AfroGlobal Perspectives
Vol. 1 No. 10 (2024): October 2024
https://doi.org/10.70572/agp.v1i10.2
Original article

CHILD-RELATED FACTORS AND MATERNAL-RELATED FACTORS ASSOCIATED WITH ACUTE MALNUTRITION AMONG CHILDREN UNDER FIVE IN TEREGO DISTRICT. A CROSS-SECTIONAL STUDY.

Amon Otafire*, Bonny Aloka, Derick Modi, Julius Kayizzi
Faculty of Public Health, Lira University.

Abstract

Background

Malnutrition is one of the major causes of mortality and morbidity among vulnerable populations and these include children below five years of age, accessing the child-related factors with acute malnutrition is crucial in the Terego district, Therefore the study aimed to access the child-related and maternal factors associated with acute malnutrition in Terego district, Uganda.

Methodology

This study employed a cross-sectional design with quantitative data collection techniques, using a structured questionnaire. A multistage sampling technique by randomly generated numbers was used. The data was cleaned for univariate and bivariate analysis using SPSS version 26.

Results

A total of 419 children were included in the study, more than half of the children were females (54.4%) aged 37-59 months (55.3%). Of the males,32.6% experienced acute malnutrition, and 44.0% of females experienced acute malnutrition, p-value of 0.064. 94.3% of children aged 0-12 months experienced acute malnutrition, and 48.7% of children aged 23-36 months experienced acute malnutrition, p-value of <0.001. 19.2% of children aged 37-59 months experienced acute malnutrition, p-value <0.001. According to Birth order**,** 23.8% (41) of children with birth order 1-2 experienced acute malnutrition, and 46.6% (48) of children with birth order 3-4 experienced acute malnutrition, p-value of <0.00. 51.4% (74) of children with birth order 5+ experienced acute malnutrition, a p-value of 0.458. Additionally, 22.5% (31) of mothers aged 20-29 had children with acute malnutrition.,95% CI: 1.062-5.425, a p-value of 0.012.

Conclusion

Higher birth order is associated with increased malnutrition, due to resource dilution in larger families. Additionally, Short birth intervals are a significant risk factor for malnutrition.

Recommendation

Embracing family planning to control the birth order as well as Improving Food Security through implementing agricultural programs that enhance food production, promote crop diversification, and ensure sustainable food supplies.

Keywords: *Terego district, child-related factors, acute malnutrition, anthropometric measures.*
Submitted: *2024-08-18* ***Accepted:*** *2024-10-11*

Corresponding Author: *Amon Otafire**
Email: ***amonotafire3@mail.com***
Faculty of Public Health, Lira University.

Background of the study

Acute malnutrition is a nutritional deficiency resulting from either inadequate energy or protein intake (Dipasquale et al., 2020). Undernutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, and delays recovery (Kassaw et al., 2021). WHO defines acute malnutrition as a low weight-for-height. It often indicates recent and severe weight loss, although it can also persist for a long time. It usually occurs when a person has not had food of adequate quality and quantity (Gebremaryam et al., 2022). In the view of acute malnutrition WHO, World Bank estimates show that its prevalence has been declining since the year 2000, more than one in five 149.2 million children under 5 were stunted in 2020, and 45.4 million suffered from acute malnutrition (Govender et al., 2021a). Available evidence shows the world today is facing a prevalence of malnutrition with 155 million stunted and 52 million wasted children. Globally, it is estimated that 45% of deaths in children under 5 years of age are due to undernutrition(Adebisi et al., 2019a).

Malnutrition has been identified as one of the major challenges facing Africa, especially the sub-Saharan region (John-Joy Owolade et al., 2022a). The prevalence of undernutrition in the region was estimated to rise from 181 million in 2010 to about 222 million in 2016. In 2020, up to 264.2 million people living in sub-Saharan Africa were undernourished (John-Joy Owolade et al., 2022b). That is about 24.1% of the population, the highest prevalence anywhere in the world some are poverty, overpopulation,

unsuccessful small-scale agriculture, low educational status, climate change, corruption, wars and conflicts, and fluctuation of food prices (Koubi, 2019).

The prevalence of acute malnutrition, also known as wasting, among children aged 6 to 59 months in Uganda is 4%, and it rises to 10% in the West Nile sub-region (Adebisi et al., 2019b). Malnutrition is the most serious outcome of food insecurity in children under five years old. Acute malnutrition is associated with increased risks of illness, death, and disability, along with stunted cognitive and physical growth and a heightened susceptibility to infections (Govender et al., 2021). Ensuring the physical and mental development of children is a fundamental right, and achieving optimal health requires proper nutritional support (World Health Organization, 2018).

The United Nations General Assembly declared that to address all forms of malnutrition by 2025. The Sustainable Development Goal (SDG)-2 (end hunger, achieve food security and improve nutrition). SDG-3 (ensure healthy lives and promote well-being for all ages) also sets the relevant nutritional outcome targets by 2030 (Atukunda et al. 2021). Furthermore, there is limited published information about child-related factors associated with acute malnutrition among children under five years old in the Terego district. Therefore, this study aimed to assess the child-related and maternal-related factors associated with acute malnutrition among children under five years old in Terego district. Uganda.

Methodology

Study design

This study was cross-sectional research that included the use of quantitative methods of data collection techniques and data analysis. The partakers provided answers to the questions by ticking in the suitable options provided in the questionnaire and other data collection tools.

Study location

The study was carried out in the different health centers of Terego district one of the eleven districts in the west Nile region. This is because Terego hosts a large number of refugees from neighboring South Sudan, placing additional strain on already limited resources. Terego District is located in the West Nile region of northern Uganda and is a new district created out of the Arua district. It borders the districts of Yumbe to the north, Madi-Okollo to the east, Arua to the south, and Maracha to the west.

Study population

This research targeted all the children in the age group of 1 to 59 months and accessed those admitted at the pediatric ward of the health Centers in Terego district.

Inclusion criteria

This study included all children in the age group of 1 to 59 months at the pediatric ward of health centers of Terego, the communities, and those who assented to the study.

Exclusion criteria

This study excluded all the children who were 5 years and above admitted at the pediatric ward of health centers of Terego district and within the community and those who did not assent to the study.

Sample size determination

The sample size was determined using Kish Leslie's (1965) sample size formula for finite population;

$$n = \frac{Z2pq}{E2}$$

n= required sample size.

z= the z value on the table value for 1 degree of freedom at the desired confidence level (1.96 for a 95% confidence level).

q= 1-p

P= the population proportion.

e= the error margin (0.05).

According to (UDHS 2016) data, acute malnutrition prevalence among children under 5 was 54%.

p=0.54, q=0.46, z=1.96, e=0.05

n=1.962*0.54*0.46/0.052=381

Non respondent rate= 0.1*381= 38

n=381+38=419

Sampling Technique

The study used a multistage sampling technique by randomly generated numbers where children in the age group of 1 to 59 months were regarded for the study. The caretakers (mothers) provided answers to the questions during the study. The technique also provided each participant of the target population an equal and independent probability of being carefully chosen for the study. This confirmed that the selected sample was a good illustration of the population of the study.

Data collection methods

Quantitative data collection methods like structured interviews through interviewer-administered were used to collect data from the participants who consented to the study by signing the forms of consent. This was supplemented by interactive periods with the partakers to make clear those elements of the questionnaire not understood well.

Data Collection tools

Structured interviews with closed-ended questions were used as the data collection tool. The questionnaire contained the parts namely part one (this consisted of the child-related factors), part two (which consisted of maternal-related factors), and part three (anthropometry measurements).

Data collection procedure

This started with an enrolment of research assistants which included students attached to the pediatric wards of

different health centers, then data was collected by the researcher by the use of structured interviews which were directed by the researcher as the participants responded to the questionnaires. In the course of data gathering, there was supervision from the researcher which made sure complete data collection was achieved.

Quality control

Before the efficiency, effectiveness, and quality of the study results, the subsequent measures under quality control were used. Proper preparation and orientation of the interviewers before the study, in circumstances where the participants found it problematic to understand the questions, the questions then were interpreted by the interviewer. The presence and conduct of the interviewer were professional.

Data analysis and presentation

Once the data was collected, it was ready for analysis for frequency and percentages and presented using statistical approaches like tables, graphs, pie charts, and information then be précised in the form of percentages, pie charts, and tables to give descriptive statistics for easy comprehension by other scholars with the use of SPSS (Statistical Package for Social Sciences) software 2020 version for data analysis and presentation.

Ethical considerations

Approval

A formal letter was issued by the Lira University faculty of public health to be presented to the in-charges of health centers and the community leaders before the researcher started data collection.

Consent

A printed document containing the purpose of the study, the significance the associated risks, and the rights of the participants. They were requested to consent to the study after they had confirmed that they understood and agreed to partake in the study. Consent was obtained by a written signatory or a thumbprint for those who could not write.

Assent Form

If the individual was willing to participate, they were asked to sign an assent form, which is a simplified version of the consent form. For those unable to write, other methods of indicating agreement, such as a verbal agreement recorded by the researcher, were used.

Privacy protection

Interviewing of respondents was carried out in a private place which was safe from disturbances and inconveniences.

Confidentiality

Data collection was done by the student and reserved in a place that was of controlled access. All relevant information obtained from participants was kept private using initials and not their full names and other personal data. Only the investigator was capable of gaining contact with the collected data.

Anthropometry analysis

Anthropometry is a method that uses body measurements of the human to draw assumptions about the nutritional status of persons and residents. This technique was used to assess the malnutrition status of under-five children (Bhattacharya et al., 2019). Child variables including weight, height/length, sex, and age were entered into SPSS (2020 version) Software to generate measurement indices of weight-for-age, height-for-age, and weight-for-height. The indices generated were then compared with standard reference values for WHO Child Growth Standards and CDC to obtain the Z-scores. This was done automatically by the software. Three indices were used including wasting, stunting, and underweight among children below five years of age.

Wasting refers to a low weight-for-height and is a measure of acute malnutrition; it's an indicator of short-term fluctuation in nutritional status. Children whose weight-for-height Z-scores were below minus 2 standard deviations were regarded as wasted. Stunting on the other hand refers to a low height-for-age which is a measure of chronic malnutrition. It's a good indicator of cumulative growth retardation. Children whose height-for-age Z-scores were below minus 2 standard deviations were regarded as stunted. Underweight on the other hand denotes a low weight-for-age and it's a measure of chronic and acute malnutrition. Similarly, all children whose weight-for-age Z-scores were less than minus 2 standard deviations were denoted as underweight.

Results

A total of 419 children were included in the study. The results were categorized into child factors, maternal factors, and anthropometry measurements and represented in the tables below by specific objectives of the study using percentages, tables, and charts.

Showing the summary of child-related factors

Variables	Frequency	Percentages
Sex of child		
Male	187	44.6
Female	232	55.4
Age of the child		
<12	35	8.4
13-36	191	46.3
37-59	193	55.3
Birth order		
<2	172	40.9
3-4	103	42.2
5+	144	34.9
Birth interval		
1-2	232	55.4
3-4	112	26.8
5+	75	17.8

More than half of the children in the study were females (54.4%) aged 37-59 months (55.3%). Almost half of the children (40.9%) were of birth order 1-2. More than half of the children (57.1%) were in the birth interval of less than 2

Showing summary of maternal related factors

Variables	Frequency	Percentages
Maternal age at birth		
<20	162	40.2
20 – 29	138	32.7
30 – 39	36	18.5
40+	83	8.6
Maternal education level		
None	98	22.1
Primary	193	47.6
Secondary	67	15.6
Tertiary/university	61	14.7
Maternal marital status		
Married	247	66.4
Single	54	9.7
Separated	61	15.6
Widowed	57	8.3
Maternal occupation		
Peasant farmer	256	62.3
Business	57	13.9
Civil servant/NGO staff	43	8.8
Others	63	15.0

The majority of the children in the study had their mothers less than 20 years (40.2%). The percentage distribution of the children in the study according to the education level of the mother indicates the majority having attained primary level (47.6%). Furthermore, the distribution of children according to the marital status of their mother indicates the majority being born by mothers who were married (66.4%). The findings in the study also indicate that half of the children had mothers who were peasant farmers (62.3), followed by those of the others category (15.0).

Table Showing the number and percentage of malnourished children based on child-related factors and maternal-related factors

VARIABLES	CATEGORIES	ACUTE MALNUTRITION (N/%)		COR	p-value
		YES	NO		
Sex	Male	32.6(61)	67.4(126)	1	1
	Female	44.0(102)	56.0(130)	1.621(1.085-2.420)	0.064
Age of the child	0-12	94.3(33)	5.7(2)	1	1
	23-36	48.7(93)	51.3(98)	0.014(0.030-0.063)	**<0.001**
	37-59	19.2(37)	80.8(156)	0.250(0.158-0.395)	**<0.001**
Birth order	1-2	23.8(41)	76.2(131)	1	1
	3-4	46.6(48)	53.4(55)	3.378(2.091-5.455)	**<0.001**
	5+	51.4(74)	48.6(70)	1.211(0.730-2.010)	0.458
Birth interval	<2	45.7(106)	54.3(126)	1	1
	3-4	28.6(32)	71.4(80)	0.594(0.345-1.025)	0.061
	5+	33.3(25)	66.7(50)	1.250(0.665-2.225)	0.480

Child-related factors bivariate analysis

Sex of the child

Male: 32.6% (61 out of 187) of males experienced acute malnutrition, while 67.4% (126 out of 187) did not. This group is the reference category (COR=1). Female: 44.0% (102 out of 232) of females experienced acute malnutrition, while 56.0% (130 out of 232) did not. The odds ratio is 1.621 (95% CI: 1.085-2.420) with a p-value of 0.064. This suggests that females are 1.621 times more likely to experience acute malnutrition compared to males, although this result is not statistically significant at the 0.05 level.

Age of the child

0-12 months: 94.3% (33 out of 35) of children aged 0-12 months experienced acute malnutrition, while 5.7% (2 out of 35) did not. This group is the reference category (COR=1). 23-36 months: 48.7% (93 out of 191) of children aged 23-36 months experienced acute malnutrition, while 51.3% (98 out of 191) did not. The odds ratio is 0.014 (95% CI: 0.030-0.063) with a p-value of <0.001. This indicates that children aged 23-36 months are 98.6% less likely to experience acute malnutrition compared to those aged 0-12 months, and this result is highly significant.
37-59 months: 19.2% (37 out of 193) of children aged 37-59 months experienced acute malnutrition, while 80.8% (156 out of 193) did not. The odds ratio is 0.250 (95% CI: 0.158-0.395) with a p-value of <0.001. This indicates that children aged 37-59 months are 75.0% less likely to experience acute malnutrition compared to those aged 0-12 months, and this result is highly significant.

Birth order

1-2: 23.8% (41 out of 172) of children with birth order 1-2 experienced acute malnutrition, while 76.2% (131 out of 172) did not. This group is the reference category (COR=1). 3-4: 46.6% (48 out of 103) of children with birth order 3-4 experienced acute malnutrition, while 53.4% (55 out of 103) did not. The odds ratio is 3.378 (95% CI: 2.091-5.455) with a p-value of <0.001. This indicates that children with birth orders 3-4 are 3.378 times more likely to experience acute malnutrition compared to those with birth orders 1-2, and this result is highly significant. 5+: 51.4% (74 out of 144) of children with birth order 5+ experienced acute malnutrition, while 48.6% (70 out of 144) did not. The odds ratio is 1.211 (95% CI: 0.730-2.010) with a p-value of 0.458. This suggests that there is no significant association between birth order 5+ and acute malnutrition compared to birth order 1-2.

Birth interval

<2 years: 45.7% (106 out of 232) of children with a birth interval of less than 2 years experienced acute malnutrition, while 54.3% (126 out of 232) did not. This group is the reference category (COR=1). 3-4 years: 28.6% (32 out of 112) of children with a birth interval of 3-4 years experienced acute malnutrition, while 71.4% (80 out of 112) did not. The odds ratio is 0.594 (95% CI: 0.345-1.025) with a p-value of 0.061. This suggests that children with a birth interval of 3-4 years are 40.6% less likely to experience acute malnutrition compared to those with a birth interval of less than 2 years, although this result is not statistically significant at the 0.05 level. 5+ years: 33.3% (25 out of 75) of children with a birth interval of 5 or more years experienced acute malnutrition, while 66.7% (50 out of 75) did not. The odds ratio is 1.250 (95% CI: 0.665-2.225) with a p-value of 0.480. This suggests that there is no significant association between a birth interval of 5 or more years and acute malnutrition compared to a birth interval of less than 2 years.

Table showing the number and percentage of malnourished children based on maternal-related factors

VARIABLES	CATEGORIES	ACUTE MALNUTRITION (N/%) YES	NO	COR	p-values
Age of the mother at birth	<20	44.4(72)	55.6(90)	1	1
	20-29	22.5(31)	77.5(107)	2.4001(1.062-5.425)	**0.012**
	30-39	25.0(9)	75.0(270	0.502(0.293-0.861)	0.072
	40+	61.4(51)	38.6(32)	2.761(1.605-4.579)	**0.035**
Maternal education	None	92.9(91)	7.1(7)	1	1
	Primary	35.8(31)	64.2(162)	2.019(1.024-3.981)	**0.043**
	Secondary	27.9(24)	72.1(43)	0.692(0.327-1.466)	0.337
	Tertiary	16.1(17)	83.9(44)	0.030(0.011-0.077)	0.067
Marital status	Married	15.8(39)	84.2(208)	1	1
	Single	87.0(47)	13.0(7)	70.667(24.184-206.493)	**<0.001**
	Separated	39.3(24)	60.7(37)	1.973(0.543-7.167)	0.302
	Widowed	93.0(53)	7.0(4)	20.427(6.541-63.790)	**<0.001**
Maternal occupation	Peasant	61.7(98)	38.3(158)	1	1
	Business	43.9(25)	56.1(32)	1.133(0.646-1.986)	0.663
	Civil servant	32.6(14)	67.4(29)	0.899(0.436-1.857)	0.774
	Others	41.3(26)	58.7(37)	1.456(0.647-3.277)	0.365

Maternal-related factors bivariate analysis

Maternal age at birth

<20 years: 44.4% (72 out of 162) of mothers under 20 had children with acute malnutrition. This group is the reference category (COR=1). 20-29 years: 22.5% (31 out of 138) of mothers aged 20-29 had children with acute malnutrition. The odds ratio is 2.4001 (95% CI: 1.062-5.425) with a p-value of 0.012. This indicates that children of mothers aged 20-29 are 2.4 times more likely to experience acute malnutrition compared to children of mothers under 20, and this association is statistically significant. 30-39 years: 25.0% (9 out of 36) of mothers aged 30-39 had children with acute malnutrition. The odds ratio is 0.502 (95% CI: 0.293-0.861) with a p-value of 0.072. This suggests that children of mothers aged 30-39 are 49.8% less likely to experience acute malnutrition compared to children of mothers under 20, though this finding is not statistically significant at the 0.05 level. 40+ years: 61.4% (51 out of 83) of mothers aged 40 and above had children with acute malnutrition. The odds ratio is 2.761 (95% CI: 1.605-4.579) with a p-value of 0.035, indicating that children of mothers aged 40+ are 2.76 times more likely to experience acute malnutrition compared to children of mothers under 20, and this association is statistically significant.

Maternal Education

None: 92.9% (91 out of 98) of mothers with no education had children with acute malnutrition. This group is the reference category (COR=1). Primary: 35.8% (31 out of 193) of mothers with primary education had children with acute malnutrition. The odds ratio is 2.019 (95% CI: 1.024-3.981) with a p-value of 0.043. This indicates that children of mothers with primary education are 2.019 times more likely to experience acute malnutrition compared to children of mothers with no education, and this association is statistically significant. Secondary: 27.9% (24 out of 86) of mothers with secondary education had children with acute malnutrition. The odds ratio is 0.692 (95% CI: 0.327-1.466) with a p-value of 0.337. This suggests no significant association between secondary education and acute malnutrition compared to no education. Tertiary: 16.1% (17 out of 61) of mothers with tertiary education had children with acute malnutrition. The odds ratio is 0.030 (95% CI: 0.011-0.077) with a p-value of 0.067. This indicates that children of mothers with tertiary education are 97% less likely to experience acute malnutrition compared to children of mothers with no education, though this finding is not statistically significant at the 0.05 level.

Marital Status

Married: 15.8% (39 out of 247) of married mothers had children with acute malnutrition. This group is the reference category (COR=1). Single: 87.0% (47 out of 54) of single mothers had children with acute malnutrition. The odds ratio is 70.667 (95% CI: 24.184-206.493) with a p-value of <0.001, indicating that children of single mothers are 70.667 times more likely to experience acute malnutrition compared to children of married mothers, and this association is highly significant Separated: 39.3% (24 out of 61) of separated mothers had children with acute malnutrition. The odds ratio is 1.973 (95% CI: 0.543-7.167)

with a p-value of 0.302, suggesting no significant association between being separated and acute malnutrition compared to being married. Widowed: 93.0% (53 out of 57) of widowed mothers had children with acute malnutrition. The odds ratio is 20.427 (95% CI: 6.541-63.790) with a p-value of <0.001, indicating that children of widowed mothers are 20.427 times more likely to experience acute malnutrition compared to children of married mothers, and this association is highly significant.

Maternal Occupation

Peasant: 61.7% (98 out of 256) of peasant mothers had children with acute malnutrition. This group is the reference category (COR=1). Business: 43.9% (25 out of 57) of mothers in business had children with acute malnutrition. The odds ratio is 1.133 (95% CI: 0.646-1.986) with a p-value of 0.663, indicating no significant association between being in business and acute malnutrition compared to being a peasant. Civil Servant: 32.6% (14 out of 43) of civil servant mothers had children with acute malnutrition. The odds ratio is 0.899 (95% CI: 0.436-1.857) with a p-value of 0.774, suggesting no significant association between being a civil servant and acute malnutrition compared to being a peasant. Others: 41.3% (26 out of 63) of mothers in other occupations had children with acute malnutrition. The odds ratio is 1.456 (95% CI: 0.647-3.277) with a p-value of 0.365, indicating no significant association between other occupations and acute malnutrition compared to being a peasant.

Discussion

The results of the study showed that female children were more malnourished constituting 44.0% as compared to the males (32.6%). The results are contrary to those found in studies which established that boys are more affected by environmental stress compared to girls and also contrary to the study done in Kwara state Nigeria (Yikealo et al., 2018) which reported that more male children were more likely to get malnourished due to increased attention paid to the female children unlike their male counterparts (Thurstan et al., 2020). Therefore, the sex of the child was statistically insignificant in the study conducted in Terego District. The impact of multistage cluster sampling could have been the reason for the discrepancy in the results found in the Terego district. Results of the study indicated that the majority of the malnourished children were in the age group of less than 12 months (94.3%) and then a rate of 48.7% for those 13-36 months and those in the age group of 37-59 months was 19.2%.

The above results also correlate with those according to (UBOS) which reported that malnutrition increases with the age of the child through the first three years of life before declining to the fourth and fifth year (Lokuruka, 2020). These findings were accepted by those performed by (Wells et al., 2020) who found out that young children are less likely to get malnourished than older children because of breastfeeding.

The results further indicated that malnutrition was higher in birth order 5 and above (51.4%), followed by 46.6% of birth order 3-4 and then the smallest observed in birth order 1-2 (23.8%). This is accepted by the study done in Bangladesh which showed the increase in prevalence of stunting with an increase in birth order hence most of the children who were of birth order more than two had greater chances of wasting and stunting (Abdulla et al., 2023).

Finally, the results indicated the highest prevalence rate in the birth interval (less than 2 years) – 45.7% followed by 28.6% for the birth interval of 3-4 years and 33.3% for the birth interval of 5 and above years. The above results are in correspondence with the study done in Bangladesh, which indicated that the children within the first birth interval were 1.66 times more likely to be stunted than those with a birth interval of 24 months and above (Sultana et al., 2019). Also, according to UBOS and Macro International, malnutrition is highest if the birth interval is less than 24 months (41%) since it's an important indicator of the nutritional status of children (Ntambara et al., 2023).

Maternal related factors

The highest rates of malnutrition were observed in mothers less than 20 years of age at the time of birth of the child (44.4%) and those above 40 years of age (61.4%) lowest in the mothers who were between 30-39 years at the time of birth (22.5%) and those between 20-29 years of age at birth (22.5%).

This is in correspondence with(Nankinga et al., 2019)which suggested that children whose mothers were below 20 years at the time of birth were 1.22 times more likely to be stunted, wasted, and underweight compared to children whose mothers were 20 years and above. The maternal age of 40+ is associated with a higher likelihood of giving birth to low-birth-weight children (Wang et al., 2020).

The results on maternal education level showed a high percentage of malnutrition in children whose mothers had no education. (92.9%) and the lowest in children whose mothers had tertiary or university education (16.1%) mothers who had secondary education (27.9%) and 35.8% of mothers who had secondary education. The level of education of the mother has an impact on child care as many of the mothers may lack the basic skills and knowledge to look after their children by offering nutritious nutrition.

The above results correlate with studies done by Faustini et al. (2022) which suggested that the higher the education level of the mother, the lower the rate of malnutrition. The study suggested that educated mothers are better aware of the nutrition requirements of their children by providing improved health care (Teweldemedhin et al., 2021). The results also corresponded with those from (UDHS; 2016 and 2023).

The results obtained on marital status indicate a similar pattern of malnutrition (15.8%) in each of married, single (87.0%) and widowed (93.0%) mothers and (39.3%) in separated. The results show almost a constant pattern of

malnutrition contrary to findings in Ethiopia, which found out that under-five malnutrition, is higher among unmarried rural and separated women compared to married ones.

On the other hand, however, the higher rate of malnutrition correlates with a study in Tanzania which revealed that mothers who are married were more likely to have undernourished children unlike those who were unmarried perhaps because of the cost of maintaining families hence sometimes these families fail to produce nutritious supplements to the under-five children. The results on maternal occupation showed a positive correlation with other previous studies whereby 65.2% were peasant farmers. It is common for non-working mothers to fail to provide complementary feeds including protein foods since most of them cannot afford them (Mrema et al., 2021).

The results on maternal education occupation showed a high percentage of malnutrition in children whose mothers were peasants (61.7%) and the lowest in children whose mothers were civil servants (32.7%), mothers who had businesses (43.7%) and 41.3% of mothers who fell in the others category.

Another study in Ethiopia also reported a greater prevalence of stunting, underweight, and wasting in mothers who were laborers or farmers than those working in offices or were housewives (Mohammed & Hussein, 2022). This is because they leave their children at home with other siblings who neglect to feed them following the right frequency hence worsening the problem of malnutrition (Schoonees et al., 2019). The above findings are true for peasant farmers attending the health facilities of Terego district who spend most of their time in the gardens leaving the under-five children at home under the care of other siblings or housemaids who in most times too young or illiterate on proper nutrition.

Conclusion

These findings suggest the need for focused nutritional support and education for mothers during the early stages of a child's life. Higher birth order is associated with increased malnutrition, possibly due to resource dilution in larger families. Targeted nutritional programs for larger families could help mitigate this issue. Short birth intervals are a significant risk factor for malnutrition, likely due to insufficient maternal recovery and resource allocation.

Recommendations

Improving Food Security through implementing agricultural programs that enhance food production, promote crop diversification, and ensure sustainable food supplies.

Acknowledgment

My grateful joy goes to GOD Almighty, maker of heaven and earth for keeping me alive and protected under his grace through his son Jesus Christ throughout the entire duration of compilation of this dissertation. I thank my Supervisor Mr. Aloka Bonny for the indispensable guidance he offered to enable me to successfully write this dissertation, may God bless you, Sir.

Also, my two parents have contributed much toward the development of this dissertation; your financial support shall always be cherished. May God increase the fruits of your hands. I would also like to thank my friends for the individual guidance and support they offered during the development of this dissertation.

List of Abbreviations.

BMI: Body Mass Index
BSPL: Bachelor of Science in Public Health
FAO: Food and Agriculture Organization
GDP: Gross Domestic Product
MCH: Maternal and Child Health
MOH: Ministry of Health
MUAC: Mid-Upper Arm Circumference
OPD: Outpatient Department
UDHS: Uganda Demographic and Health Survey
UNAP: Uganda National Action Plan
UNICEF: United Nations International Children's Emergency Fund
USAID: United States Agency for International Development
WFP: World Food Program
WHO: World Health Organization

Source of funding.

The study was not funded.

Conflict of interest

The author declares no conflict of interest.

Author Biography

Amon Otafire is a student at Lira University, Faculty of Public Health

Bonny Aloka is a senior lecturer at Lira University, Faculty of Public Health.

Derick Modi is a student at Lira University, Faculty of Public health

Julius Kayizzi is a student at Lira University, Faculty of Public Health

References

1. Abdulla, F., Rahman, A., & Hossain, M. M. (2023). Prevalence and risk predictors of childhood stunting in Bangladesh. *PloS One*, *18*(1), e0279901. https://doi.org/10.1371/journal.pone.0279901
2. Adebisi, Y. A., Ibrahim, K., Lucero-Prisno, D. E., Ekpenyong, A., Micheal, A. I., Chinemelum, I. G., & Sina-Odunsi, A. B. (2019a). Prevalence and Socio-economic Impacts of Malnutrition Among Children in Uganda. *Nutrition and Metabolic Insights*,*12*, 1178638819887398. https://doi.org/10.1177/1178638819887398

3. Adebisi, Y. A., Ibrahim, K., Lucero-Prisno, D. E., Ekpenyong, A., Micheal, A. I., Chinemelum, I. G., & Sina-Odunsi, A. B. (2019b). Prevalence and Socio-economic Impacts of Malnutrition Among Children in Uganda. *Nutrition and Metabolic Insights*,*12*, 1178638819887398. https://doi.org/10.1177/1178638819887398
4. Atukunda, P., Eide, W. B., Kardel, K. R., Iversen, P. O., & Westerberg, A. C. (2021). Unlocking the potential for achievement of the UN Sustainable Development Goal 2 – 'Zero Hunger' – in Africa: Targets, strategies, synergies and challenges. *Food & Nutrition Research*, *65*, 10.29219/for.v65.7686. https://doi.org/10.29219/fnr.v65.7686
5. Dipasquale, V., Cucinotta, U., & Romano, C. (2020). Acute Malnutrition in Children: Pathophysiology, Clinical Effects and Treatment. *Nutrients*, *12*(8), 2413. https://doi.org/10.3390/nu12082413
6. Gebremaryam, T., Amare, D., Ayalew, T., Tigabu, A., & Menshaw, T. (2022). Determinants of severe acute malnutrition among children aged 6—23 months in Bahir Dar city public hospitals, Northwest Ethiopia, 2020: A case-control study. *BMC Pediatrics*, *22*, 296. https://doi.org/10.1186/s12887-022-03327-w
7. Govender, I., Rangiah, S., Kaswa, R., & Nzaumvila, D. (2021a). Malnutrition in children under the age of 5 years in a primary health care setting. *South African Family Practice*, *63*(1), 5337. https://doi.org/10.4102/safp.v63i1.5337
8. Govender, I., Rangiah, S., Kaswa, R., & Nzaumvila, D. (2021b). Malnutrition in children under the age of 5 years in a primary health care setting. *South African Family Practice*, *63*(1), 5337. https://doi.org/10.4102/safp.v63i1.5337
9. John-Joy Owolade, A., Abdullateef, R. O., Adesola, R. O., & Olaloye, E. D. (2022a). Malnutrition: An underlying health condition faced in sub-Saharan Africa: Challenges and recommendations. *Annals of Medicine and Surgery*, *82*, 104769. https://doi.org/10.1016/j.amsu.2022.104769
10. John-Joy Owolade, A., Abdullateef, R. O., Adesola, R. O., & Olaloye, E. D. (2022b). Malnutrition: An underlying health condition faced in sub-Saharan Africa: Challenges and recommendations. *Annals of Medicine and Surgery*, *82*, 104769. https://doi.org/10.1016/j.amsu.2022.104769
11. Kassaw, A., Amare, D., Birhanu, M., Tesfaw, A., Zeleke, S., Arage, G., & Kefale, D. (2021). Survival and predictors of mortality among severe acute malnourished under-five children admitted at Felege-Hiwot Comprehensive Specialized Hospital, northwest, Ethiopia: A retrospective cohort study. *BMC Pediatrics*, *21*, 176. https://doi.org/10.1186/s12887-021-02651-x
12. Koubi, V. (2019). Climate Change and Conflict. *Annual Review of Political Science*, *22*(1), 343–360. https://doi.org/10.1146/annurev-polisci-050317-070830
13. Lokuruka, M. N. I. (2020). Food and Nutrition Security in East Africa (Kenya, Uganda and Tanzania): Status, Challenges and Prospects. In *Food Security in Africa*. IntechOpen. https://doi.org/10.5772/intechopen.95036
14. Ntambara, J., Zhang, W., Qiu, A., Cheng, Z., & Chu, M. (2023). Optimum birth interval (36–48 months) may reduce the risk of undernutrition in children: A meta-analysis. *Frontiers in Nutrition*, *9*, 939747. https://doi.org/10.3389/fnut.2022.939747
15. Sultana, P., Rahman, Md. M., & Akter, J. (2019). Correlates of stunting among under-five children in Bangladesh: A multilevel approach. *BMC Nutrition*, *5*, 41. https://doi.org/10.1186/s40795-019-0304-9
16. Thurstans, S., Opondo, C., Seal, A., Wells, J., Khara, T., Dolan, C., Briend, A., Myatt, M., Garenne, M., Sear, R., & Kerac, M. (2020). Boys are more likely to be undernourished than girls: A systematic review and meta-analysis of sex differences in undernutrition. *BMJ Global Health*, *5*(12), e004030. https://doi.org/10.1136/bmjgh-2020-004030
17. Wells, J. C., Sawaya, A. L., Wibaek, R., Mwangome, M., Poullas, M. S., Yajnik, C. S., & Demaio, A. (2020). The double burden of malnutrition: Aetiological pathways and consequences for health. *Lancet (London, England)*, *395*(10217), 75–88. https://doi.org/10.1016/S0140-6736(19)32472-9
18. World Health Organization. (2018). *Nurturing care for early childhood development: A framework for helping children survive and thrive to transform health and human potential*. World Health Organization. https://apps.who.int/iris/handle/10665/272603
19. Yikealo, D., Yemane, B., & Karvinen, I. (2018). The Level of Academic and Environmental Stress among College Students: A Case in the College of Education. *Open Journal of Social Sciences*, *6*(11), Article 11. https://doi.org/10.4236/jss.2018.611004
20. Nankinga, O., Kwagala, B., & Walakira, E. J. (2019a). Maternal employment and child nutritional status in Uganda. *PLOS ONE*, *14*(12), e0226720. https://doi.org/10.1371/journal.pone.0226720
21. Nankinga, O., Kwagala, B., & Walakira, E. J. (2019b). Maternal employment and child nutritional status in Uganda. *PLoS ONE*, *14*(12). https://doi.org/10.1371/journal.pone.0226720

22. Wang, S., Yang, L., Shang, L., Yang, W., Qi, C., Huang, L., Xie, G., Wang, R., & Chung, M. C. (2020). Changing trends of birth weight with maternal age: A cross-sectional study in Xi'an city of Northwestern China. *BMC Pregnancy and Childbirth*, *20*(1), 744. https://doi.org/10.1186/s12884-020-03445-2
23. Faustini, F. T., Mniachi, A. R., & Msengwa, A. S. (2022). Coexistence and correlates of forms of malnutrition among mothers and under-five child pairs in Tanzania. *Journal of Nutritional Science*, *11*, e103. https://doi.org/10.1017/jns.2022.103
24. Teweldemedhin, L. G., Amanuel, H. G., Berhe, S. A., Gebreyohans, G., Tsige, Z., & Habte, E. (2021). Effect of nutrition education by health professionals on pregnancy-specific nutrition knowledge and healthy dietary practice among pregnant women in Asmara, Eritrea: A quasi-experimental study. *BMJ Nutrition, Prevention & Health*, *4*(1), 181–194. https://doi.org/10.1136/bmjnph-2020-000159
25. Mrema, J. D., Elisaria, E., Mwanri, A. W., & Nyaruhucha, C. M. (2021). Prevalence and Determinants of Undernutrition among 6- to 59-Months-Old Children in Lowland and Highland Areas in Kilosa District, Tanzania: A Cross-Sectional Study. *Journal of Nutrition and Metabolism*, *2021*, 6627557. https://doi.org/10.1155/2021/6627557
26. Mohammed, K., & Hussein, I. M. and M. (2022). Ethiopia: Are children of employed mothers less stunted than those of unemployed mothers? *Field Exchange 68*, 69.
27. Schoonees, A., Lombard, M. J., Musekiwa, A., Nel, E., & Volmink, J. (2019). Ready-to-use therapeutic food (RUTF) for home-based nutritional rehabilitation of severe acute malnutrition in children from six months to five years of age. *The Cochrane Database of Systematic Reviews*, *2019*(5), CD009000. https://doi.org/10.1002/14651858.CD009000.pub3

Publisher details:

AfroGlobal Press

AfroGlobal Press
Amplifying Voices Worldwide

Contact: +256 763 123 847

Email: afroglobalpress@gmail.com

Website: https://afroglobalpress.com

Address: Scholar's Summit, Nakigalala, East Africa