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Economic factors associated with anaemia among children under the age of five attending services at Kitgum General Hospital, Kitgum District. A cross-sectional study.

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ABSTRACT

Background:

The main causes of anaemia among children under five include parasitic infections such as intestinal worms, schistosomiasis, and malaria, along with inadequate dietary intake and chronic illnesses. The study aims to determine the economic factors associated with anaemia among children under the age of five attending services at Kitgum General Hospital, Kitgum District.

Methodology:

A descriptive cross-sectional study design utilising quantitative data collection methods was applied. A simple random sampling technique was used to select a sample of 52 participants, and data were gathered using an approved semi-structured interview guide.

Results:

More than half (57.7%) of respondents were married, and 22(42.3%) were unmarried. The majority, 44(84.6%) of respondents reported unaffordability of high-cost iron-rich food (meat, fish, egg) while 8(15.4%) reported being able to afford high-cost iron-rich food. More than half 30, 57.7%) of respondents reported having ever had financial difficulties, while 22(42.3%) reported having never had financial difficulties. Half of 26(50%) experienced food shortage, while only 8(15.4%) always have enough food. Nearly half 24, 46.2%) of respondents reported their households were not able to afford enough nutritious food for their children, while only 8(15.4%) who always afford nutritious food for their children. The majority, 35(67.3%) of respondents buy their food from the market, followed by 20(38.4%) grew theirs at home, 17(32.7%) get from exchanged labour, while 7(13.5%) get as charity food from community members or some organisation.

Conclusion:

Economic factors associated with anaemia among children under five include inadequate food distribution, financial difficulties, and the high cost of food items.

Recommendation:

The Ministry of Health to improve iron supplementation among children under five.

Keywords: *Economic factors, high-cost iron-rich food, Children under the age, Anaemia.*
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Background to the study:

Anaemia is commonly linked to childhood malnutrition, resulting in interconnected factors that may contribute to increased mortality risk (Gaston et al., 2021). The main causes of anaemia among children under five include parasitic infections such as intestinal worms, schistosomiasis, and malaria, along with inadequate dietary intake and chronic illnesses. Additional causes include deficiencies in hematinics such as iron, folate, and vitamins A, B12, and C, as well as copper, reduced red blood cell production due to inflammation, and increased red blood cell destruction, especially in malaria or due to certain nutrient deficiencies like vitamin A (Hailemeskel et al., 2020).

Children under five years of age are the most vulnerable group to anaemia (Khulu et al., 2023). Anaemia is recognised as a major public health concern that threatens the health, survival, and overall well-being of children in developing countries (Akalu et al., 2020). In Uganda, approximately 53% of children under five are anaemic (Tesema et al., 2021). Additionally, four in ten children below five years (38%) experience chronic malnutrition

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(stunting), 23% are underweight, and 6% suffer from acute malnutrition (Kuziga et al., 2017). Micronutrient deficiencies remain widespread, with iron-deficiency anaemia (IDA) being particularly prevalent; vitamin A deficiency affects about 20% of children, while IDA impacts up to 73% of preschool-aged children (Kuziga et al., 2017). Among hospitalised children at the University of Gondar Hospital in Northwest Ethiopia, Enawgaw et al. (2019), food unavailability is one of the major causes of anaemia. Prüss-Ustün et al. (2019) also revealed that anaemia among children under five in low- and middle-income countries is often linked to poor economies and environmental crises such as droughts or natural disasters that lead to food shortages. In Western Kenya, anaemia resulted from unbalanced diets, digestive issues, and other medical conditions (Valice et al. 2018). In Ethiopia, anaemia and malnutrition among children under five stemmed from overconsumption of unhealthy foods (Belachew et al. 020). The study aims to determine the economic factors associated with anaemia among children under the age of five attending services at Kitgum General Hospital, Kitgum District.

METHODOLOGY

Study Design and Rationale

The study employed a descriptive cross-sectional design using quantitative data collection methods. It was cross-sectional because data were gathered at a single point in time from a group of respondents whose characteristics, such as age, parity, marital status, education level, and occupation, were documented. The design was descriptive in nature, as it presented the data as observed without any manipulation or alteration.

Study Setting and Rationale

The study was carried out in the Paediatric Ward of Kitgum General Hospital, located in Kitgum District, Northern Uganda. The hospital provides a wide range of health services, including child health care, immunisation, obstetric and emergency care, HIV/AIDS management, general patient care, laboratory services, nutrition support, family planning, antenatal and postnatal care, EMTCT programs, and RCT services, among others. This study site was chosen because it was familiar to the study, allowed for easy access to the required number of participants, and consistently recorded a high number of anaemia cases each month.

Study Population

The study included caretakers of children under five years admitted to the Paediatric Ward, Kitgum General Hospital, Kitgum District.

Sample Size Determination

In this study, the sample size was calculated using a formula that was originally developed by

Yamane (1967) $n = \frac{N}{1+N(e)^2}$

$$n = \frac{60}{1 + 60(0.05)^2}$$

$$n = \frac{60}{1.13} = 52.17 \cong 52$$

$$n = \mathbf{52}$$

Where;

n- The sample size

N- Average monthly number of anaemic children under 5 years attending OPD

e- The acceptable sampling error

(95% confidence level and p =0.05 are assumed)

Therefore, the sample size of **52** participants was considered

Sampling Procedure

The study employed a simple random sampling technique to determine the study sample. All potential respondents who met the inclusion criteria were given an equal chance to participate by drawing papers from a closed box. Those who picked a paper labelled “YES” were selected to take part in the study. To minimise bias, an equal number of 13 “YES” and 13 “NO” papers were placed in the box each day. This process was repeated over four days until the required sample size of 52 respondents was achieved.

Inclusion and Exclusion criteria

Inclusion criteria

The study included only caretakers of children under five admitted to the Paediatric Ward, Kitgum General Hospital, who were free and were willing to voluntarily consent to participate in the study.

Exclusion criteria

The study excluded caretakers who were ill and could not participate, those with language barriers, and those who refused to voluntarily consent to participate in the study.

Study Variables

Economic factors

The dependent variable for the study included:

Anaemia among children under the age of five years.

Research Instruments

Data were collected using an approved semi-structured interview guide containing both open- and closed-ended questions. This tool was chosen because the study involved

respondents with varying literacy levels—some were literate, while others could not read, write, or understand English, which was the language used to design the questionnaire.

Data Collection Procedure

The study was accompanied and introduced to the respondents by the person in charge of the Paediatric Ward at Kitgum General Hospital. After explaining the purpose of the study, the study administered the interview guides to caretakers in the Paediatric Ward. This approach enhanced both efficiency and confidentiality during data collection. A total of 13 respondents were sampled each day over a period of four days, resulting in a total sample size of 52 participants.

Data Management and Analysis

Data management involved editing the collected information before leaving the study area to ensure completeness and accuracy, with any errors or missing responses corrected on-site. The data were initially analysed manually using paper and pen for tallying. Thereafter, the results were presented in tables, graphs, and pie charts generated using Microsoft Excel version 2013. Descriptive statistics, including frequencies and percentages, were employed to summarise the findings.

Quality Assurance: Validity and Reliability

To ensure validity, the study presented the questionnaire to the research supervisor for evaluation. The supervisor assessed each question for its relevance to the study objectives, and any unclear or unsuitable items were revised or replaced with more appropriate ones.

To ensure reliability, a standardised questionnaire was used and pre-tested among caretakers of children with anaemia under 5 years attending the OPD at St. Joseph's Hospital, Kitgum. The pilot study included five respondents to evaluate the clarity and understanding of the questions in the data collection tool.

Ethical Considerations

A letter of introduction was obtained from the Principal of Florence Nightingale School of Nursing and Midwifery, which introduced the study to the administration of Kitgum General Hospital and requested permission to conduct the study. Once permission was granted, the medical director introduced the study to the person in charge of the Paediatric Ward, who subsequently introduced the study to the respondents. Participants were assured of strict confidentiality, with only numbers used to identify them instead of names. The study commenced only after the objectives were clearly explained and informed consent was obtained from all participants.

RESULTS

Demographic characteristics

Table 1 Showing distribution of respondents by demographic features (n=52)

Variables	Categories	(n)	(%)
Age	18-25 years	22	42.3
	26-35 years	18	34.6
	36 and above	12	23.1
Gender	Female	40	76.9
	Male	12	23.1
Marital status	Married	30	57.7
	Unmarried	22	42.3
Level of education	No formal education	9	17.3
	Primary	11	21.2
	Secondary	20	38.4
	Tertiary	12	23.1
Occupation	House wife	20	38.4
	Peasant farmer	7	13.5
	Professional	10	19.2
	Self-employed	15	28.9

Number of children	1-2 children	18	34.6
	3-4 children	25	48.1
	5 children and above	9	17.3

Legend: (n)-frequency, (%)-percentage

Table 1, Majority 40(76.9%) of respondents were female, while male was only 12(23.1%). More than half (57.7%) of respondents were married, while 22(42.3%) were unmarried. Nearly half 25, 48.1%) of the respondents had 3-4 children, and 9(17.3%) had 5 children and above. Around 22(42.3%) of respondents were aged 18-25 years, while 12(23.1%) were aged 36 years and above. About 20(38.4%) of respondents had secondary level, 11(21.1%) had primary level, and 9(17.3%) had no formal education. About 20(38.4%) of respondents were housewives and 7(13.5%) were peasant farmers.

Economic factors associated with anemia among children under five.

Table 2: Showing economic factors associated with anemia (n=52)

Variables	Categories	(n)	(%)
Household able to afford enough nutritious food for children daily.	Always	8	15.4
	Sometime	20	38.4
	Never	24	46.2
Households experience food shortages.	Always	26	50
	Sometime	18	34.6
	Never	8	15.4
The cost of iron-rich foods (meat, fish, eggs) is affordable.	Yes	44	84.6
	No	8	15.4
Whether financial difficulties ever prevented respondents from seeking medical care or providing adequate food for the child/children.	Yes	30	57.7
	No	22	42.3

Legend: (n)-frequency, (%)-percentage

In Table 2, the majority, 44(84.6%) of respondents reported unaffordability of high-cost iron-rich food (meat, fish, egg) while 8(15.4%) reported being able to afford high-cost iron-rich food. More than half 30, 57.7%) of respondents reported having ever had financial difficulties, while 22(42.3%) reported having never had financial difficulties. Half of 26(50%) experienced food shortage, while only 8(15.4%) always have enough food. Nearly half 24, 46.2%) of respondents reported their households were not able to afford enough nutritious food for their children, while only 8(15.4%) who always afford nutritious food for their children.

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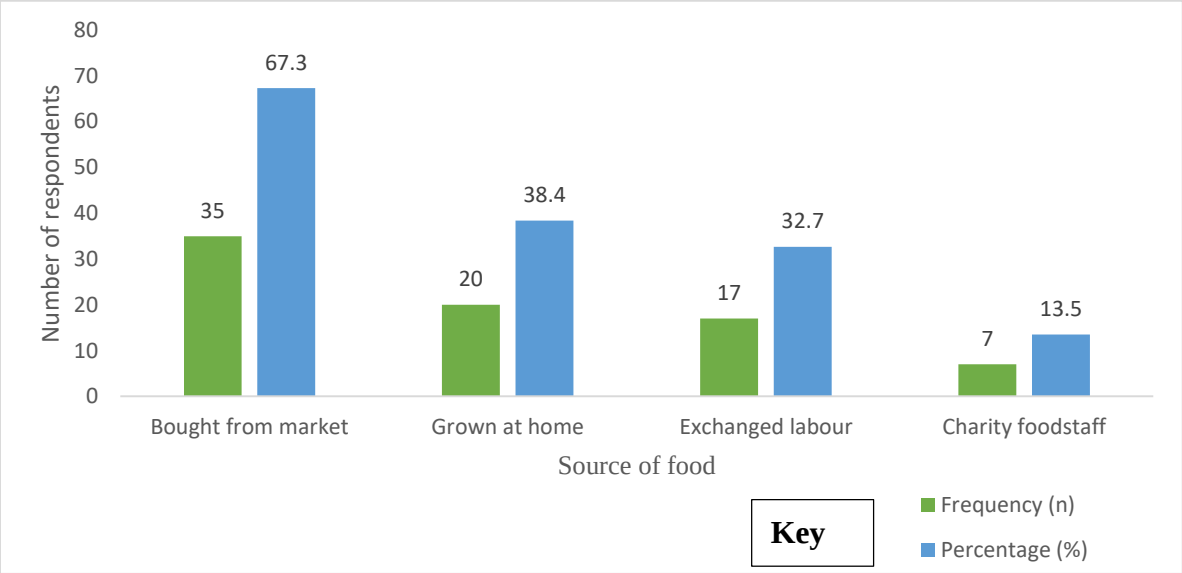
Figure 1: Showing the main source of food for the family (n=52)



In figure 1, the majority 35(67.3%) of respondents buy their food from the market, followed by 20(38.4%) grew theirs at home, 17(32.7%) get from exchanged labour, while 7(13.5%) get as charity food from community members or some organisation.

Discussion

The study revealed the source of household food as: more from the market, followed by some grown at home, while others exchanged labour, and from charity organisations or individuals. Uneven and inadequate food supply to the household imposes famine on the community, making them vulnerable to conditions that bring anaemia. This study was in line with Cha et al.'s (2019) study, which revealed poor food distribution to be associated with anaemia among children. An uneven and inadequate food supply results in both long- and short-term effects on anaemia through children having a low immune system and low energy to withstand any comorbidity of malnutrition.

The study also further noted that the majority of respondents were unable to afford the iron-rich foods (meat, fish, egg) and more than half had financial difficulties. Financial constraint would make many families fail to provide balance diet to children under five since the cost of food would be very high and scarce. This study agrees with Tesema et al.'s (2021) study, which evidenced poverty and the inability to purchase adequate quantities of food as a social factor that contributes to anaemia among children under five years. An unbalanced diet and financial constraints significantly increase the risk and prevalence of anaemia by exacerbating essential nutrient deficiencies.

The study also indicated that half of the respondents' households experienced food shortages. This would render them vulnerable to most famine related illness that complicate anaemia. This study is consistent with Gebre et al. (2019), which identified food insecurity as a factor associated with anaemia in children under five. It also aligns with Ajakaye and Ibukunoluwa (2020), who reported that hunger and poverty are the most common causes of malnutrition and anaemia in this age group. Addressing food insecurity by ensuring access to iron-rich foods is essential to reducing the risk of anaemia and promoting overall good nutrition in children.

Conclusion

Economic factors associated with anaemia among children under five include inadequate food distribution, financial difficulties, and the high cost of food items.

Limitations

The study employed a cross-sectional design, which restricted the extent to which the results could be generalised to the broader population. Nonetheless, a simple random sampling technique was applied to reduce potential bias within the study sample.

There was also a possibility of social desirability bias, where participants gave responses that they thought were acceptable rather than truthful ones. To mitigate this, participants were assured strict confidentiality and informed that there were no right or wrong answers.

Recommendations

The Ministry of Health ought to improve iron supplementation among children under five. This can be achieved through universal daily iron supplementation as a public health intervention for children aged 6 to 59 months in order to prevent iron deficiency anemia.

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List of abbreviations/ acronyms

AIDS	Acquired Immune Deficiency Syndrome
EMTCT	Elimination of mother-to-child transmission
RCT	Random counselling and testing
HIV	Human Immunodeficiency Virus
OPD	Outpatient Department

Source of funding

The study was not funded.

Conflict of interest

The author did not declare any conflict of interest.

Data availability

Data is available upon request.

Author contribution

Leofrida Lamwaka collected data and drafted the manuscript of the study
Labeja, Ronald Awoi, supervised the study

Author biography

Leofrida Lamwaka is a student of a diploma in midwifery at Florence Nightingale School of Nursing and Midwifery.
Labeja, Ronald Awoi, is a supervisor at Florence Nightingale School of Nursing and Midwifery.

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