a significant correlation between food production and dietary habits ($\chi^2 = 0.83$; $p = 0.050$). Notably, 63.3% of households lacked agricultural strategies to enhance food production and food availability ($\chi^2 = 0.83$; $p = 0.050$), whilst 44.3% of children under five were from households with limited food accessibility, consuming only two meals per day ($r = 0.79$; $p = 0.021$). There is a need to train agricultural technicians and community leaders to facilitate the application of fertilizers and use updated technologies to increase agricultural production for food availability, accessibility and durability. This study recommends the training of mothers, caregivers, and health workers on the nutrition care processes for improving the nutritional status of children under five. A nutrition intervention program is needed to reach malnourished children, particularly those under five.

Key words: Food production, dietary practices, nutritional status, wasting, stunting, dietary diversity

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INTRODUCTION

Globally, an estimated 149 million children under five are stunted, and 45 million are wasted; in Africa, 30% of under-fives are stunted, and wasting affects nearly 10% of children in sub-Saharan Africa [1]. Across Africa, over 20% of the population faces severe food insecurity, only one in five children aged 6–23 months receives a minimally diverse diet, and stunting affects 30% of under-fives [2]. In Burundi, annual population growth reduces per capita land availability and increases rural poverty, impeding agricultural development [3]; pre-schoolers receive meals that are not varied or of high quality, with children aged 24–36 months most at risk for malnutrition [4]. To curb this situation, the Burundian government seeks to ensure agricultural intensification guarantees food security [5], while a development-focused approach includes social protection, poverty reduction, disaster prevention, and charitable food provision [6]. Community-level food security programs are essential in addressing food consumption adequacy among vulnerable populations [7]. Communities and Non-Government Organizations (NGOs) also support food distribution practices for safe delivery of nutritious food [8]. Despite these interventions, food insecurity and malnutrition persist because prior research in Rwanda shows agricultural intensification policies may worsen food insecurity for smallholder farmers [9], current food systems remain inadequate for healthy child dietary practices [10], and family farmers have limited embrace of modern technologies [11]. Therefore, understanding why existing interventions have failed is urgently needed. In addition, limited evidence exists on the relationship between household food production and child nutritional outcome in the Imbo region of Burundi. The objective of this study was to investigate household food production, dietary practices, and nutritional status of children under five years old in the Imbo region of Burundi.

MATERIALS AND METHODS

Study Area

The study was conducted in the Imbo region in Western Burundi. The Imbo region is known as the primary hub for rice and maize cultivation in the country. It occupies a strategic position between the Ruzizi River, Lake Tanganyika, and the crest of the Congo-Nile watershed. Altitudes range from 774 m at Lake Tanganyika to 1,000 m at the onset of the escarpments. Due to these altitude variations, the region has varying annual rainfall patterns. The population is predominantly rural, with livelihoods centered on smallholder farming, mixed cropping systems, and livestock rearing. Cassava, beans, sweet potatoes, and maize constitute the primary food sources for household consumption and income generation. The Imbo region was selected for this study because it experiences persistent food insecurity and high rates of child malnutrition despite being an agricultural hub, a paradox that makes it



critically relevant for investigating the relationship between household food production, dietary practices, and nutritional status of children under five. Understanding this disconnect between agricultural productivity and child nutritional outcomes in the Imbo region can inform targeted interventions for similar agronomically rich but nutritionally poor areas in Burundi and beyond.

Research Design

A cross-sectional design was adopted because it allows for the simultaneous assessment of household food production, dietary practices, and nutritional status of children under five years old at a single point in time, making it appropriate for estimating prevalence and identifying associations in the Imbo region. The sampling frame consisted of all rural households with children under five years of age in the Imbo region of Burundi, covering the provinces of Cibitoke, Bubanza, Bujumbura, Makamba, and Rumonge. A stratified cluster sampling technique was used. Strata were defined by province, forming two groups: Group 1 (Cibitoke, Bubanza, Bujumbura) and Group 2 (Makamba, Rumonge). Within each stratum, communes served as clusters. Two communes were selected per province, except for Makamba where only one commune was available. From each commune, households were systematically selected. Inclusion criteria were household residency in the Imbo region, presence of at least one child under five years of age and lastly consent to participate. Exclusion criteria were no child under five years of age and primary caregiver unavailable after three visits.

Data Collection

The data collection process utilized structured questionnaires to gather information on various aspects of household demographics, socioeconomic characteristics, dietary practices, food consumption patterns, and the nutritional status of children under five years old. The focus was primarily on mothers responsible for childcare. A sample size was calculated using Yamane's formula [12] : $n = N / (1 + N(e)^2)$ where N = total population of households with under-five children in the Imbo region, e = margin of error of 0.05, and confidence level of 95%, yielding 422 households. However, data was ultimately collected from 411 households due to non-responses from 11 families, which reduces the effective sample size by 2.6% but still maintains adequate power for analysis. To enhance the reliability of the questionnaire, a pre-test survey was conducted in two municipalities, Rugombo in the north and Rumonge in the south, which led to revisions in the questionnaire for clarity and relevance before the main data collection in communes across five provinces. Enumerators were trained for two days on the questionnaire content, interview techniques, and ethical procedures, followed by supervised field practice. The questionnaires were digitized using Kobo Collect software on smartphones and tablets to facilitate efficient data gathering. Key information collected included main

food sources, single 24-hour dietary recall following World Health Organization/Food Agriculture Organization (WHO/FAO) guidelines, and weekly consumption, as well as household food production practices. Additionally, anthropometric measurements were taken following standard WHO procedures employing a SECA 874 digital scale (manufactured 2022), Mid Upper Arm Circumference (MUAC) tapes (model MUAC 201), and a SECA 417 height measuring board (manufactured 2022) to assess the nutritional status of the children involved in the study. All equipment was calibrated daily before use, and each child was measured twice with the average recorded.

Data Analysis

The data analysis was done using SPSS version 25. Initially, the dataset was extracted from Kobo Collect in Excel format and then subjected to a thorough cleaning process to ensure data accuracy. For anthropometric data, WHO Anthro software (version 3.2.2) was used to calculate z-scores, with child age verified using birth certificates or health cards where available; where documents were unavailable, age was estimated using a local events calendar. Chi-square tests were performed with a significance level set at 0.05 to assess associations. Chi-square analyses were employed to explore the relationship between food production and dietary practices. To identify predictors of malnutrition while controlling for confounders, logistic regression models were used, with odds ratios and 95% confidence intervals reported. Various aspects were analysed, including the frequency and prevalence of agricultural strategies, dietary practices among households, particularly concerning children's feeding habits, food acceptance or rejection, and the nutritional status of children under five. Dietary diversity scores were computed based on the frequency of food group availability and consumption within households. Minimum Dietary Diversity (MDD) for children was defined as consumption of at least 5 out of 8 food groups such as cereals, roots and tubers, pulses/nuts and grains, oils and fats, milk and dairy products, fruits and vegetables (WHO/UNICEF 2021). These indicators were assessed at child level, not household level. The prevalence of malnutrition was evaluated using the full WHO classification: weight-for-height z-score (WHZ), height-for-age z-score (HAZ), and weight-for-age z-score (WAZ), with stunting (HAZ < -2), wasting (WHZ < -2), and underweight (WAZ < -2) with or without the presence of oedema. In addition, Mid Upper Arm Circumference (MUAC) measurements were used with the following cut-offs: severe wasting (< 115 mm), moderate wasting (≥ 115 mm and < 125 mm), normal (≥ 125 mm).

Operational definitions

Dietary practices – this is how families select, prepare, and serve food to their children, following WHO/FAO guidelines as either appropriate (meeting Minimum Dietary Diversity and meal frequency) or inappropriate.



Food accessibility – means a household's ability to obtain food, whether from their own farm, the local market, or other sources.

Nutritional status – this is the physical condition of a child's body as measured by WHO growth standards, including whether the child is stunted (too short for age), wasted (too thin for height), or underweight (too light for age).

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Households

Table 1 shows the socioeconomic characteristics of caregivers and households. Most respondents (93.2%) were mothers of the children. Among these mothers, 57.3% were aged 18-24 years and 6.7% were aged 35-44 years while 36% of mothers were aged 25-34 years old. The mean age of respondents was 28.8 years (SD = 4.7). The mean age of children under five was 26.8 months (SD = 15.5). A majority of respondents (72.5%) were married, 10.5% were separated, and 5.6% were widowed. The participants had varying educational backgrounds: 30.0% had no formal education, 42.6% had completed primary school, 19.2% had secondary education, and 0.5% had university-level education. Agriculture was the main occupation: 83.7% were actively involved in farming, whilst 15.8% worked as casual labourers and 10.9% were involved in business activities (note: percentages sum to >100% due to multiple occupations). The main household income sources were harvest sales (68.1%), casual labour (30.9%), business activities (15.8%), and livestock sales (4.9%); only 1.2% had formal employment income. The largest proportion of households (35.3%) earned 5,000-10,000 Burundian Francs (BIF), equivalent to 1.66-3.34USD per day, while 30.9% earned less than 5,000 BIF (1.66 USD) per day. Associations between socioeconomic factors and nutritional outcomes are examined in subsequent analyses with 95% confidence intervals reported where applicable.

The study population comprised households with household sizes ranging from 1 to 13 individuals. A modest daily expenditure on purchasing food could suffice to meet the dietary needs of the household, including other essentials. High caregiver illiteracy rates are associated with poor child feeding practices, as education influences nutrition knowledge, dietary diversity, and health-seeking behaviour. The sale of harvests and casual labour constituted the primary income sources for households in the Imbo area. Specifically, 68.1% and 30.9% of households relied on these activities respectively. In Burundi, agriculture remains the primary source of income for the majority, with poverty rates persisting above 80% between 1990 and 2005 [13]. To supplement their earnings, households often engage in unskilled agricultural wage labour [14]. These low-income levels limit households' ability to purchase diverse foods, directly affecting child dietary diversity and nutritional status.

Agricultural strategies

Table 2 presents the agricultural strategies that respondents adopted to improve their food production. Notably, just over one-third of respondents (35.3%) confirmed that they had implemented specific strategies designed to strengthen food security within their households. Among the agricultural strategies observed, two main approaches stood out: establishing kitchen gardens (18.0%) and applying fertilizers to cultivated land (17.7%). The relationship between agricultural strategies and child nutritional status is examined in subsequent analyses.

Food Production and Consumption

Table 3 shows food production and consumption across provinces. Percentages are reported instead of frequencies. In Bujumbura province, 10.5% of households used fertilisers (11/105), while 4.8% engaged in kitchen gardening (5/105). In contrast, in Bubanza Province, 28.8% of households used fertilizer (19/66), with 47.0% maintaining kitchen gardens (31/66).

This study revealed that Cibitoke province had the highest rate of food consumption from home-grown crops, with 97.4% of households regularly consuming food from their harvest (75/77). Bubanza (95.5%, 63/66), Rumonge (56.0%, 51/91), and Makamba (88.9%, 64/72) also showed high consumption from their crop yields. Provincial comparisons are presented as observed proportions.

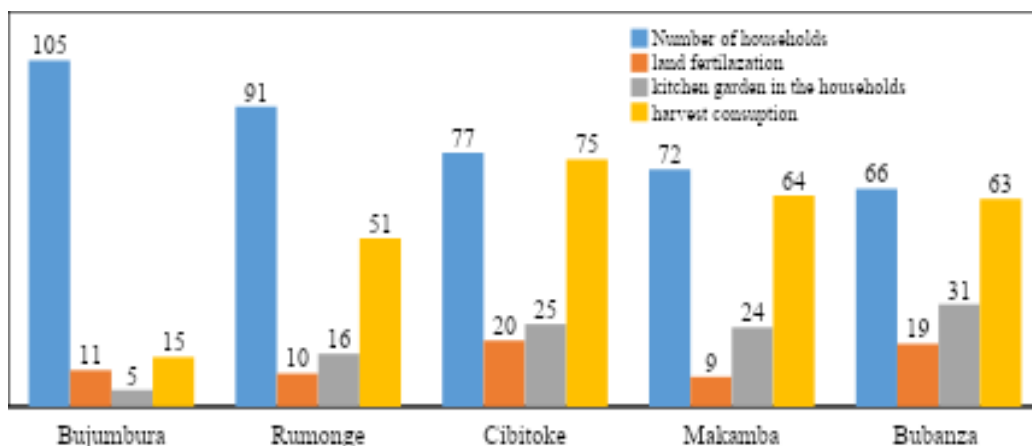


Figure 1: Food Production and Harvest Consumption per Province

Sources of Food for Children under Five

Table 3 shows the primary sources of food for children across the surveyed households. The data reveals that the majority of households acquired some of their children's food through purchases from local markets (76.9%). Additionally, a significant proportion of households sourced food for their children from the family's own harvest (65.2%). This highlights the significance of home-grown produce in

meeting nutritional needs. Borrowed foods and food from urban agriculture accounted for 0.6% of the sources of food supply for children. Foods obtained through donations or gifts accounted for 4.6%.

Dietary Practices for Children Under Five

Number of Meals for Children

Table 4 shows the number of meals consumed per day by children under five. Of the 411 households surveyed, 44.3% reported providing two meals daily for their children, whilst 39.7% managed to offer three meals when food was available. Additionally, 11.7% of households provided only one meal to their children each day. Only 2.7% of households could afford to provide their children with at least four meals daily. Seven households declined to respond to this question. No inferential statistics were calculated for this therefore, statistical significance of differences between meal frequency proportions was not assessed.

Child Feeding Situation

Table 5 shows the child feeding practices across households. The results indicate that 55.7% of parents allowed their children to feed themselves, whilst 43.8% actively fed their children. Among those who fed their children, mothers accounted for 93.9% of caregivers. The remaining 6.1% of caregivers included grandmothers, aunts, and neighbours. These findings demonstrate the central role of mothers in child feeding practices. No inferential statistics were calculated for this, therefore, statistical significance of differences between proportions was not assessed.

Food rejection or acceptability

Table 6 illustrates the responses of mothers when faced with food rejection by their children. Of the 411 respondents, 44.3% opted to change the meal offered to their children in response to rejection. Conversely, 35.0% of mothers reported being unable to find a solution when their children rejected food. For 11.7% of mothers, the lack of food diversity in their households limited their options, leaving them with no alternative when faced with rejection. In 7.0% of cases, mothers resorted to forcing their children to consume the available food. A minority (0.7%) of respondents reported that their children were exclusively breastfed until the next mealtime. This section is important because food rejection directly affects dietary intake and nutritional status of children under five.

A considerable number of children exhibited meal rejection behaviours towards certain foods. Specifically, among children under five, approximately 50.4% rejected staples such as cassava, maize meal, and vegetables. This food rejection was particularly evident in sub-localities within Cibitoke and Bubanza provinces, where children displayed signs of poor nutrition status, whilst 49.6% of children consumed

the available food without issues. This lack of food diversity significantly impacted the nutritional status of children.

Nutritional Status of Children Under Five

The study assessed the nutritional status of children under five using stunting (HAZ), wasting (WHZ), and underweight (WAZ) indicators (Table 8). Height-for-age z-scores showed that 29.2% of children were severely stunted, 28.0% were moderately stunted, and 41.2% had normal growth. For wasting (weight-for-height z-score), 5.9% of children were severely wasted (WHZ < -3), whilst 5.6% were moderately wasted (WHZ between -3 and -2). According to WHO thresholds, a wasting prevalence of 5.9-5.6% is classified as "poor" to "serious" (5-10%), while stunting prevalence of 57.2% (severe + moderate) is classified as "very high" (>40%). The data show critically high rates of malnutrition among children under five in the study area.

Food Production

In the Imbo region, a significant proportion of households (63.3%) lacked strategies to address food insecurity. Only 18.0% of households implemented agricultural initiatives such as kitchen gardens to enhance vegetable production. A comparative study in Dodoma, Tanzania, reported a similar trend, with only 3% of families practising kitchen gardening due to constraints such as limited water availability and inadequate fencing [15]. Furthermore, fertiliser utilisation in the Imbo region was low, with only 17.7% of households using them to bolster food production. In contrast, research by Sheahan and Barrett [16] found that over 75% of farming households in Malawi, 50% in Ethiopia, and approximately 40% in Nigeria used organic fertilisers. However, these comparisons should be interpreted with caution given differences in agricultural extension services and soil conditions across countries. The current study also examined livestock rearing: 53.8% of households had no animals, whilst 20.2% raised chickens, 9.2% raised pigs, and 3.6% owned cattle. Low adoption of agricultural strategies (63.3% lacking strategies, only 17.7% using fertilisers) directly limits household food availability and dietary diversity, which in turn affects child nutritional status.

Main sources of food for children under five

The study revealed that a majority of households (76.9%) relied primarily on purchasing food from the market, and 65.2% harvested food from their own agricultural production. Various studies have underscored the pivotal role of food crops, cultivated on approximately 85% of arable land in Burundi, as the primary source of sustenance and income for most households [17]. In this study, market purchase and home harvest were the two dominant sources, with borrowed food (0.6%) and donations (4.6%) playing minimal roles. These findings indicate that both

market access and agricultural production are important for child food supply in the Imbo region.

Child Feeding Situation

This study examined the role of mothers in child feeding. The majority of mothers (93.9%) were the primary caregivers responsible for feeding their children. Grandmothers, aunts, and neighbours made up the remaining 6.1%. However, 55.7% of mothers left their children at home to engage in daily casual work, creating uncertainty about whether children consumed prepared meals. Only 43.8% of mothers had sufficient time for feeding and breastfeeding their children. When mothers were absent, other household members or neighbours fed children, which changed mealtimes and food choices. Irregular feeding contributes to nutritional deficiencies and developmental problems. Regular child feeding practices are crucial for preventing long-term damage and promoting optimal nutrition outcomes.

Dietary practices for children under five and dietary diversity score

The study underscores the significant influence of infant feeding practices on nutritional well-being, with a notable involvement of mothers, caregivers, and other family members. A considerable proportion (55.7%) of mothers left their children unattended during mealtimes. Children consequently fed themselves. This meant they potentially did not consume meals as their mothers expected. The mothers fed only 43.8% of children when they were present at home. Regarding dietary diversity, 80.8% of children fell short of the Minimum Dietary Diversity (MDD), consuming fewer than five food groups per day.

Anthropometric measurements were utilised to assess the nutritional status of children under five, revealing poor nutrition status among this demographic group. The prevalence of severe and moderate wasting was 5.9% and 5.6%, respectively, giving a total wasting prevalence of 11.5%. According to WHO classification, a wasting prevalence of 10–14% is considered "serious" and indicates a critical need for nutritional interventions [18]. These findings highlight the urgency of targeted programmes to address acute malnutrition among under-fives in the Imbo region.

CONCLUSION AND RECOMMENDATIONS FOR DEVELOPMENT

The results of this study indicate that in the Imbo region, households engage in food production yet yields frequently fall short of meeting the entire family's nutritional requirements. Despite this challenge, only 18.0% of households adopted enhanced agricultural strategies through the utilisation of fertilisers (17.7%) and implementation of kitchen gardens (18.0%) to bolster their food production capacity. Consequently, considerable variation exists in dietary practices for children under five, with 44.3% of households providing two meals daily and 39.7% providing three meals daily. Alarming, 80.8% of children failed to achieve Minimum Dietary



Diversity (MDD), and stunting affected 57.2% of children (29.2% severe, 28.0% moderate), with 69.9% classified as underweight. These findings directly address the study objective of investigating household food production, dietary practices, and nutritional status of under-five children in the Imbo region. The high prevalence of malnutrition underscores the urgent need for targeted interventions focusing on agricultural support and nutrition education.

Based on the study findings that only 18.0% of households used kitchen gardens and 17.7% used fertilisers, and that 80.8% of children failed to achieve Minimum Dietary Diversity:

- Agricultural extension services should train farmers in the Imbo region on low-cost fertiliser application and kitchen garden establishment, using locally available materials to ensure affordability for impoverished households.
- Community health workers should be trained to deliver nutrition education to mothers and caregivers, focusing on dietary diversity (at least 5 food groups per day) and responsive feeding practices, given that 57.2% of children were stunted and 69.9% were underweight.
- A targeted nutrition intervention programme should be implemented to reach malnourished children under five and their caregivers, prioritising households with limited meal frequency (44.3% of children received only two meals daily)
- Longitudinal studies should be conducted in the Imbo region to establish causal relationships between household food production, dietary practices, and nutritional status of under-five children, as the current cross-sectional design could not determine causality.
- Qualitative research is needed to understand the contextual barriers to adoption of agricultural strategies (for example kitchen gardens, fertiliser use) and the reasons for high food rejection among children under five in Cibitoke and Bubanza provinces.

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Ethics approval and consent to participate

Ethical clearance was obtained from Kenyatta University Graduate School, School of Health Science, Department of Food, Nutrition and Dietetics. In Burundi, where this study was conducted, research approval was given by the IRB (Internal Review Board) at IITA (International Institute of Tropical Agriculture), approval number IRB/08/2025. Written consent was sought from parents or caregivers of children under five years of age who were the subjects of this study.

Limitations

This study has several limitations. First, the cross-sectional design allows assessment of associations but not causal relationships. Second, dietary data relied on maternal recall, which may introduce recall bias. Third, despite daily calibration of equipment and duplicate measurements, minor anthropometric measurement errors cannot be ruled out. Fourth, the study was conducted only in the Imbo region, so findings may not be generalizable to other regions of Burundi.

Conflict of Interest

The authors declare no competing interests.

Table 1: Socioeconomic Characteristics of the Households

Socioeconomic characteristics of the caregivers		n (N=411)	%	Mean and Sd
Relationship of the respondent to the child	Mother	383	93.2	
	Others (grand-mother, sister, aunt)	28	6.8	
Age (years) of caregivers				Mean age = 28.8
	18-24	102	57.3	Sd = 4.7
	25-34	64	36	
	35-44	12	6.7	
Age of children (months)	0-59 months	396	96.3	Mean age = 26.8 Sd = 15.5
Marital status of parents	Married	298	72.5	
	Separated	43	10.5	
	Single	47	11.4	
	Widowed	23	5.6	
Education level of parents	No formal or informal education	123	30.0	
	Informal education	32	7.8	
	Primary	175	42.6	
	Secondary	79	19.2	
	University	2	0.5	
Occupation of parents to generate income or food supply	Agricultural activities	344	83.7	
	Small business	45	10.9	
	Casual laborer	65	15.8	
	Housewife	1	0.2	
	Formal employment	5	1.2	
	School going	1	0.2	
	Self-employed	16	3.9	
Economic characteristics of the households		n (411)	%	
Main sources of household income	Sale of the Harvest	280	68.1	
	Sale of livestock	20	4.9	

	Small business	65	15.8	
	Casual laborers	127	30.9	
	Formal employment	5	1.2	
Household income (BIF)	≤5000	127	30.9	
	5,001-10,000	145	35.3	
	10,001-20,000	72	17.5	
	20,001- 50,000	51	12.4	
	>50,000	16	3.9	

Table 2: Agricultural Strategies for Food Production

Agricultural Strategies	N=411	N	%
Households with a strategy to improve food security	Adopted agricultural strategies	145	35.3
Agricultural strategies (145)	Presence of kitchen garden	74	18.0
	Use of fertilizer	69	17.7

Table 3: Main Sources of Food for Children

Sources of Food	N	%
From own harvest	268	65.2
Purchase at the market	316	76.9
Donations/gifts	19	4.6
Urban agriculture	3	0.6
Health facilities/food supplements	1	0.2

Table 4: Number of Meals per Day for Children

Number of meals per day	(n)	(%)
1	48	11.7
2	182	44.3
3	163	39.7
4 and more	11	2.7

Table 5: Child Feeding Situation

Item	Response	(n)	(%)
Child feeding status	Children feed themselves	229	55.7
	Children fed by others	180	43.8
Who fed children who could not feed themselves?	Mother	169	93.9
	Others (grandmother, uncles, neighbors)	11	6.1

Table 6: Food Rejection or Acceptability

Actions	(n)	(%)
Breastfeeding the child until the next meal	6	1.3
Improving cooking techniques	2	0.5
Waiting for the next meal	4	1.0
Change food	195	44.3
Consult health facilities	2	0.5
Forcing the child to eat available food	29	7.0
Nothing to report	164	46.5

Table 7: 24 -hour Dietary Recall and Food Group Consumption

Food groups	Frequency	percent
Cereals	77	18.7
Roots tubers	5	19.2
Pulses and nuts and grains	178	43.3
Oils and fats	328	79.8
Milk and dairy products	7	1.7
Fruits	99	24.1
Vegetables	117	28.5

Table 8: Nutritional Status of Children Under Five at Imbo, Burundi

Nutrition indicators	Nutrition status	n (411)	%
Stunting	Severe	119	29.2
	Moderate	114	28.0
	Normal	167	41.2
Wasting	Severe	24	5.9
	Moderate	23	5.6
	Normal	353	86.3
	Overweight	9	2.2

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