

Mothers' Nutritional Knowledge, Associated Factors and Effect on Nutritional Status of Children under Five in Bushenyi District-Western Uganda

¹Tambwe Patrick, ²Bot Yakubu Sunday, ³Glory Nja, ⁴Charles Idehen, ⁵Musafiri Simba Lionel, ⁶Dominique Bigabwa and ⁷Raha Zihindula Raoul

^{1,3}Department of Public Health, Kampala International University, Uganda

^{2,4}Department of Medical Laboratory Science, Kampala International University, Uganda

⁵Department of General Surgery, Kampala International University, Uganda

⁶Department of Internal Medicine, Kampala International University, Uganda

⁷Department of Public Health, University of Nairobi

ABSTRACT

The cause of undernutrition state in children remains multifactorial and a measure of public health issues especially in developing countries. Even though mothers' nutritional knowledge is widely acknowledged as a critical factor in shaping a child's nutritional status and outcomes; this remains inadequately explored in the Bushenyi district. Therefore, this study was aimed at assessing Mothers' Nutritional Knowledge, associated factors, and effect on the nutritional status of children under five in Bushenyi District-Western Uganda. A cross-sectional study was conducted among 195 mothers and their under-five children chosen from KIU-TH, Ishaka Adventist Hospital, and Bushenyi Health Center IV in Bushenyi district. They were recruited using a convenience sampling method with the help of a pretested questionnaire to obtain the relevant data. Results show that mothers' nutritional knowledge was predominately moderate (44.1%) and the total prevalence of undernutrition among children was 76(39%). The rates for wasting, underweight, and stunting were 33.3%, 27.2%, and 19.0%, respectively. This was associated with Mothers' level of education (primary education) and showed a high level of significance ($P \leq 0.05$). The odds ratio showed that they were 2 times more likely to have a child with undernutrition. Mothers with an income between 100,000-500,000 UGX were 2 times more likely to have a child with undernutrition as Mothers with low nutritional knowledge were found to be significantly associated with child undernutrition ($P \leq 0.05$). With an odds ratio of 13 times more likely to have a child with undernutrition. It's therefore concluded that the majority of mothers had moderate nutritional knowledge which correlated well with the nutritional status of their children under the age of five in the Bushenyi district.

Keywords: Undernutrition, Mothers' nutritional knowledge, Bushenyi District, Odds ratio.

INTRODUCTION

Particularly in Low and Middle-Income nations, undernutrition is a serious global health concern [1]. Undernutrition is manifested by a deficiency in protein, energy, minerals, and vitamins, which causes the loss of body fats and muscular tissues [2]; It can be classified into two categories: acute (recent) or chronic (long-term), and it is often caused by insufficient food intake or poor nutrient absorption in the body [3]. Globally, nearly 149.2 million kids younger than five suffer from stunting, and an additional 45.4 million (6.7%) lose out on food because of inadequate nourishment [4]. Undernutrition is one of the most frequent causes of mortality in poor nations,

accounting for around 49% of the 10.7 million deaths of children under the age of five that occur there each year [2]. In low-income countries, 39.4% of children under five are stunted, 24.9% are underweight, and 10.3% are wasted [5]. Additionally, one-third of all undernourished children worldwide reside in Sub-Saharan Africa (SSA), indicating that undernutrition is still a significant health problem for children under the age of five in this part of Africa [6]. In East Africa particularly Uganda, 29% of Ugandan children aged 6-59 months are stunted (short for their age), 4% are wasted (thin for their height), and 11% are underweight (thin for their age) [7]. The undernutrition state in children is multifactorial. Nutritional knowledge among mothers of under-five children has been also among the factors contributing to its occurrence. It should be noted that mothers have a significant impact on the future of society, as nutrition is a crucial aspect of a child's growth and development, particularly during the first five years of life [8]. To the extent that about one-third of infant and young child mortality in developing countries is due to basic causes of undernutrition, with an estimated two-thirds resulting from insufficient mothers' knowledge of childhood nutrition, maternal knowledge of childhood nutrition has contributed to the nutritional status of children, particularly those under five years [9]. Demilew and colleagues discovered that only 28.7% of mothers in a 2018 study of malnourished infants in Ethiopia had adequate knowledge of Infant and Young Child (IYC) nutrition recommendations [10]. Similar results were found among mothers of malnourished children in Ghana, where 54% of mothers had little understanding and about 19 (38%) had moderate knowledge [11]. According to reports, several variables that affected young children's nutritional condition were related to the nutritional knowledge among mothers of under-five children. Mother's education, antenatal care, and having an employed husband were significantly reported to be related to childhood nutrition [10]. Within the Bushenyi District, there is serious concern about the nutritional well-being of children under five, as evidenced by the consistently high rates of undernutrition (stunting, wasting, and underweight, which are 47%, 25%, and 27%, respectively), and the fact that nearly half of the children (47%) were stunted, which is too high among this vulnerable age group [12]. Mothers' nutritional knowledge is widely acknowledged as a crucial factor in shaping child nutrition and outcomes [13]. However, no inadequate study has been done to ascertain how much women in Bushenyi District know about nutrition and how that information affects the nutritional status of their children under five [14]. Thus, this study aimed at Mothers' Nutritional Knowledge, associated factors, and effect on the nutritional status of children under five in Bushenyi District-Western Uganda.

METHODOLOGY

This was a descriptive cross-sectional study, using a quantitative design. The study enrolled three health facilities in western Uganda- Bushenyi District. The research was done at KIU-TH, ISHAKA Adventist Hospital, and Bushenyi Health Center IV, BUSHENYI district-Western Uganda, and the target population of this study was paired mothers under-five children attending the selected health centers in the BUSHENYI district.

Selection Criteria

All mothers who had under-five children attended the selected health center and excluded mothers attending with their children over five years in the selected health centers in Bushenyi District.

Sample Size

The sample size for the study was considered by using the Kish & Leslie formula [15], expressed as $n = z^2(1-p)/e^2$. In this formula, n represents the probable minimum sample size recommended, p denotes the proportion of undernutrition within the study sample, z is 1.96 for a 95% confidence interval, and e is the acceptable margin of error, set at 5%.

Hence, the sample size was: $n = \frac{(1.96)^2 \times 0.149 \times (1-0.149)}{(0.05)^2} = 194.8 \sim 195$

Sampling Technique

To guarantee representative samples, Convenience Sampling was implemented.

Participant Recruitment and Study Procedure

There was Collaboration with selected health centers or community health centers, to recruit participants. Permission was sought from healthcare providers to approach mothers during admission, postnatal visits, and/or immunization. The Demographic data collected from participants, included age, educational level, occupation, household income, and other relevant factors that might influence maternal and child nutritional status.

Mother's Nutritional Knowledge Assessment:

A structured questionnaire was administered to assess the maternal nutritional knowledge of children, covering various aspects such as breastfeeding and complementary feeding.

Privacy and confidentiality were ensured during the administration of the questionnaire. An assessment of nutritional knowledge among mothers was carried out and the overall knowledge was grouped as poor, moderate, and good. Measured maternal feeding practices were assessed using WHO-IYC feeding indicators.

Anthropometric assessment of children under the age of five. Height and weight were recorded. Weight-for-height (WFH), Weight-for-Age (WFA), and Height-for-Age (HFA), represented as z-scores based on a standard reference for estimation, were evaluated via weight and height measurements and transformed into nutritional status variables using the WHO Anthro program.

The attendee provided details on practices and guidelines for young children's nutrition. Participants also answered questions on their views on nutrition for babies and young children. Additionally, queries about the factors influencing children's nutritional status were addressed.

Data Collection Methods

- The researcher designed and administered structured questionnaires to collect data on mothers' knowledge associated with child nutrition and its effect on undernutrition in children under five years old which included questions on breastfeeding practices and complementary feeding practices (IYC feedings recommendations practices).
- Anthropometric Measurements were done by conducting physical measurements of children under five years to assess their nutritional status and this involved measuring height and weight.
- Individual interviews with mothers to explore their knowledge, related to child nutrition in an in-depth manner were done by Semi-structured or structured interview guides to ensure consistency.

Data Processing and Analysis Plan

Data was gathered and input into the Excel software. The summarized data was subsequently analyzed using IBM SPSS version 20.

For objective one: Socio-Demographic characteristics of the mothers, comprising age, educational level, marital status, tribe, and socioeconomic status were summarized and calculated as means or frequencies; the mothers' knowledge levels were categorized into groups (e.g., good, moderate, low) based on using statistical methods such as frequency and percentage.

For Objective Two: The prevalence of nutritional status among under-five children was summarized and the summary statistics were calculated as frequency and percentage

For objective three: The factors related to the mother that influence children's nutritional status and the relationship between the mother's nutritional knowledge and the child's nutritional status were calculated.

The chi-square test and $p\text{-value} \leq 0.05$ were employed to evaluate the association between each factor and the child's nutritional status, as well as the relationship between mothers' knowledge and the child's nutritional status, to establish statistical significance. The association between variables was investigated through a bivariate analysis.

Multivariate analysis (binary logistic regression) for Effect sizes was calculated (e.g., odds ratios, confidence interval 95%, $P \text{ value} \leq 0.05$) to quantify the strength of the association.

RESULTS

Table 1: Shows the Descriptive Characteristics Of Mothers Under Study

Variables	Frequency (n=195)	Percentage (%)
Age(years)		
<20	33	16.9
20-24	52	26.7
25-29	71	36.4
>30	39	20
Marital status		
Single	41	21.0
Married	150	76.9
Widow/Separate/Divorce	4	2.1
Education level		
No education	25	12.8
Primary education	44	22.6
Senior high school	72	36.9
Tertiary education	54	27.7
Partner's level of education		
No education	11	5.6
Primary education	26	13.3
Senior high school	67	34.4

Tribe	Tertiary education	91	46.7
	Muganda	33	16.9
	Runyakole	100	51.3
	Munyoro	34	17.4
	Others	28	14.4
Religion	Christianity	132	67.7
	Islam	63	32.3
Birth order of the child	Firstborn to second	88	45.1
	Third born to fourth	70	35.9
	Fifth-born and above	37	19.0
Distance from health facility	Less than 2Km	76	39.0
	2km and above	119	61.0
Occupation of participants			
	peasant	62	31.8
	Self-employed	79	40.5
	Public/government	31	15.9
	others	23	11.8
Husband's occupation			
	peasant	47	24.1
	Self-employed	81	41.5
	Public/government	39	20.0
	others	28	14.4
Monthly household income			
	< 100, 000 UGX	63	32.3
	100, 000-500, 000 UGX	81	41.5
	> 500, 000 UGX	51	26.2

Table 1 shows that the population is predominantly composed of mothers between 25-29 years old (36.4%). The majority of the population is married (76.9%) and the majority has a senior education level (36.9%); the population is dominated by Runyakole tribe.

The majority of the participants were self-employed (40.5%), among which were 62 peasants. (31.8%), Similarly, the husbands of participants were mostly self-employed (41.5%), among which are 47 peasants (24.1%); self-employment and peasant occupations are common in this population and many households have an income between 100 000-500 000UGX (41.5%) while the second-largest proportion with 32.3 % has a monthly income of less than 100 000 UGX. This information suggests that many households have a moderate monthly income with a significant proportion earning less than 100 000 UGX.

Table 2: Mothers' Nutrition Information

Variables	Frequency (n=195)	Percentage (%)
Mothers' Nutrition information		
Have heard	145	73.6
Have not heard	50	25.4
Source of nutrition information		
Health facilities	31	21.4
Radio/television/newspaper	40	27.8
Community/health educators	37	25.5
others	37	25.5

Table 2 suggests that most participants (73.6%) have heard about nutrition information while the primary source of nutrition information is through radio, television, and newspapers (27.8%) followed by community and/or health educators (25.5%).

Table 3: Shows Mothers' Knowledge on Breastfeeding and Complementary Feeding

Variables		Frequency (n=195)	Percentage (%)
Meaning of exclusive breastfeeding meaning	know	190	96.4
	Do not know	5	3.6
Knowledge on immediate Initiation of breastfeeding	know	186	94.4
	Do not know	9	5.6
Knowledge on duration of Exclusive breastfeeding	Know	161	81.7
	Do not know	34	18.3
Reason of Exclusive breastfeeding	know	115	58.4
	Do not know	80	41.6
Knowledge on continues breastfeeding duration	know	86	43.7
	Do not know	108	55.8
Importance of continues breastfeeding	know	89	45.2
	Do not know	106	54.8
Reason of complementary feeding at six months	know	112	54.8
	Do not know	83	45.2
Knowledge of type of foods for complementary feeding	know	137	69.5
	Do not know	58	30.5
Knowledge of minimum meal frequency (MMF)	know	135	68.5
	Do not know	60	31.5
Knowledge on feeding Hygienic practices	know	143	72.6
	Do not know	52	27.4
Importance of Egg and/or Flesh Food consumption (EFF)	know	76	61.4
	Do not know	119	38.6
Knowledge on Unhealthy Food Consumption (UFC)	know	60	69.5
	Do not know	135	30.5
importance of Vegetable or Fruit Consumption (VFC)	know	133	68.5
	Do not know	62	31.5

The nutritional knowledge of the mother was assessed using a standardized questionnaire that was derived from the guidelines of WHO and UNICEF. Mothers were questioned regarding their breastfeeding and complementary feeding habits, and their replies were rated as either true (Yes) or faulty (No). The mother answered 13 questions, and her scores were divided into three categories: strong nutritional knowledge (10-13 correct answers), moderate nutritional knowledge (6-9 correct answers), and low nutritional knowledge (less than 6 correct answers). Mothers demonstrated excellent knowledge about breastfeeding practices, with an overwhelming majority providing correct answers on exclusive breastfeeding (96.4%), initiation of breastfeeding (94.4%), Knowledge of duration of exclusive breastfeeding (81.7%), and reasons for exclusive breastfeeding (58.4%). However, their knowledge was average as far as complementary feeding practices are concerned. This finding highlighted the areas where the women showed

strong knowledge (breastfeeding) and areas where their knowledge was little or/and average (complementary feedings and food hygiene practices).



Figure 1: Mother's level of knowledge on under-five child nutrition

The figure showed that the majority of mothers 86 (44.1%) possessed moderate nutritional knowledge, while a proportion of 57 (29.2%) demonstrated good nutritional knowledge. Notably, only a fraction of 52 (26.7%) of the mothers had poor nutritional knowledge.

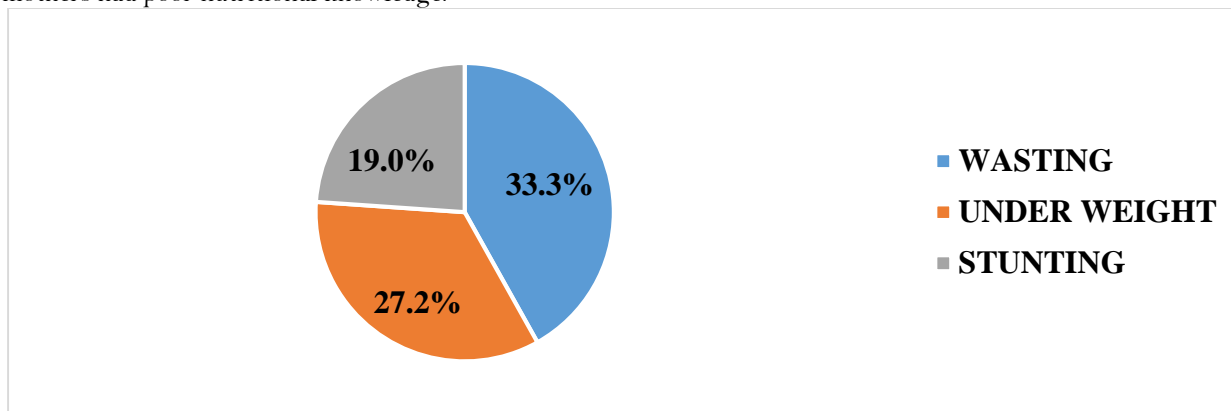


Figure 2: Children's nutritional status distribution

The total prevalence of undernutrition among children was 76 (39%). The rates for wasting, underweight, and stunting were 33.3%, 27.2%, and 19.0%, respectively. Some of the malnourished children suffered from more than one type of undernutrition.

Table 4: Bivariate Analysis Factors Influencing Under Five Children Nutritional Status

Variables	Good nutrition N (row %)	Under nutrition N (row %)	P-value	X ²
Age(years)			<0.001	80.29
	<20	01(0.8%)		
	20-24	24(20.2%)		
	25-29	58(48.7%)		
	>30	36(30.3%)		
Marital status			<0.001	47.92
	Single	6(5.0%)		
	Married	111(93.3%)		
	Widowed/Separate/Divorce	2(50.0%)		
Education			<0.001	61.74
	No education	1(0.8%)		
	Primary education	10(8.4%)		
	Senior education	33(27.7%)		
	Tertiary education	75(63.0%)		
Partner's education			0.395	1.89
	No education	0(0.0%)		
	Primary education	3(11.1%)		
	Senior high school	3(4.5%)		
	Tertiary education	51(56.0%)		
Tribe			0.824	0.890
	Muganda	20(16.8%)		
	Munyakole	62(62.0%)		
	Munyoro	22(18.5%)		
	Other	15(12.6%)		
Mothers' nutrition information			0.33	2.51
	Have heard	30(5.9%)		
	Have not heard	112(94.1%)		
If yes, source of information			0.133	0.93
	Health facilities	23(26.8%)		
	Radio/television/newspaper	29(25.9%)		
	Community/health educators	33(29.5%)		
	Others	20(17.9%)		
Religion			0.375	1.92
	Christianity	85(71.4%)		
	Islam	33(27.7%)		
Birth order of the child			0.674	1.04
	First born to second	35(29.8%)		
	Third born to fourth	48(40.3%)		
	Fifth born and above	36(30.3%)		
Distance from Health facility			0.06	2.26
	Less than 2Km	54(45.4%)		
	2Km and above	65(54.6%)		
Occupation			0.02*	47.38
	Peasant	19(16.0%)		
	Self-employed	50(42.0%)		

Partner's occupation	Public/government	30(25.2%)	1(3.9%)	0.320	1.50
	Others	20(16.8%)	3(3.9%)		
Monthly income	Peasant	16(13.4%)	31(40.8%)	<0.001	230.7
	Self-employed	49(41.2%)	32(42.1%)		
	Public/government	32(26.9%)	7(9.2%)		
	Others	22(18.5%)	6(7.9%)		
	<100, 000 UGX	12(10.1%)	51(67.1%)		
	100, 000-500, 000 UGX	58(48.7%)	22(28.9%)		
	<500, 000UGX	49(41.2%)	3(3.9%)		

Chi-square test, p≤0.05 (significant)

This table presents a bivariate analysis of factors associated with undernutrition, identifying significant factors through chi-square tests and p-values ≤ 0.05 . The results indicate that the mother's age ($\chi^2 = 80.29$, $p \leq 0.001$), mother's marital status ($\chi^2 = 47$, $p \leq 0.001$), mother's education ($\chi^2 = 61.74$, $p \leq 0.001$), mother's occupation ($\chi^2 = 47.38$, $p = 0.02$) and income ($\chi^2 = 230.7$, $p \leq 0.01$) were significant.

Table 5: Multivariate Analysis with Binary Logistic Regression for Factors Influencing Children's Nutritional Status

Nutritional status	[95% Conf.	Interval]	Odds Ratio	P value
Age				
<20	Ref.		1.0	Ref.
20-24 years	0.2774188	5.088268	1.1881	0.816
25-29 years	0.1069239	3.102906	0.575999	0.521
>30 years	0.0799357	4.339947	0.5889962	0.603
Marital status				
Single	Ref.		1.0	Ref.
Married	0.1321317	1.902416	0.5013675	0.310
Widowed/Separate/Divorce	0.0791965	19.68778	1.24868	0.875
Education				
No education	Ref.		1.0	Ref.
Primary education	1.2380183	4.847339	1.70413	0.026
Senior high school	0.1799827	3.919924	0.8399515	0.824
Tertiary education	0.0537964	3.154543	0.4119502	0.393
Occupation				
peasant	Ref.		1.0	Ref.
Self-employed	0.5619489	5.105216	1.693774	0.349
Public/Government	0.1480463	8.904068	1.148135	0.895
Others	0.1272683	3.600591	0.676935	0.647
Income				
< 100 000 UGX	Ref.		1.0	Ref.
100 000-500 000 UGX	1.3142244	3.80058	1.902811	0.009
> 500 000 UGX	0.1648253	27.01145	2.110017	0.566

Binary logistic regression analysis, p-value≤0.05 (significant)

The multivariate analysis using binary logistic regression identifies factors influencing children's nutritional status. This table shows how maternal factors affect children's nutrition. Mothers with only primary education were significantly associated ($P \leq 0.05$) with child undernutrition, being two times more likely to possess a child with

undernutrition. Additionally, household income was also identified as a factor influencing child nutritional status, Mothers with an income between 100,000-500,000 UGX were 2 times more likely to possess a child with undernutrition.

Table 6: Bivariate Analysis of Relationship Between Mothers' Nutritional Knowledge and Their Under-Five Child Nutritional Status

	good under nutrition	Under nutrition	P-value	X ²
Mothers' nutritional knowledge			<0.001	118.0
Good	55(46.2%)	2(2.6%)		
Moderate	64(53.8%)	22(28.9%)		
Poor	0(0.0%)	52(68.4%)		

Chi-square test, p-value ≤ 0.05 (significant)

A chi-squared analysis revealed a robust and significant association between mothers' nutritional knowledge and their children's nutritional status. A high chi-square value suggests a non-random link. The p-value was less than 0.05, indicating that there is less than a 5% possibility of getting the results by chance. In other words, the data indicate that mothers' nutritional awareness is highly connected to their children's nutritional status, and this finding is unlikely to be due to chance.

Table 7: Multivariate Analysis with Binary Logistic Regression of Relationship Between Mothers' Nutritional Knowledge and Their Under-Five Child Nutritional Status

Nutritional status	[95% Conf. Interval]	Odds Ratio	P value
Nutritional Level knowledge			
Good	Ref.	1.0	Ref.
moderate	1.2342449	8.467485	0.023
low	1.418218	120.7035	0.008

P-value ≤ 0.05 (significant)

The multivariate analysis using binary logistic regression identifies the relationship between mothers' nutritional knowledge and their under-five child's nutritional status, Mothers with low nutritional knowledge were found to be significantly associated with child undernutrition ($P \leq 0.05$), with these, mothers being 13 times more probable of having a child with undernutrition.

DISCUSSION

Mothers' Level of Knowledge on Child Nutrition

In this finding, the level of mothers' knowledge of child nutrition presented in Figure 1 was dominated by moderate nutritional status at 44.1% and good nutritional status at 29.2%. Our findings were lower compared to the previous research by [16] in Ghana which reported an outcome ruled also by moderate nutritional knowledge at 61.5% followed also by good nutritional knowledge at 32.7% [16]. A similar study done by Gichana in Kenya reported that mothers' nutritional knowledge was dominated by a moderate level at 50.2% [17]. The plausible explanation for the low finding in this study is that a similar population of mothers was used but differed in sample size, location, or specific socio-demographics. More so, the previous research had a more educated sample, and that explains the reason for good nutritional status. Differences in local health policies and nutrition programs over time might also affect mothers' knowledge and practices. If there were recent changes in health policy or new interventions in a study area, these could lead to variations [18].

Unlike others, it was found that mother's nutritional knowledge was majorly dominated by a good level of knowledge as reported by Ozdogan and colleagues in Turkey [19]; Patali in India, also found out that the majority of mothers assessed had a good knowledge concerning IYCF recommendations [20]. The reason for this is that the study was conducted in areas with more effective or extensive nutritional education programs, this also might explain the higher dominance of good nutritional knowledge or/ and might have been conducted in regions with better access to nutritional information and resources, leading to higher knowledge levels.

Shettigar and colleagues evaluated 50 under-five mothers about child nutrition, they found that half of them (54%) had poor nutritional knowledge and only 38% had moderate knowledge [11]. The feasible theory of this, Shettigar and colleagues focused on a very specific group (mothers with malnourished children), who may face greater challenges and barriers to acquiring nutritional knowledge and/or the dominance of poor nutritional knowledge

among mothers with malnourished children which highlights a potential correlation between low nutritional knowledge and child malnutrition.

Nutritional Status of Children Under Five Years Old

In this study, the total prevalence of undernutrition among children was 76(39%). The rates for wasting, underweight, and stunting were 33.3%, 27.2%, and 19.0%, respectively. Some of the malnourished children suffered from more than one type of undernutrition. Compared to other findings. This prevalence seems to be lower, in 2020. A study conducted in 16 randomly chosen clusters in India included 3671 children under the age of five. The overall occurrence of impaired growth in children under five was 45.9% for stunting, 17.1% for wasting, and 35.4% for underweight [21]. The reasonable justification is that the previous research covered a larger and more diverse population across 16 clusters in India, indicating the likelihood of a wider range of socio-economic and environmental conditions. The higher rates of stunting and underweight in India could also indicate long-term issues with nutrition and health services, possibly due to systemic challenges.

Sub-Saharan Africa (SSA) has a lengthy record of grappling with childhood malnutrition. The incidence of undernutrition remains elevated, underscoring the critical need to understand this health issue and its root causes to safeguard children's health [22]. Nevertheless, certain research findings found lower results than this study. For instance, research conducted in Ghana encompassing 2720 children aged 0-59 months revealed that the rates of low weight, acute malnutrition, and impaired growth were 10.4%, 5.3%, and 18.4%, respectively. The child's age correlated with low weight, acute malnutrition, and impaired growth, while gender was linked with acute malnutrition and impaired growth [23]. A survey was conducted in Bandja village, Cameroon, involving 388 children. The study assessed malnutrition in terms of acute malnutrition (wasting), chronic malnutrition (stunting), and low weight-for-age (underweight). The prevalence rates were 3.2% for wasting, 16.4% for stunting, and 5.2% for underweight. Malnutrition is widespread in Bandja, with higher prevalence observed among boys, younger children, firstborns, breastfeeding children, and those with mothers engaged in farming [24]. The convincing argument here is the lower rates of waste and underweight in Ghana and Cameroon might reflect better access to nutritional support and healthcare services and also, and the differences in data collection methods, timing, and specific criteria for diagnosing undernutrition might also account for variations in prevalence rates.

In East Africa, specifically Uganda, 29% of Ugandan children aged 6-59 months are stunted (short for their age), 4% are wasted (thin for their height), and 11% are underweight [7]. Overall undernutrition remains a pressing global health challenge, particularly among children under five years old. Despite significant progress in recent decades, millions of children worldwide still suffer from various forms of undernutrition, including stunting, wasting, and underweight [25].

Factors Influencing Children's Nutritional Status

Mothers with low knowledge of nutrition were discovered to be substantially linked. With child undernutrition ($P \leq 0.05$), these mothers are 13 times more likely to have a child with undernutrition. Mothers with only primary education were also significantly associated ($P \leq 0.05$) with child undernutrition, being 2 times more probable of having a child with undernutrition. Additionally, household income was identified as a factor influencing a child's nutritional status. Mothers with an income between 100,000-500,000 UGX were 2 times more likely to have a child with undernutrition. Other findings reported globally that mother's education, and higher socioeconomic among mothers were positively associated with appropriate child nutritional status [26]; additionally, in Nigeria, it was observed that women with children under five, particularly those who have no education or only primary education and are young, have poor IYC feeding practices and then, poor child nutritional status [27]. The logical interpretation, consistently shows that higher maternal education and socioeconomic status are associated with better child nutritional outcomes. The Nigeria-specific findings reinforce the impact of education and young motherhood on child nutrition. Moreover, it was discovered that mothers with a high school degree had better practices about child nutrition than those with less education or no education, and Studies from African and Asian nations demonstrated a significant relationship between mother's education and children's nutritional status [28]. Next to our findings, other factors affect indirectly children's nutritional status. For instance, it has been observed that mothers' Cultural beliefs, traditions, and societal norms influence a child's nutritional status. Studies conducted in diverse settings in Latin America, the Middle East, and Oceania, have highlighted the impact of cultural and beliefs factors on mother's knowledge of child nutrition [29, 30]. However, Studies conducted in Burkina Faso and Zimbabwe suggest the same fact that there is an influence of mothers' cultural factors and societal norms on child nutritional status [31]. The plausible explanation is that both findings highlight that a child's nutritional status is not determined by a single factor but is influenced by multiple interrelated aspects. Our study shows that direct factors (measurable factors) such as maternal nutritional knowledge, education, and income are responsible for a child's nutritional status. While the previous studies emphasize indirect factors (qualitative factors) such as cultural beliefs, traditional norms, and societal norms both approaches underline the complexity of child nutrition determinants but these previous findings did not establish a direct statistical link.

Relationship Between the Mother's Knowledge and The Child's Nutritional Status

Our findings suggest that mothers' knowledge is significantly related to their children's nutritional status, and this finding is unlikely to be due to chance. This finding is supported by numerous studies that have explored the effect of mother's knowledge on child nutrition outcomes. It has been observed that mothers with higher levels of nutritional knowledge tend to have better feeding practices, provide a more diverse diet, and take appropriate measures to prevent undernutrition in their children [32]. Both researches underlined the critical role of maternal nutritional knowledge in shaping child nutrition outcomes as studied by Fadare and colleagues has provided concrete examples of how better maternal knowledge translates into positive practices. Together, they emphasize the importance of targeted education and support to improve child nutrition across different contexts. Although the study found that higher maternal knowledge generally leads to better feeding practices and diet diversity, the absence of statistical significance may be due to the influence of other factors, such as regional differences in wealth distribution, varying levels of access to food, health services, or cultural practices that limit the impact of maternal knowledge alone.

Conversely, Kajjura mentioned that inadequate mother's knowledge of child nutrition contributes to suboptimal feeding practices, limited dietary diversity, and increased risk of undernutrition [33]. Furthermore, in 2018, a study of malnourished infants in Ethiopia. Demilew and colleagues found that only 28.7% of mothers had adequate knowledge about newborn and young child feeding recommendations [10]. Similar findings were observed in Namibia among mothers with children malnourished, where 54% of mothers had low knowledge and around 19 (38%) had average knowledge [11]. The plausible explanation is that both studies from Namibia and Ethiopia which assessed knowledge among mothers with malnourished children, might represent a subset of the population with more significant challenges, such as lower education levels, fewer resources, or inadequate healthcare access. This focus on a more vulnerable group could partly explain the lower levels of knowledge observed. Even [32] also confirms our thesis by suggesting that there is a strong correlation between mothers' knowledge of children's nutrition and the prevalence of undernutrition in children under the age of five [32]. Nevertheless, in Ghana, a study demonstrated that there was no statistically significant link between mother's nutritional knowledge and their children's nutritional status [16]. While it did not find a statistically significant link, it observed a promising trend that aligns with the idea that increased maternal knowledge may improve child nutrition. This suggests that other factors may be more influential in determining children's nutritional status in that context, or that the sample size or methods used in the Ghana study were not sufficient to detect a significant relationship. Other contextual factors might play a more dominant role in determining children's nutritional status, such as local food availability, cultural beliefs, socioeconomic disparities, or access to health services. These factors could dilute or overshadow the impact of maternal knowledge alone, leading to a non-significant statistical association despite a trend suggesting better outcomes with increased knowledge.

STUDY LIMITATIONS

The study's findings might be limited to the specific population or setting from which the participants were recruited, which could affect the applicability of the results to other populations,

Cultural Factors: Limited exploration of Cultural beliefs and societal dimensions influencing nutritional practices, child nutritional outcomes

Self-Reported Data: Potential for bias as mothers may overstate their knowledge and practices.

Geographic Limitation: Findings may not apply to other regions.

MUAC limitation: Narrow Age Group: MUAC is most accurate for children ages 6-59 months. It may not be as reliable in determining the nutritional status of younger infants under the age of five.

CONCLUSION

This research highlights a critical disparity in nutritional knowledge among mothers, particularly between breastfeeding practices and complementary feeding practices. The study reveals that while mothers generally possess excellent knowledge about breastfeeding, their understanding of complementary feeding is only average. Moreover, the study establishes that mothers' nutritional knowledge is predominately moderate. These findings suggest that socioeconomic status like age and household income plays a crucial role in shaping child nutritional status in the Bushenyi district. The research also reveals that the majority of mothers in the Bushenyi district had moderate nutritional knowledge and the nutritional knowledge of mothers had a direct and significant impact on the nutritional status of their children under the age of five.

RECOMMENDATIONS

1. Government and policymakers are called upon to develop and implement educational programs that specifically address gaps in knowledge about complementary feeding and food hygiene. These programs should be tailored to reach younger mothers, those with lower education levels, and lower incomes.
2. The researcher strongly advocates for policies that support maternal education and economic empowerment, as these are key factors influencing nutritional knowledge. Government and non-

governmental organizations should collaborate to provide resources and support systems that help mothers improve their nutritional knowledge.

3. There is also a need for increasing community outreach efforts to disseminate nutritional information effectively, utilizing local healthcare workers and community leaders to reach a wider audience.
4. There is also a need to recognize and integrate local cultural beliefs, traditions, and norms into nutrition education and health promotion strategies. Engaging community leaders and influencers can help shift harmful norms and encourage healthier feeding practices.

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