

Cultural factors influencing Iron Deficiency Anaemia among children below five years at Bujubuli Health Centre IV, Kyegegwa district. A cross-sectional study.

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ABSTRACT

Background:

To identify cultural factors influencing Iron Deficiency Anaemia among children below five years at Bujubuli Health Centre IV, Kyegegwa district.

Method:

A hospital-based cross-sectional study at Bujubuli Health Centre IV, Kyegegwa District. Data was collected using structured questionnaires, and a systematic random sampling technique was employed to select the 96 study participants. Data was analysed using Microsoft Excel and SPSS version 22.

Results:

(75%), were married, 4.2% were widows or widowers. Among the 22 caregivers who delayed visiting the health facility, 16 (72.7%) of their children were anaemic. Among the 74 who sought timely medical care, only 21 (28.4%) of their children had IDA. Children whose caregivers believe illnesses are caused by spiritual forces had a high anaemia prevalence (72.2%). Those who rejected the belief had a much lower prevalence (28.3%). Of the 28 caregivers who reported avoiding certain foods for young children, 18 (64.3%) of their children were anaemic. Among the 25 respondents who introduced complementary feeding before 6 months, IDA prevalence was high (60%). The lowest prevalence (28.3%) occurred among those who started at the recommended time of 6 months. Delayed (45.5%) or early initiation of complementary feeding appears to increase anaemia risk. Cultural discouragement of animal-source foods such as meats and dairy products was associated with a high prevalence of Iron deficiency anaemia (62.5%). Children of caregivers who used traditional remedies had a much higher prevalence of IDA (60%) compared to those who did not (26.2%).

Conclusion:

Food unsuitability beliefs, introduction of complementary meals before 6 months, and delayed seeking of medical care were the significant cultural factors influencing Iron Deficiency Anaemia among Children below five years at Bujubuli Health Centre IV.

Recommendations:

Pregnant mothers should be well educated on how to take care of their newborn babies and children during antenatal care services.

Keywords: Food unsuitability beliefs, Cultural factors, Iron Deficiency Anaemia, Children below five years

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Background

In various cultures, anaemia is often attributed to supernatural or spiritual causes. For instance, in Tanzania, some mothers believe that anaemia is caused by witchcraft or evil spirits, leading them to seek traditional healers instead of medical treatment. This belief can delay appropriate healthcare interventions for affected children. (Garg et al., 2024). Cultural dietary practices can contribute to iron deficiency. In Nepal, complementary foods introduced to infants are often limited and lack iron-rich content. (Siegel et al., 2006). Traditional diets may exclude

certain nutritious foods due to cultural taboos or beliefs, leading to inadequate iron intake among young children.

In some communities, anaemia is not perceived as a serious health issue. (Garg et al., 2024). This perception can lead to delayed treatment-seeking behaviour. For instance, in Uganda, community members often associate anaemia with common symptoms like fatigue, not recognising the potential severity of the condition, which can result in delayed medical intervention. (Dhabangi et al., 2019). The timing of complementary feeding contributes to the risk of anaemia and iron deficiency. (Fläring et al., 2011). A cross-

sectional study in Bushenyi district, Western Uganda, revealed that children introduced to complementary foods before six months of age had a higher prevalence of anaemia (41.6%) compared to those introduced after six months (5.0%). Early introduction of complementary foods, particularly those low in iron content, may displace iron-rich breast milk and increase the risk of infections, contributing to higher anaemia rates. (Kikafunda et al., 2009).

The preference for traditional remedies over conventional medical treatments is prevalent in many communities. In Tanzania, nearly half of the mothers surveyed believed that anaemia could be cured using herbal preparations. This reliance on traditional medicine can hinder the timely administration of effective medical treatments for IDA. (Garg et al., 2024).

Cultural beliefs influence infant feeding practices, which can impact iron intake. In Ethiopia, it is common for mothers to introduce cow's milk early in an infant's diet. (Sahiledengle et al., 2024). Cow's milk is low in iron and can interfere with iron absorption, increasing the risk of IDA in young children. A lack of awareness and knowledge about anaemia contributes to its prevalence. In Nigeria, caregivers demonstrated limited understanding of anaemia's causes and prevention methods. Educational interventions were found to improve caregivers' knowledge and self-efficacy in preventing and managing IDA in children. (Nwaba et al., 2022).

In some cultures, it is customary to serve tea during or immediately after meals. Tea contains polyphenols that can inhibit iron absorption by forming insoluble complexes with iron, reducing its bioavailability. In Tanzania, the practice of giving tea with sugar to young children was found to increase the risk of anaemia. This cultural habit, though well-intentioned, can contribute to iron deficiency in children. (Kejo et al., 2018).

METHODOLOGY

Study design

The study was a descriptive cross-sectional study design involving mainly a quantitative method of data collection. This design allowed for the estimation of the prevalence of IDA and the identification of socio-demographic and cultural factors influencing it at a specific point in time.

Study area

The study was carried out in a government health facility, that is Bujubuli Health Centre IV in Kyegegwa district, the southwestern region. Bujubuli Health Centre IV is located in Kyaka II refugee settlement and was established in 2005. The settlement covers 81.5 square kilometres in three sub-counties of Kyegegwa district, in the west of the country. Over 80% of the refugees in Kyaka II are from the Democratic Republic of Congo (DRC), while others are from Burundi, Ethiopia, Kenya, Malawi, and Rwanda.

Study population

The study only focused on children aged below five years of age attending Bujubuli Health Centre IV for inpatient and immunisation services and their mothers or primary caregivers for relevant socio-demographic and feeding history data within the period of data collection.

Sample size determination

The sample size was determined using Kish Leslie formula (1965) for a single population. This is because the formula ensures that the sample reflects the true characteristics of the target population and also reduces the sampling error. The expression is as follows:

$$n = \frac{Z^2 PQ}{d^2}$$

Where n is the sample size

Z is the score corresponding to 95% confidence interval (1.96).

P is the estimated prevalence (53%) of anaemia in Uganda (UBOS & ICF, 2016).

d is the acceptable error of estimation at 95% confidence interval of 0.1.

Q is $(1-P)$.

Substituting the value: $n = \frac{(1.96)^2 \times 0.53 \times (1-0.53)}{(0.1)^2}$

$$n = 95.694$$

Therefore, the sample size consisted of 96 respondents.

Sampling technique

The researcher employed a Systematic random sampling that selected every k^{th} child attending Bujubuli health centre IV until the sample size was reached. The sample represents the target population and eliminates sampling bias.

Sampling procedure

Respondents of this study were obtained by using systematic random sampling, whereby the study units that happened to be available at the time of data collection were selected for the study.

Study variables

Dependent variables

Iron Deficiency Anaemia among children below five years.

Independent variables

Cultural factors: Food taboos, traditional/spiritual healers, poor health-seeking behaviours, inappropriate IYCF practices, caregivers' knowledge, and household customs.

Data collection method

Data was collected by means of an interview method with the aid of a questionnaire that was administered by the

researcher. The information on the socio-demographic and cultural factors influencing IDA among children below five years was obtained through the interview method.

An automated haemoglobin machine (Hemocue) was used to determine the haemoglobin level. A strict aseptic technique and a separate lancet for each child were used. The haemoglobin level of the under-fives was measured using capillary blood, and one drop of capillary blood was carefully collected from the middle finger of the under-five by finger prick. The first and second blood drops were discarded in order to remove excess fluid created by squeezing the finger. The level of anaemia was categorised according to WHO as follows: Mild anaemia when the Hb level is between 10-10.9g/dl, moderate anaemia when the Hb level is between 7-9.9g/dl, and severe anaemia when the Hb level is less than 7.0g/dl for severe anaemia.

Data collection tool(s)

Data was collected using a semi-structured questionnaire coded in kobo-collect tool, comprising open and closed-ended questions and administered in the language they understood better. A hemocue device for rapid haemoglobin testing.

Data collection procedure

An introductory letter from Nkumba University was taken to the administration of Bujubuli Health Centre IV seeking permission to allow the researcher carry out data collection at the health facility among children below five years. In addition, Informed consent was obtained, eligible children underwent clinical assessment, caregivers were interviewed using the questionnaire, and blood samples were collected from children below five years of age via finger prick for haemoglobin testing.

Validity and reliability

A pilot study was carried out at Kakabara Health Centre III, and this involved pretesting of the data collection tools, where a sample of respondents was interviewed and checked to establish the effectiveness, errors/gaps in the data collection tools to be used in the final study.

Pre-testing of the research tool(s)

The questionnaire was pre-tested on 15% of the sample size at another health center, that is to say, Kakabara HC III, Kyegegwa district. Feedback was used to guide adjustments for clarity and consistency.

Piloting of the study

The questionnaire was pretested at Kakabara HC III in Kyegegwa before being used at Bujubuli Health Centre IV. This was to assess feasibility and identify logistical or methodological issues before the full rollout.

Quality control

The following activities were done by the researcher before conducting the actual study;

Pre-testing of the research tools to be used in the study for data collection.

Training of the research assistants on how to assess the prevalence, socio-demographic, and cultural factors associated with IDA among children below five years.

Piloting of the study, which was done at Kakabara HC III in Kyegegwa district.

A clear selection criterion was followed to attain accurate results.

Inclusion criteria

The study involved all caretakers and mothers of children below five years of age who attended health services at Bujubuli Health Centre IV during the period of data collection and after consent.

Exclusive criteria

Caretakers or mothers with children above five years were not involved in the study. Additionally, critically ill children unable to undergo blood testing, those with diagnosed genetic anaemia such as thalassemia, sickle cell, and caregivers who declined consent.

Data management, analysis, and presentation

Data was stored on flash disks, questionnaires, and a record book, which is only accessible to the researcher and supervisor. It was then processed and analysed by Microsoft Excel and SPSS and presented in form of tables, graphs, and charts.

Ethical considerations

The proposal was approved by the management of MIHS and Nkumba University. An introductory letter from MIHS seeking permission from the Kyegegwa District Health Office and the Bujubuli HC IV administration to carry out data collection. Written informed consent from caregivers and privacy, confidentiality, and the right to withdraw were all respected.

RESULTS.

Table 1: socio-demographic characteristics.

Variable	Category	Frequency (%) N=96
Age of caretaker	16 -20	08 (8.3)
	21 -25	27 (28.1)
	26 – 30	31 (32.3)
	>30 years	30 (31.3)
Marital status	Single	12 (12.5)
	Divorced	05 (5.1)
	Married	75 (78.1)
	Widow	04 (4.2)
Residence	Rural	84 (87.5)
	Urban	12 (12.5)
Sex of child	Male	55 (57.3)
	Female	41 (42.7)

Table 1 majority of the respondents were between 26 and 30 years of age, 31 (32.3%), and the least number of respondents were between 16 and 20 years, with the rate of 8 (8.3%). Almost all the respondents reside in the rural area

87.5% and the least of the respondents live in the urban areas, with 12.5%. The majority of the children in the study were males, 55 (57.3%). The majority of respondents were married (75%), and 4.2% were widows or widowers.

Table 2: Showing Cultural beliefs and practices influencing IDA among children below five years at Bujubuli Health Centre IV.

Cultural Variable	Category	Frequency (N=96)	IDA Cases	IDA Prevalence (%)
Delayed facility visit	Yes	22	16	72.7
	No	74	21	28.4
Illnesses are spiritual	Yes	18	13	72.2
	No	60	17	28.3
	Not sure	18	7	38.9
Belief that some foods are unsuitable	Yes	28	18	64.3
	No	68	15	22.1
Timing of complementary feeding	Before 6months	25	15	60
	At 6months	60	17	28.3
	After 6months	11	5	45.5
Discouragement of animal-source foods	Yes	32	20	62.5
	No	50	13	26
	Not sure	14	4	28.6
Use traditional remedies	Yes	35	21	60
	No	61	16	26.2
Decision-making on household food consumption	Mother	48	14	29.2
	Father	22	8	36.4
	Grandparent	16	10	62.5
	Others	10	5	50

Table 2: Among the 22 caregivers who delayed visiting the health facility, 16 (72.7%) of their children were anaemic. In contrast, among the 74 who sought timely medical care,

only 21 (28.4%) of their children had IDA. Children whose caregivers believe illnesses are caused by spiritual forces had a high anaemia prevalence (72.2%), suggesting that

such beliefs may delay or hinder access to medical care. On the contrary, those who rejected the belief had a much lower prevalence (28.3%). Of the 28 caregivers who reported avoiding certain foods for young children, 18 (64.3%) of their children were anaemic. This contrasts with a lower IDA rate (22.1%) among the 68 caregivers who did not restrict foods. Among the 25 respondents who introduced complementary feeding before 6 months, IDA prevalence was high (60%). The lowest prevalence (28.3%) occurred among those who started at the recommended time of 6 months. Delayed (45.5%) or early initiation of complementary feeding appears to increase anaemia risk. Cultural discouragement of animal-source foods such as meats and dairy products was associated with a high prevalence of Iron deficiency anaemia (62.5%). Children of caregivers who used traditional remedies had a much higher prevalence of IDA (60%) compared to those who did not (26.2%). In addition, children in households where the mother was the primary decision-maker on food had the lowest prevalence of IDA (29.2%). In contrast, where grandparents or other persons, such as uncles or aunts, made food decisions, IDA prevalence was much higher (62.5% and 50%, respectively).

Discussion

The 64.3% IDA prevalence among Bujubuli participants who reported food unsuitability beliefs supports the view that culturally-driven food restrictions can compromise iron intake during critical growth periods. A cross-sectional study by Gebregziabher et al. (2023) In the Tigray region, Ethiopia, the cultural determinants of IDA among children aged 6–59 months were investigated. The study found that food taboos against meat, eggs, and dark green vegetables were significantly associated with IDA (Adjusted Odds Ratio [AOR] = 2.91, 95% CI: 1.78–4.76, $p < 0.001$). Children whose caregivers believed some foods were “too strong” or “unsuitable” for children had a prevalence of 59.6% compared to 27.3% among those without such beliefs.

Among 25 caregivers who introduced complementary feeding before 6 months, IDA prevalence was high (60%). The lowest prevalence (28.3%) occurred among those who started at the recommended time of 6 months. The probable reason could be that such practices may lead to poor iron bioavailability or interference with iron absorption due to low-nutrient alternatives. Similarly, a study by Ebroshe et al. (2023) In Haramaya district, Eastern Ethiopia, assessed feeding practices and anaemia in children aged 6–23 months. The study, involving 403 mother-child pairs, found that early introduction of complementary foods (before 6 months) was significantly associated with higher odds of IDA. The prevalence of IDA among early-fed children was 55.2% compared to children introduced at 6 months 27.6%. 60% of children whose caregivers used traditional remedies

had IDA, compared to 26.2% among those who did not. It also reflects the 72.7% IDA prevalence among those who delayed seeking medical care, affirming the role of traditional practices and delayed intervention in worsening iron deficiency.

Conclusion

Food unsuitability beliefs, introduction of complementary meals before 6 months, and delayed seeking of medical care were the significant cultural factors influencing Iron Deficiency Anaemia among children below five years at Bujubuli Health Centre IV.

Study Limitations

Being a cross-sectional study design, the limitation would be that it would not show a causal effect relationship. Scarcity of resources with limited time may limit the researcher from conducting the study effectively, non-responsiveness of the participants, who would request money to provide certain information, and a language barrier, since some participants are illiterate.

The study was carried out in only the hospital premises, leaving out mothers or caretakers in the community who could provide information that could contribute to the proposed study.

Recommendations

Pregnant mothers should be well educated on how to take care of their newborn babies and children during antenatal care services, which can be helpful to improve their knowledge, so that the children are fed well on complementary foods to avoid iron deficiency anaemia. Parents should ensure that children sleep under treated mosquito nets to avoid infestation of malaria parasites, since it can be a major cause of anaemia if it becomes chronic. a Bachelor of Science Degree in Human Nutrition and Clinical and Dietetics

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List of abbreviations and acronyms

CI	:	Confidence interval
DL	:	deci-litre

Hb	: Haemoglobin
HC	: Health Centre
ICF	: International Coach Federation
ID	: Iron deficiency
IDA	: Iron Deficiency Anaemia
IYCF	: Infant and Young Child Feeding
MIHS	: Mildmay Institute of Health Sciences
SPSS	: Statistical Package for Social Sciences
UBOS	: Uganda Bureau of Statistics
WHO	: World Health Organisation

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Conflict of interest

The author did not declare any conflict of interest.

Data availability

Data is available upon request.

Author contribution

Musa Kayima collected data and drafted the manuscript of the study

Elizabeth Okello supervised the study

Author biography

Musa Kayima is a student of a Bachelor of Science Degree in Human Nutrition and Clinical and Dietetics at Mildmay Institute of Health Sciences.

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