

Optimal Complementary Feeding Practices Among Caregivers and Their Children Aged 6-23 Months in Kisoro District, Uganda

Tracy Lukiya Birungi (✉ luksbirungi@gmail.com)

Uganda Martyrs University

David Livingstone Ejalu

Uganda Martyrs University

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Abstract

Background: There is a wide number of risk factors for stunting and one that is most often corroborated by studies is complementary feeding practices. There was a need to ascertain the prevalence of and factors that lend to caregivers meeting requirements for the optimal complementary feeding practices in Kisoro district, a district with high stunting rates.

Methodology: A cross-sectional analytical study that used secondary data obtained from the USAID/Uganda's Integrated Community, Agriculture, and Nutrition (ICAN) Activity. Multi-stage sampling on the data was done to select entries for 384 caregivers of children aged 6-23 months in Kisoro district. The data was first proffered in Excel sheets and analysed using SPSS version 20. Multivariable logistic regressions were conducted to determine independent factors, at the 3 levels of the SEM, associated with optimal complementary feeding practices.

Findings: The prevalence of introduction to solid, semi-solid or soft foods was the highest at 95.06%, and the prevalence for Minimum Dietary Diversity (MDD) and Minimum Acceptable Diet (MAD) was very low at 4.43%.

At the settings level, type of occupation (AOR = 21.206; CI = 2.032 - 221.256; p=0.011) and community groups (AOR = 0.426; CI = 0.219 - 0.828; p=0.012) were found to be statistically significant for association with minimum meal frequency.

At the interpersonal level, household size (number of household members) (AOR = 0.346; CI = 0.128 - 0.936; p=0.037) was statistically significant for association with minimum dietary diversity and minimum acceptable diet. Also, marital status was found to be statistically significant for association with continued breastfeeding (AOR = 13.245; CI = 1.763 - 100.248; p=0.012).

At the intrapersonal level, age was associated with timely introduction of complementary foods (AOR = 1.731; CI = 1.040 - 2.883; p=0.035). While age was associated with minimum meal frequency (AOR = 2.208; CI = 1.097 - 4.445; p=0.026).

Conclusion: The study findings revealed that the prevalence of MAD and MDD was very low in Kisoro district putting these children at a very high risk to become stunted.

Introduction

Stunting, a sub-form of malnutrition, which is responsible for 14% of global childhood deaths also heavily debilitates cognitive growth and physical capabilities, leaving the future of a person less gainful than it would otherwise have been [1, 2]. There are a wide number of risk factors for stunting and one that is most often corroborated by studies is complementary feeding practices [2, 3]. In many countries across the world, few children receive nutritionally adequate and safe complementary foods; and less than a quarter of the population of infants 6–23 months of age meet the criteria of the Minimum Acceptable

Diet (MAD) appropriate for their age [4]. These reports of inappropriate and inadequate complementary feeding practices feed into the current 21.9% of stunted children that are in the world [5].

In Uganda, Infant and Young Child Feeding (IYCF) and thus complementary feeding is guided by the Policy Guidelines on Infant and Young Child Feeding. The recommendations from discussions at several technical consultations and documents on complementary feeding produced by the World Health Organisation and UNICEF were used to develop the guidelines[6]. The guidelines described complementary feeding as providing other foods (solid or semi-solid) to the infant, in addition to breastfeeding or replacement feeding, to fulfil the nutritional needs of the baby from the age of 6 months [6]. Herein replacement feeding referred to feeding a child not receiving breast milk on a sufficient diet until a time when the child is fully fed on family foods [6]. The guidelines further elaborated on the practices by recommending: introduction of complementary foods at the age of 6 months; continued breastfeeding until 2 years of age and beyond; feeding on various nutritious, locally available foods; feed liquid/soft, semi-solid foods using clean cups and spoons; disuse of cups with spouts, bottles or teats; preparing food with the right consistency (thickness) and nutrient density (especially energy and micronutrients); feeding as frequently as is consistent with the child's age; practising active feeding; practising high standards of hygiene when handling the child's food; feeding the child more frequently when sick with extra fluids; and maintaining sanitation and food/water safety [6, 7].

However, several studies have reported on the inadequacy in IYCF practices and consequently complementary feeding practices and advocate for the need to support populations, especially in low- and middle-income countries such as Uganda to adopt the recommended evidence-based guidelines when practising complementary feeding. These studies established that when complementary feeding practices were carried out appropriately per the global and national recommendations, then they were termed as appropriate or optimal but when they were inadequate, they were considered inappropriate or sub-optimal with terrible consequences to a child's growth and future productivity [1, 5, 8–11].

Several studies revealed that proportions of children meeting requirements for optimal complementary feeding (CF) were generally low with minimum acceptable diet (MAD), minimum dietary diversity (MDD) and minimum meal frequency (MMF) in order of lowest to slightly higher across all the regions. Other indicators such as continued breastfeeding (CBF) at 1 year and introduction of solid semi-solid or soft foods (ISSSFs) showed higher proportions for children aged 6–23 months [5, 12–14]. The literature also revealed the prevalence of MDD in Kisoro district to be very low at 3.9% [15]. The prevalence of the other CF indicators was not revealed, however.

Various factors were documented to be associated with complementary feeding and this study concentrated on factors according to the SEM, at the settings, interpersonal and intrapersonal levels.

At the settings level, the literature explored locations or social contexts that were positively or negatively associated with complementary feeding practices (CFPs); the factors mentioned were the type of occupation of the caregiver [16–19]; rural vs urban areas [20–24]; ease of access to a health facility [25, 26]; type of community group [15, 27–29] and place of delivery [25, 30–32]. At the interpersonal level, the

literature delved into relationships and household factors documented to be associated with CFPs which included family or household size [22, 23, 33, 34]; the number of children under five years of age [16, 35–37]; the number of household chores (workload effect) [22, 38–40]; the influence of interpersonal relationships with emphasis on the marriage partner (marital status) [16, 22, 30, 35, 41–44]; WASH situation of the household [16, 45, 46] and household wealth [16, 17, 20, 22, 24, 26, 34, 43, 47]. At the intrapersonal level, the literature examined biological characteristics and personal background factors of caregivers recognised as associated with CFPs which included the age of the caregiver [16, 17, 24, 43]; the education level of the caregiver [16, 17, 19, 25, 43, 48]; antenatal and postnatal visits [21, 25, 33, 34, 47, 49]; sex of the HH head [22, 34, 40]; age and sex of the child [17, 22, 43, 48, 50, 51]; and maternal parity [33, 42, 43].

However, to the best of our knowledge, none of the studies determined the prevalence of more than three OCFPs and the factors that lend to caregivers meeting requirements for the optimal complementary feeding practices in the Kisoro district. Cognizant of this empirical gap, this study, therefore, sought to determine the prevalence and factors associated with the optimal complementary feeding practices of caregivers and their children aged 6–23 months in Kisoro district. The findings gathered from this study will provide evidence for use by policymakers and organisations towards strengthening existing strategies tackling the malnutrition scourge, at least in the Kigezi region.

Methods

Study design, area and population

The study adopted a cross-sectional analytical design and employed quantitative methods of data collection and analysis. Secondary data was used originally collected in Kisoro district, by the USAID-funded project Uganda's Integrated Community, Agriculture, and Nutrition (ICAN) Activity, from households with children aged 6–23 months; with the main respondents being the caregivers of the children. Kisoro district was purposively selected because it is one of the districts in the Kigezi region; a region that has persisted with levels of stunting higher than the national levels [52]. Kisoro district is located in the South-Western part of Uganda bordered in the North by Kanungu district, Kabale district to the East, the Republic of Rwanda to the South and the Democratic Republic of Congo to the West. The total land area of the Kisoro district is roughly 729.2 km² (662 km² open land and the rest is open water and swamps). The district is approximately 510 km from Kampala, the capital city of Uganda [52, 53].

Sample size and sampling procedure

The study used Cochran's formula; a popular formula for sample size determination [54]. The inputs were 95% confidence level, 5% margin of error, and with an unknown proportion of children aged 6–23 months use maximum variability of 50% i.e., 0.5 was used. The sample size calculated was 384.

Multistage sampling was then applied to select the entries for analysis from the database obtained from USAID/ICAN. Random sampling was first applied to select 12 parishes from the 22 where USAID/ICAN

carried out its activities followed by randomly selecting 24 villages from the 12 parishes. Finally, systematic sampling was applied which involved, picking 16 households from each village by selecting the 4th household till 384 were obtained. Ultimately, 16 households from the 24 villages made up the 384 as per the calculated sample size.

Data Analysis

The data was analysed using SPSS version 20 whereby with univariate analysis, descriptive statistics were performed and the results were using frequencies and percentages in tabular and graph form.

For the bivariate and multivariate analysis, logistic regression models were run to determine the factors significantly associated with OCFPs. This involved employing a stepwise backwards approach to construct the models. The procedure for constructing the models involved first running all the independent variables separately against the dependent variable. Crude Odds ratios (CORs) and their 95% confidence intervals (CIs) were calculated with a p-value < 0.05 considered to be significant.

Secondly, the independent variables that were found not significant (p-value \geq 0.05) were discarded and those with a p-value < 0.05 were retained for the final model and run together against each dependent variable. Adjusted Odds ratios (AORs) and their 95% confidence intervals (CIs) were calculated with a p-value < 0.05 considered to be statistically significant.

Operational Definitions

Optimal complementary feeding practices (OCFPs): This is the feeding of other foods and liquids to a breastfeeding child aged 6 to 23 months that meets the requirements for introduction to solid, semi-solid and soft foods, continued breastfeeding at 1-year, minimum dietary diversity, minimum meal frequency and minimum acceptable diet.

Minimum dietary diversity (MDD): This is defined and measured as the proportion of children aged 6–23 months who received foods from 4 or more food groups consisting of; grains, roots and tubers; legumes and nuts; dairy products; flesh foods; eggs; vitamin-A rich fruits and vegetables; and other fruits and vegetables the previous day or 24 hours.

Minimum meal frequency (MMF): the proportion of breastfed children who receive solid, semi-solid or soft foods the minimum number of times or more; 2 times for infants 6–8 months and 3 times children 9–23 months.

Introduction of solid, semi-solid or soft foods (ISSSFs): This indicator measured the timeliness of the introduction of complementary foods and it is defined as the proportion of children who had received solid, semi-solid or soft foods at 6–8 months of age.

Minimum Acceptable Diet (MAD): the proportion of children aged 6–23 months who consumed the minimum dietary diversity and minimum meal frequency in the previous 24 hours.

Setting: This is a location (workplaces, place of residence, closeness to a health facility) or social context (community groups) in which people carry out everyday activities that influence how they practice complementary feeding.

Community group: This is defined as five or more people who live in the same area and either work together to maximize economic opportunities from agriculture and non-agriculture-based livelihoods through connections to markets and financial services (livelihood group) or participate in activities such as nutrition education to reduce malnutrition in mothers, infants, young children, adolescents, and newborns (MIYCAN group).

WASH (Water, Sanitation and Hygiene) Situation: Possession of a functional latrine and handwashing facility (with a cleansing agent and water) gauged as best, good, bad and terrible.

Caregiver

A parent (mother or father) or any other person that is directly involved in meeting the child's needs (feeding, grooming etc) and lives within the household.

Results

Characteristics of the sample

The distribution of the sample across the settings, inter-and intrapersonal levels are presented in Table 1. Most of the caregivers 279 (72.7%) worked in the agricultural sector. All the caregivers 384 (100%) resided in rural areas. More than half of the caregivers, 242 (63%) subscribed to the Livelihoods group. The caregivers that resided in small HHs were more than 275 (71.6%) those that resided in large HHs 109 (28.4%). Few of the caregivers 45 (11.7%) had in their care more than 2 children under the age of 5 years. The majority of the caregivers 305 (79.4%) were married. More than half of the caregivers possessed more than 29 years of age 231 (60.2%). Most of the caregivers were female 327 (85.2%). About half of the caregivers 201 (52.3%) had attended primary school. Over seventy per cent (73.2%) had not attended antenatal care (ANC). More than half of the caregivers (66.4%) resided in households (HHs) where the HH head was male.

Table 1
Characteristics of the Sample at Settings, Inter- and Intrapersonal Levels

Variables (N = 384)	Categories	Frequency (N)	Percentage
Settings			
Type of occupation	working in the agricultural sector	279	72.75%
	own non-agricultural business	35	9.1%
	formal employment	33	8.6%
	others	22	5.7%
	none	15	3.9%
Residence	Rural	384	100%
Time to walk to the nearest health facility	5–30 minutes	150	39.1%
	> 30 minutes	234	60.9%
Community Groups	Livelihood group	242	63%
	MIYCAN group	142	37%
Interpersonal			
Variables (N = 384)	Categories	Frequency (N)	Percentage
Number of HH members	Small \leq 6	275	71.6%
	Large \geq 7	109	28.4%
Number of children under 5 years	\leq 2	339	88.3%
	> 2	45	11.7%
Chore score	All chores carried out by myself and others	278	72.4%
	Caregiver carried out all the chores	106	27.6%
Marital status	Married	305	79.4%
	Others	79	20.6%
Functional Latrine	Available	374	97.4%
	Not available	10	2.6%
Handwashing Facility	Handwashing facility available with water & a cleansing agent	171	44.5%

Variables (N = 384)	Categories	Frequency (N)	Percentage
	Handwashing facility available with water, no cleansing agent	55	14.3%
	Handwashing facility available with a cleansing agent, no water	9	2.3%
	Handwashing facility available with no water & a cleansing agent	40	10.4%
	No handwashing facility	109	28.4%
WASH Situation	Best	170	44.3%
	Good	65	16.9%
	Bad	38	9.9%
	Terrible	111	28.9%
Intrapersonal			
Variables (N = 384)	Categories	Frequency (N)	Percentage
Age of caregiver	≤ 29 years of age	153	39.8%
	> 29 years of age	231	60.2%
Sex of the caregiver	Female	327	85.2%
	Male	57	14.8%
Education status	No education	78	20.3%
	Attended primary school	201	52.3%
	Attended secondary school	80	20.8%
	Attended university	7	1.8%
	Others	18	4.7%
Attended ANC	Attended ANC	103	26.8%
	Did not attend ANC	281	73.2%
Sex of HH head	Female	129	33.6%
	Male	255	66.4%
Age of child	6–11 months	130	33.9%
	12–17 months	107	27.9%

Variables (N = 384)	Categories	Frequency (N)	Percentage
	18–23 months	147	38.3%
Sex of child	Female	327	85.2%
	Male	57	14.8%
Caregiver received nutrition education/training	Received	147	38.3%
	Did not receive	237	61.7%

Prevalence

Table 2 shows the prevalence of each complementary feeding indicator (CFI) for the caregivers of infants 6–23 months of age in Kisoro district. Of the five practices, introduction to solid, semi-solid or soft foods (ISSSFs) and continued breastfeeding (CBF) at 1 year were the most well practised whereby 95.06% (77/81) of the caregivers introduced solid, semi-solid or soft foods in a timely fashion. While 84.81% (67/79) of mothers of infants 12 to 15 months of age had continued to breastfeed their children. The results also showed that 76.56% (294/384) of infants 6 to 23 months of age met the standards for minimum meal frequency (MMF). The Minimum Dietary Diversity (MDD) and Minimum Acceptable Diet (MAD) were too low at 4.43% (17/384) for infants 6 to 23 months of age.

Table 2
Prevalence of each complementary feeding indicator (CFI) for the caregivers of infants 6–23 months of age in Kisoro district

CFI	ISSSFs	CBF	MDD	MMF	MAD
Prevalence	95.06%	84.81%	4.43%	76.56%	4.43%

Food Groups Consumed by Children Across the Different Age Categories

Amongst the food groups, grains, roots and tubers were consumed by the majority of the children 359/384 (93.5%) while eggs were the least consumed at 23/384 (6%) as shown in Table 3. Across the 6–11, 12-17- and 18-23-months age categories, it was revealed grains, roots and tubers were the most consumed (86.2%, 95.3% and 98.6%). However, for the least consumed food group, the 6–11 and 12–17 age groups had consumed eggs the least at 6.2% and 5.6% respectively while the 18–23 age group had consumed Vitamin-A rich fruits and vegetables the least at 2.0% as shown in Table 3.

Table 3

Percentage distribution of food groups consumed by children across the different age categories (N = 384)

Food Groups	Status	Age Categories			Total
		6-11 months	12-17 months	18-23 months	
Grains, roots & tubers	Consumed	112 (86.2%)	102 (95.3%)	145 (98.6%)	359 (93.5%)
	Didn't consume	18 (13.9%)	5 (4.7%)	2 (1.4%)	25 (6.5%)
Legumes & Nuts	Consumed	21 (16.2%)	31 (28.97%)	30 (20.4%)	82 (21.4%)
	Didn't consume	109 (83.9%)	76 (71.03%)	117 (79.6%)	302 (78.7%)
Milk & milk products	Consumed	27 (20.8%)	13 (12.2%)	13 (8.8%)	53 (13.8%)
	Didn't consume	103 (79.2%)	94 (87.9%)	134 (91.2%)	331 (86.2%)
Flesh foods	Consumed	31 (23.9%)	37 (34.6%)	35 (23.8%)	103 (26.8%)
	Didn't consume	99 (76.2%)	70 (65.4%)	112 (76.2%)	281 (73.2%)
Eggs	Consumed	8 (6.2%)	6 (5.6%)	9 (6.1%)	23 (6%)
	Didn't consume	122 (93.9%)	101 (94.4%)	138 (93.9%)	361 (94%)
Vit. A rich fruits and vegetables	Consumed	13 (10.0%)	11 (10.3%)	3 (2.0%)	27 (7%)
	Didn't consume	117 (90.0%)	96 (89.7%)	144 (98%)	357 (93%)
Other fruits and vegetables	Consumed	50 (38.5%)	55 (51.4%)	81 (55.1%)	186 (48.4%)
	Didn't consume	80 (61.5%)	52 (48.6%)	66 (44.9%)	198 (51.6%)

Factors Associated with Optimal Complementary Feeding Practices

As seen in Table 4, at the settings level, the type of occupation and community group were statistically significant for association with MMF. Caregivers that gained income in other ventures such as begging,

remittances and so on were 21 times more likely to meet the requirements for MMF for their children compared to caregivers working in the agricultural sector (AOR = 21.206; CI = 2.032–221.256; p = 0.011).

Caregivers that belonged to the livelihood group were 57.4% less likely to achieve minimum meal frequency for their children compared to caregivers that belonged to the MIYCAN group (AOR = 0.426; CI = 0.219–0.828; p = 0.012).

At the interpersonal level, the number of HH members was found to be statistically significant for association with MDD and MAD while marital status was found to be statistically significant for association with CBF. Caregivers residing in HHs with 7 or more HH members were 65.4% less likely to offer their children an acceptable and diverse diet compared to caregivers living with 6 or fewer HH members (AOR = 0.346; CI = 0.128–0.936; p = 0.037).

Caregivers who were not married were 13.25 times more likely to have continued breastfeeding their children by 1 year of age compared to caregivers that were married (AOR = 13.245; CI = 1.763–100.248; p = 0.012).

At the intrapersonal level, the age of the caregiver was found to be statistically significant for association with ISSSFs while the age of the child was statistically significant for association with MMF. Caregivers older than 29 years were 1.7 times more likely to introduce solid, semi-solid and soft foods timely to their children compared to caregivers that were 29 years or younger (AOR = 1.731; CI = 1.040–2.883; p = 0.035).

Caregivers for children aged between 12–17 months were 2.2 times more likely to meet the MMF requirements for their children compared to caregivers with children in the 6–11 months age bracket (AOR = 2.208; CI = 1.097–4.445; p = 0.026).

Table 4

Factors Associated with Optimal Complementary Feeding Practices of Caregivers and their Children Aged 6–23 Months in Kisoro District, Uganda (N = 384)

	Independent Variable	Categories	CORs	AORs	p-value for AOR	Dependent variable
Settings	Type of occupation	working in agricultural sector	1	1	0	MMF
		own non-agricultural business	1.314 (.550–3.143)	3.010 (.949–9.550)	.061	
		formal employment	10.514 (1.410–78.381)	2.076 (.486–8.862)	.324	
		none	.288 (.101–.822)	1.208 (.250–5.840)	.814	
		Others	1.117 (.397–3.140)	21.21(2.03–221.26)	.011*	
	Community group	MIYCAN group	1	1	0	
		Livelihood group	.435 (.253–.747)	.426 (.219–.828)	.012*	
Interpersonal level	Marital status	Married	1	1	0	CBF
		Others	.046(.006–.340)	13.25 (1.763–100.248)	.012*	
	Number of HH members	≤6	1	1	0	MDD & MAD
≥7	3.004(1.128–8.001)	.346 (.128–.936)	.037*			
Intrapersonal level	Age of caregiver	≤ 29 years of age	1	1	0	ISSSFs
		> 29 years of age	.539 (.326–.892)	1.731 (1.040–2.883)	.035*	
	Age of child	6–11 months	1	1	0	MMF

* significant when $p < 0.05$

Independent Variable	Categories	CORs	AORs	p-value for AOR	Dependent variable
	12–17 months	.416(.210 – .822)	2.208 (1.097–4.445)	.026*	
	18–23 months	.299 (.159 – .559)	.938 (.494–1.783)	.846	
* significant when $p < 0.05$					

Discussion

Of the 81 caregivers with children 6–8 months of age, 95.06% (77/81) introduced solid, semi-solid or soft foods in a timely fashion relatively higher than national prevalence which stood at 78.8% (Uganda Bureau of Statistics and ICF, 2018). However, similar findings were obtained by a study carried out in China amongst persons in rural settings where 95.4% of the infants aged 6–8 months received solid, semi-solid or soft foods appropriately [55] which the study attributed to the caregivers having received nutrition education which they applied by introducing their children to foods at the right age.

Minimum Dietary Diversity was too low at 4.43% (17/384) for mothers of infants 6 to 23 months of age that met the standards for minimum dietary diversity. The proportion was significantly lower than that for Uganda at 30% [12]. The MDD was exceedingly low similar to that from other studies carried out after the COVID-19 pandemic traversed the globe. Kundu et al.[56] and Minja et al.[57] explained that MDD was heavily associated with the earning potential of HHs and in rural areas where most HHs earned low incomes, and in the presence of the pandemic that negatively impacted income earning, MDD was in turn very low. Amongst the food groups, grains, roots and tubers were consumed by the majority of the children (93.5%) while eggs were the least consumed at 6%. Similarly, a study carried out in Northern Uganda also found that cereals were more consumed compared to foods of animal origin which the people also attributed to cereals being cheaper to purchase and easier to access compared to foods of animal origin [3].

The study findings revealed that at the settings level, caregivers that gained income in other ventures such as begging, remittances and so on were more likely to meet the requirements for MMF for their children compared to caregivers working in the agricultural sector. Findings similar to those from studies carried out in Poland, Austria and Southern Benin which reported that parents or caregivers in particular mothers that were employed or heavily involved in income-generating activities were less likely to have their children meet the MMF requirements either due to early return to work and or not having more time with their children compared to their stay-at-home, unemployed or otherwise less engaged counterparts [22, 58].

In addition, caregivers that belonged to the livelihood group were less likely to achieve minimum meal frequency for their children compared to caregivers that belonged to the MIYCAN group. These findings were probably because caregivers in the livelihood group were more involved in income-generating activities which decreased the time offered to care for the children which hampered meeting requirements for MMF [22, 58]. In addition, caregivers in the MIYCAN groups received nutrition knowledge; a factor documented to favour optimal complementary feeding practices [17, 43].

At the interpersonal level, caregivers residing in HHs with 7 or more HH members were less likely to offer their children an acceptable and diverse diet compared to caregivers living with 6 or fewer HH members. Studies in Ethiopia, Australia, and Benin concluded that HHs with more than seven residents usually had sub-optimal CFPs because of the food insecurity brought on by income limitations; the low incomes can not ably support the large household sizes [22, 23, 33].

In addition, caregivers who were not married were more likely to have continued breastfeeding their children by 1 year of age compared to caregivers that were married. This finding differed from what studies in Kenya and Southern Benin discovered where caregivers who were married were more likely to meet the requirements for OCFPs [22, 30]. However, Scott et al. [59] concluded that partners could be deterrents to continued breastfeeding and mothers that did not have partners would breastfeed longer because they had the time to dedicate to their children and also issues such as sagging breasts and losing the interest of your partner were not a worry [60] promoting longer durations of breastfeeding.

At the intrapersonal level, caregivers older than 29 years were more likely to introduce solid, semi-solid and soft foods timely to their children compared to caregivers that were 29 years or younger (AOR = 1.731; CI = 1.040–2.883; $p = 0.035$). Studies concluded that the age of a mother was a predictor for complementary feeding practices because older mothers were more experienced and knowledgeable in taking care of their children and so exhibited optimal complementary feeding practices, compared to their younger, less knowledgeable counterparts [17, 43].

Caregivers for children aged between 12–17 months were more likely to meet the MMF requirements for their children compared to caregivers with children in the 6–11 months age bracket. A study that had similar findings explained that children within this age bracket had likely settled into the pattern of the family meals which were the prescribed number of times a child that age should be fed leading to meeting the MMF requirements [50].

Recommendations

Increased advocacy by nutrition champions and organisations for augmented funding to the nutrition sector to support the direct implementation of the IYCF guidelines and Multisectoral Nutrition Action Plans. Mass media used to boost nutrition education. The government and policymakers must strengthen existing initiatives and develop new intervention measures to increase the socioeconomic position, education status, and occupational opportunities of the citizenry for better CFPs. More research in other regions of the country on factors associated with IYCF.

Conclusion

The study findings revealed that the prevalence of Minimum Acceptable Diet (MAD) and Minimum Dietary Diversity (MDD) was very low in Kisoro district putting these children at a very high risk to become stunted. At all levels of the SEM, there was at least a factor associated with OCFPs intimating the need for all sectors to work together to break down barriers preventing caregivers from meeting requirements for OCFPs as we forge forward to end malnutrition for all.

Abbreviations

ANC: Antenatal Care; AORs: Adjusted Odd Ratios; CBF: Continued breastfeeding; CORs: Crude Odd Ratios; HH: Household; ISSSFs: Introduction to Solid, Semi-solid and Soft Foods; IYCF: Infant and Young Child Feeding; MAD: Minimum Acceptable Diet; MDD: Minimum Dietary Diversity; MIYCAN: Maternal, Infant, Young Child, Adolescent and New-born; MMF: Minimum Meal Frequency; OCFPs: Optimal Complementary Feeding Practices; WHO: World Health Organisation

Declarations

Ethical Approval and Consent to Participate

The study did not require ethical approval because the data set used was freely available to the public domain upon request from the organisation from which it was obtained.

Permission to use data was requested from the USAID/Uganda's Integrated Community, Agriculture, and Nutrition (ICAN) Activity by the student and received (see Additional File 1). Endorsement to carry out the study was also obtained from the university and an introductory letter was given that was presented to ICAN to receive the secondary data (see Additional File 2). Anonymity was ensured so that there was no re-identification of participants. Confidentiality of the information gathered was guaranteed; lastly, the researcher worked to maintain that the data used did not harm or distress the participants' lives.

Consent for publication

Not applicable

Availability of data and materials

The dataset supporting the conclusions of this article is included as Additional File 3.

Competing interests

None to declare.

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Author's Contribution

T.L.B. designed the study, conducted the analysis and wrote the manuscript. D.L.E. provided supervision for the development of the study design, data analysis and manuscript. All authors read and approved the final manuscript.

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Supplemental Data

Additional files 1-3 are not available with this version