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Knowledge and Practices on Food Hygiene among Caregivers of Malnourished Children in Uganda: A Cross-Sectional Study.

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Abstract

Background:

Food hygiene is crucial in the prevention of diarrhoeal infections, and malnourished children with diarrhoea have been shown to have lower chances of survival than their counterparts without diarrhoea. The study was carried out to determine the food hygiene knowledge and practices of caregivers with malnourished children in Mwanamugimu Nutrition Unit (MNU) and Kisenyi Health Centre IV (HC IV).

Methodology:

This was a cross-sectional quantitative study where a semi-structured questionnaire was administered to caregivers of malnourished children using both face-to-face and telephone interviews. Data were transferred to Microsoft Excel 16 and later imported to STATA 14, where they were analysed using descriptive statistics.

Results:

A total of 120 respondents (71 from MNU and 49 from Kisenyi HC IV) were involved in the study. Respondents were aged between 15 and 80 years, and the majority were female (94.2%). Only 9.2% of the caregivers had good food hygiene knowledge, and 25.8% knew that leftover food should be kept for two hours before serving/eating if kept at room temperature. Only 66 (55.0%) of the respondents reported having ever had a health education session on food hygiene. The majority (82.5%) of respondents had good self-reported practices on food hygiene. Many (81.7%) reported always washing their hands with soap and water after visiting the toilet, and none reported not washing their hands. Less than half (42.5%) reported feeding their children on leftover food, and of the 49 who kept leftover food at room temperature, 63.3% served food to their children after two hours.

Conclusion:

Generally, caregivers of malnourished children had poor knowledge but good self-reported practices on food hygiene.

Recommendation:

Health workers should educate caregivers about safe handling practices of leftover foods to help prevent the occurrence of diarrhoea among children with malnutrition.

***Keywords**: Food Hygiene Knowledge, Food Hygiene Practices, Malnutrition, Caregivers, Uganda.*
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Background

Foodborne illnesses usually occur after consumption of contaminated food, and the World Health Organization estimates unsafe food to cause about 600 million cases, 420,000 deaths every year, and 33 million years lost due to unsafe food. (WHO, 2015). The greatest burden of foodborne illnesses (80%) is attributed to microbial pathogens, including non-typhoidal *Salmonella spp.,*

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Listeria spp., Campylobacter spp., E. coli, and norovirus. (Jaffee et al., 2019), (Lee and Yoon, 2021). These microbes can enter food at any point of the food chain due to leaving food at improper temperatures and unhygienic practices. These unhygienic practices include use of contaminated water to prepare food, working in unsanitary kitchens, use of dirty utensils and kitchenware, and poor handwashing behaviour. (Nakayiza et al., 2022; Delelegn et al., 2020).

Data on foodborne illnesses is scanty in low- and middle-income countries, and this data is usually available for foodborne-associated manifestations such as diarrhoea. (Achiro et al., 2023). The prevalence of diarrhoea in Uganda among under-fives is about 19% (Uganda Bureau of Statistics, 2023), and this shows that there may still be gaps in food hygiene. Food hygiene knowledge and practices are an under-investigated topic in Uganda, especially regarding the storage of leftover cooked food. Other food hygiene practices such as handwashing are still lacking. (Kajjura *et al.*, 2019). A study in Northern Uganda showed that although handwashing after visiting the latrine was relatively high (84.5%), handwashing before preparation of food was very low (6.9%) (Achiro et al., 2023). According to the Ministry of Health annual health sector performance report of 2020/21, 44.7% of Ugandans had access to improved handwashing facilities, and this is still very low compared to the goal of WHO, which is hand hygiene for all. (WHO and UNICEF, 2020; Ministry of Health Uganda, 2020). This shows that there is a risk of faecal contamination of food, which, if consumed, can lead to foodborne illnesses.

Diarrhoea and malnutrition have been shown to have a bidirectional relationship. (Brown, 2003). This implies that diarrhoea can lead to malnutrition since the disease usually presents with reduced appetite, loss of nutrients in stool, and gut damage leading to reduced absorption of nutrients into the body, hence resulting in malnutrition. On the other hand, when an individual is malnourished, their body lacks essential nutrients, which weakens the body's immunity, hence becoming susceptible to diarrhoeal infections. (Schorling et al., 1990; Wierzba et al., 2001; Brown, 2003). The prevalence of malnutrition in Uganda is 2.9% as per the Annual Health Sector Performance Report of 2022/23 (Ministry of Health Uganda, 2023). More efforts are needed to achieve Sustainable Development Goal (SDG) 2.2, which is to end all forms of malnutrition by 2030 (WHO, 2013). Malnutrition has adverse impacts on individuals, communities, and the nation. Research shows that malnourished children perform poorly in class, have social drawbacks, and when these children grow up, they have a higher risk of suffering from chronic diseases. (Deborah *et al.*, 2014), (Hock et al., 2018). One of the ways to curb malnutrition is through prevention of diarrhoeal diseases, which can be tackled through reducing foodborne illnesses. Few studies have been carried out in Uganda to explore the food hygiene knowledge and practices of caregivers, especially those with malnourished children, hence making this topic important at such a time when the country wants to curb malnutrition and diarrhoea. Evidence on food hygiene among this group will inform key stakeholders of what needs to be done in order to control diarrhoea among malnourished children. This study therefore assessed knowledge and practices on food hygiene among caregivers of malnourished children in Uganda.

Methodology

Study area

The study was carried out in the Mwanamugimu Nutrition Unit (MNU) found in Mulago National Referral Hospital and Kisenyi Health Centre IV (HC IV). MNU is located on Mulago Hill in Kawempe sub-county in Kampala district of Central Uganda. It is owned by the Government of Uganda and is a national referral unit for children with Severe Acute Malnutrition (SAM) and receives patients from all over the country. It has an 80-bed capacity and usually admits 80-120 patients in a month. The units at MNU include triage, where patients are received and nutritionally assessed, and SAM patients, who are severely ill, are treated. In Stabilisation (P1), patients with medical complications are treated, and those who show signs of progress are taken to Transition (P2), where acceptance tests for semi-solid therapeutic foods are done. Those who pass the tests are transferred to the last section: Rehabilitation (P3), where nutrition health education of caregivers is conducted. Under Outpatient Therapeutic Care (OTC), children who have Moderate Acute Malnutrition (MAM), SAM without complications, and those discharged from Inpatient Therapeutic Care (ITC) are cared for and treated. The unit also carries out community outreaches where nutrition-related activities, such as nutrition status assessment and nutrition education, are carried out.

Kisenyi Health Centre IV is located on Muwanga II Road in Kisenyi in the Central Division of Kampala City. The facility is managed by Kampala Capital City Authority (KCCA). Several services are offered to patients, and these include antenatal care, HIV and TB treatment, and other services under the Outpatient Department, of which nutrition is part. Immunisation and nutrition services were integrated, and children who are taken for vaccination are routinely monitored (growth and nutrition status), and those

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who are malnourished are given nutrition services, which include Ready-To-Eat Therapeutic Foods and health education. Those who are severely malnourished and need admission are referred to other health facilities, of which MNU is part, since it is the national referral nutrition unit in Uganda (Fig 1).

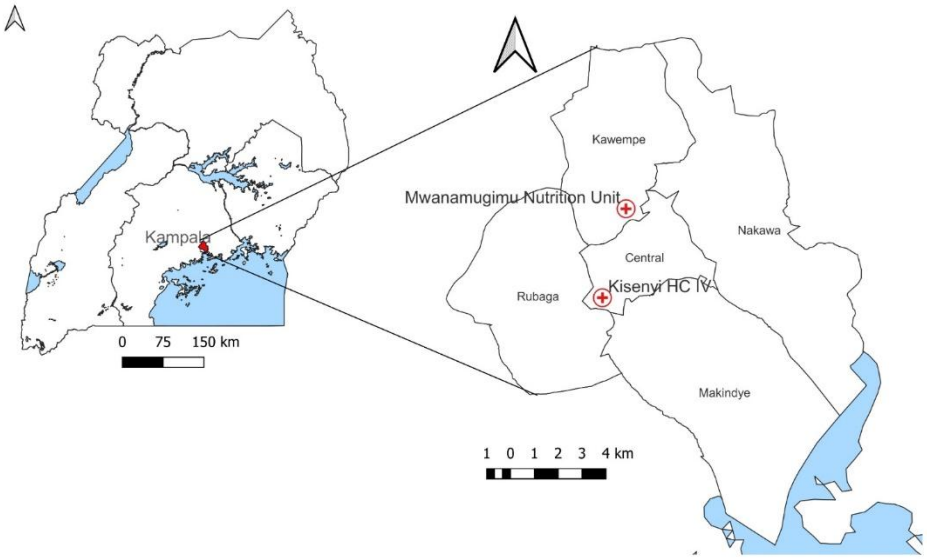


Fig 1: A map showing the Mwanamugimu Nutrition Unit and Kisenyi Health Centre IV.

Study design

A quantitative cross-sectional study was applied.

Sample size and Inclusion criteria

The initial sample size calculated for the study was 385 caregivers. However, during the data collection period, fewer caregivers of malnourished children attended the study site than anticipated, and the study timeline did not allow for further recruitment. Consequently, all caregivers (120) who were available during the data collection period were enrolled and interviewed.

Data collection

Using Kobo Toolbox online forms, a semi-structured questionnaire was developed to collect quantitative data. Before the actual data collection, the tool was pre-tested with nine caregivers who had come to the nutrition clinic at Kitebi Health Centre III. This was important for assessing the understandability of the questions, and those that yielded different responses and those that were not understood properly were eliminated from the tool, and some questions were refined. Data collection: Three volunteers (two students and a nurse at MNU) helped with collecting the data. Before data collection, they were taught the meaning and interpretation of the questions, how to deal with responses, and how to fill in the form. They were also encouraged to fill in all the questions. After seeking permission to carry out the study from the management of MNU, data were collected (using face-to-face interviews) on a Wednesday, which was the Outpatient Therapeutic Care (OTC) day when caregivers whose children had been discharged would come for a routine checkup and monitoring. The nurse collected data from caregivers whose children were in Inpatient Therapeutic Care (ITC). All caregivers within the months of February and April 2024 were interviewed. Each participant was told to respond once to the interview, and this was to avoid duplication of data.
Since immunisation and nutrition services are integrated in Kisenyi HCIV, children who were brought for immunisation had to undergo growth monitoring before immunization. After growth monitoring, caregivers with malnourished children were interviewed. Only 2 caregivers were interviewed (face-to-face) because few caregivers with malnourished children came to the facility during the time of data collection. Permission was obtained from the head of the nutrition unit to get all telephone numbers of caregivers who had been included in the nutrition register

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(from February to March). 75 telephone numbers were obtained, but 47 caregivers were reached because some did not pick up the calls and some did not consent to be interviewed. Before carrying out the telephone interviews, the study topic and objectives of the study were introduced to the respondents. The interviews were then conducted, and they took about 10 minutes.

An online semi-structured questionnaire was designed using KoboToolbox to collect data on food hygiene knowledge and practices of the caregivers. The questionnaire was adapted from two studies by (Dagne et al. 2019) and (Achiro et al., 2023). The questionnaire was translated into *Luganda* since it is the most common local language used in central Uganda. The questionnaire had 3 major sections: the first one collected information about the sociodemographic characteristics of the respondents (hospital, age, gender, marital status, education level, employment status, occupation, and estimated monthly salary). The second section was about food hygiene knowledge, and the third section was about the food hygiene practices of caregivers.

Data management and analysis

All the quantitative data collected using the online Kobo tool were uploaded to an online server, then downloaded to Microsoft Excel for cleaning (further cleaning was done in STATA 14). Data cleaning involved checking for errors and completeness, and assigning values to some variables in order to get total scores. The files that had the telephone numbers of caregivers from Kisenyi HCIV were destroyed so that no one else has access to them.

For knowledge questions, correct answers were awarded 1 and wrong answers a score of 0. The sum of correct answers was calculated, and caregivers who scored 70% and above in each section of knowledge had a good level of knowledge. Not all questions in the knowledge section were included in the total score calculation; the last 3 were excluded because they asked whether the caregiver had received health education on food hygiene and the sources of the information. For practices, 2, 1, and 0 were awarded to always, sometimes, and never, respectively, for proper practice questions and the reverse for poor practice questions. For other questions (not requiring always, sometimes, and never as responses), good practice was awarded 1 and bad practice was awarded 0. Those who scored 70% had good practice, while those who scored below 70% had poor practice (Achiro et al., 2023). The data was transferred to STATA 14, where it was analysed at the univariate level, where mean, range and percentages were used.

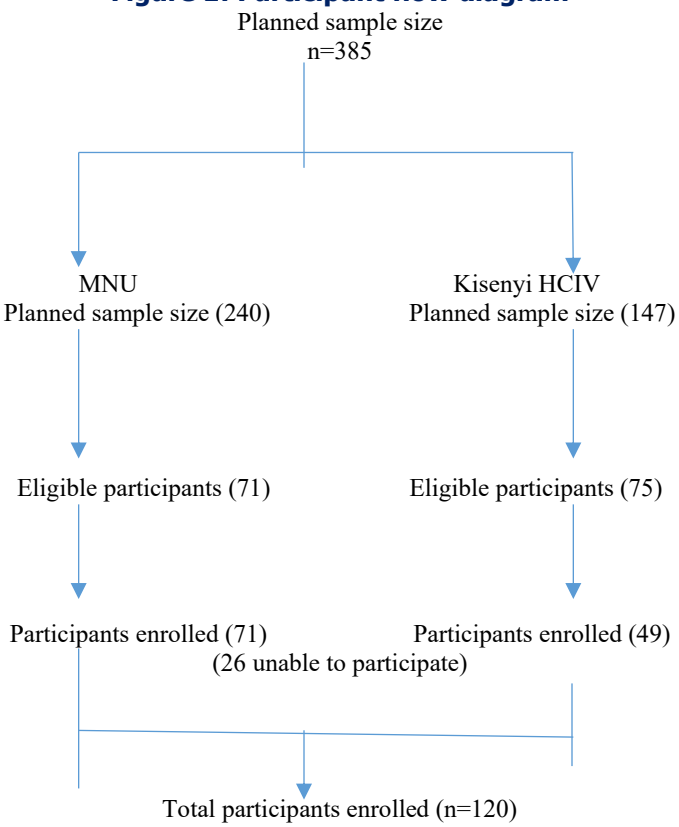
Ethical considerations

The study received approval from Makerere University School of Public Health as part of the Bachelor of Environmental Health Science programme. Permission to conduct the study at Kisenyi HCIV was obtained from Kampala Capital City Authority (KCCA) on 6 February 2024. The management of MNU approved the study on 20 March 2024. Before respondents were involved in the study, verbal consent was obtained. Information collected from the respondents was kept private and confidential.

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Results

Figure 1: Participant flow diagram



Sociodemographic characteristics of caregivers

A total of 120 individuals participated in the study, 71(59.2%) from MNU and 49 (40.8%) from Kisenyi HC IV. The majority of the respondents were females (94.2%), and the mean age of the respondents was 29.2 (SD ± 8.9) years. Only 9.2% reported not having attained any formal education, 39.2% had attained primary education, 45.0% had reached secondary level, while only 6.6% reported having gone to tertiary institutions. (Table 1).

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Table 1: Sociodemographic characteristics of caregivers

Variable	Frequency (N=120)	Percentage (%)
Hospital name		
MNU	71	59.2
Kisenyi HCIV	49	40.8
Gender		
Female	113	94.2
Male	7	5.8
Age of caregiver (years)		
15-29	71	59.2
30-44	44	36.7
45-59	4	3.3
60+	1	0.8
Marital status		
Single	27	22.5
Married / cohabiting	83	69.2
Divorced/separated	10	8.3
Widowed	0	0.0
Education status		
No formal	11	9.2
Primary	47	39.2
Secondary	54	45.0
Tertiary	8	6.6
Occupation		
Formal employment	12	10.0
Not employed	75	62.5
Others	33	27.5
Monthly salary (USD)		
> 49	26	57.8
≤ 49	19	42.2

Knowledge on Food Hygiene

The majority of respondents (90.8%) had a poor level of knowledge on food hygiene. Many (94.2%) of the respondents stated that the importance of preparing safe food was to protect children from food-borne illnesses. Only 31 (25.8%) of the respondents knew that leftover food should be kept for two hours before serving/eating it if kept at room temperature, while the majority (72.5%) knew that leftover food had to be stored for a full day before eating it if stored at room temperature. About half of the 66 (55.0%) respondents reported having ever had a health education session on food hygiene (Table 2).

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Table 2: Food hygiene knowledge of caregivers

Variable	Frequency (N = 120)	Percentage (%)
Importance of preparing safe food		
To ensure that the food is delicious	7	5.8
To protect children from foodborne illnesses	113	94.2
***When someone is supposed to wash hands**		
After visiting the toilet.	116	96.7
After coughing or sneezing	10	8.3
After disposing of waste	44	36.7
Before preparing food	59	49.2
***How leftover food should be stored**		
In a container without a cover	1	0.8
In a container with a cover	118	98.3
In refrigerator	8	6.7
How long should leftover food be kept before eating if stored at room temperature		
2 hours	31	25.8
1 day	87	72.5
More than 1 day	2	1.7
***What can make food unsafe**		
Chemicals	44	36.7
Physical objects like dust, hair	92	76.7
Micro-organisms	91	75.8
***Signs and symptoms of the foodborne illnesses**		
Vomiting	61	50.8
Diarrhoea	98	81.7
Headache	2	1.7
Stomach ache	46	38.3
Fever	12	10.0
*** Long-term effects of unsafe food**		
Diarrhoea	100	83.3
Malnutrition	76	63.3
Death	60	50.0
Ever had a health education session on food hygiene		
Yes	66	55.0
No	54	45.0
***If yes, from (n=66)**		
Health facility	34	63.0
Radio	1	1.9
Television	4	7.4
Friends	1	1.9
Community Health Workers	3	5.6
Others (school, relatives)	15	27.8
***If you received information from a health facility, when was it given? (n=34)**		
During antenatal care	2	5.9
During immunization services	19	55.9
Treatment of malnutrition	14	41.2

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Practices on Food hygiene

The majority (82.5%) of respondents had good self-reported practices on food hygiene. Many (81.7%) reported always washing their hands with soap and water after visiting the toilet, and no one reported not washing their hands. Less than half (42.5%) reported feeding their children on leftover food, and of the 49 who kept leftover food at room temperature, 63.3% served the baby food after two hours. Almost all the respondents reported always treating their water before drinking (Table 3).

Table 3: Food hygiene practices of caregivers

Variable	Frequency (N = 120)	Percentage (%)
Washed hands with soap and water after using the latrine/toilet		
Always		
Sometimes	98	81.7
Never	22	18.3
	0	0.0
Washed hands with soap and water before preparing food		
Always	96	80.0
Sometimes	24	20.0
Never	0	0.0
Served child leftover food		
Always	22	18.3
Sometimes	29	24.2
Never	69	57.5
***How leftover food was stored (n=51)**		
In a container with a cover at room temperature	49	96.1
In a container in the refrigerator	5	9.8
If keep leftover food at room temperature, duration before serving it to baby (n=49)		
Within 2 hours	18	36.7
Beyond 2 hours	31	63.3
Served his/her child food on utensils that have already been used.		
Always		
Sometimes	13	10.8
Never	4	3.4
	103	85.8
Treated water before drinking it		
Always	116	96.7
Sometimes	4	3.3
Never	0	0.0
***Method used to treat your drinking water.**		
Boiling	117	97.5
Filtration	20	16.7

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Discussion

This study was carried out to determine the knowledge and food hygiene practices of caregivers of malnourished children. The results indicate that the majority of respondents had poor food hygiene knowledge but good self-reported practices. Many respondents were female, and this could be because women are seen as the primary caretakers of children and usually the ones who take the children to health facilities. (Zyoud et al., 2019). Similar results were reported by Zyoud et al. (2019) and Achiro et al. (2023), who noted having more female respondents compared to males. This means that since females are the ones who are usually involved in bringing children to health facilities, the interventions should be gender sensitive, targeting mostly women.

Overall, the majority of the respondents had poor food hygiene knowledge. The above findings are contrary to those reported by (Achiro et al., 2023; Meysenburg et al., 2014), which reported good food hygiene knowledge among respondents. This difference might be because of differences in the questions used to assess knowledge, the time of the study, and differences in study respondents (these studies did not interview caregivers with malnourished children). Almost all the respondents noted that the importance of preparing safe food is to prevent food-borne illnesses, and similar findings were shown by Achiro et al (Achiro et al., 2023). The majority knew the critical handwashing points, and this was also found by Obande et al. (Obande et al., 2023), who showed a high level of knowledge about handwashing. This implies that people have come to appreciate certain aspects of food hygiene, such as the importance of handwashing.

The majority (74.2%) of respondents did not know the recommended time (two hours) leftover cooked food should be kept at room temperature before being eaten or refrigerated. (WECHU) and (USDA, 2020). Similar results were reported by Obande et al. (Obande et al., 2023), who reported lower prevalence of time-temperature control knowledge in lower-income countries. This finding is rather inconsistent with what Meysenburg et al. (Meysenburg et al., 2014) found, where only 9.7% of the respondents in the study did not know the recommended time. The United States Department of Agriculture (USDA) advises that cooked food should not be left out at room temperature (or the danger zone of 4 – 600C) for more than 2 hours, but should be refrigerated or kept hot. Within the danger zone, bacteria grow rapidly and could cause foodborne illnesses. (USDA, 2020). Caregivers should therefore be educated about the storage of leftover food so that they do not serve this food to their children, as this may bring about diarrhoea, which may worsen the child's nutritional status.

Only 63.3% knew that foodborne illnesses could result in malnutrition, and 50% knew that they could result in death. According to the authors, this is the first study where caregivers were asked about malnutrition being an effect of foodborne illnesses. Since almost half of the respondents did not know that malnutrition and death could result from foodborne illnesses, they may be reluctant to put in place proper food hygiene measures to avoid these adverse effects. Therefore, health workers need to educate the caregivers about the effects of poor food hygiene practices.

When asked about their sources of food hygiene information, the majority of the respondents said they received information from the health facilities. This finding corresponds with what Achiro et al. (2023) reported: the majority of the respondents received food safety knowledge at health facilities, especially during antenatal care. However, these caregivers could not state the correct time leftover food should be stored at room temperature, and this could mean that the health education talks may not have addressed the issue of leftover food storage. Therefore, health care providers should talk about safe food storage durations and risks of storing leftovers for long periods during health education sessions. In this study, we did not ask caregivers about the food hygiene topics that were covered, but this could be an area of investigation where researchers look into the different topics and content that are covered in the health education sessions.

Mariana Rocha and colleagues (Rocha et al., 2025) stated that health care workers, especially nurses, play an important role in preventing foodborne illnesses through health education, and this is because patients find their information trustworthy. However, some researchers (Chen et al., 2020), (Eslami et al., 2022) and (Guennouni et al., 2022) noted that some of the healthcare workers are not confident in their food hygiene knowledge. Chen and colleagues (Chen et al., 2020) also reported that less than half of the health workers provided food hygiene education to their patients due to a number of barriers, which included time and patients' attitudes. In our study, we did not interview healthcare workers concerning their knowledge levels and barriers. Food hygiene knowledge of healthcare providers and barriers hindering health education have to be investigated further so that gaps in knowledge are identified and targeted solutions made. The above findings show that caregivers have basic knowledge about food hygiene; they

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know the importance of preparing safe food and the critical handwashing times, but do not know much about the effects of food-borne illnesses and the storage (time and temperature) of leftover food. This basic knowledge may not be sufficient to bring about behaviour change. The caregivers also need to be educated about the grave effects of food-borne illnesses so that they understand the gravity of their actions.

The results from our study show that the majority of the respondents had good self-reported practices, and this aligns with findings from (La et al., 2023) and (Zyoud et al., 2019) but contradicts (Achiro et al., 2023). However, it is important to note that this study and those done by La and Zyoud are based on self-reported data; however, Achiro and colleagues used in-depth interviews to get more information about the practices of the caregivers. It has been noted that there is usually a big difference between self-reported and observed studies. (Dharod et al., 2007) and (Chidziwisano et al., 2020) due to the respondents' desire to associate with socially desirable practices. It is therefore important to carry out further studies that compare self-reported and observed food hygiene practices of these caregivers to see whether what they say is what they actually do.

The majority of respondents reported washing their hands after visiting the latrine, and similar results were reported by Achiro et al. (Achiro et al., 2023). The similarity in results suggests a generally high level of awareness regarding the importance of handwashing. However, these results contradict what Byamukama (2019) reported in his study. A key difference in these studies lies in the methodology. While the present study and that of Unlike this study and that conducted by (Achiro et al., 2023) relied on self-reported data, (Byamukama, 2019) observed the handwashing practices of the caregivers. Handwashing is a critical aspect in preventing foodborne illnesses; hence, the handwashing practices of the caregivers need to be studied further to prove whether what they report is actually practised.

It is important to note that 81.7% of the caregivers reported serving their children leftover food, and yet the majority served it beyond the recommended 2 hours. Beyond 2 hours, food should be refrigerated immediately to prevent the growth of microbes that could cause foodborne illnesses. (USDA, 2020). Studies by Cho et al. 2020) and Aloysius et al. 2025) also reported a high consumption of leftover food left at room temperature. These findings, however, are contrary to those reported by Zyoud et al. (Zyoud et al., 2019) which found a lower prevalence of consuming leftover food that had been left at room temperature. The difference in findings may be attributed to differences in population characteristics and study designs. The aspect of time and temperature when it comes to the storage of leftover food has to be incorporated into the health education sessions so that caregivers can understand how to keep leftover food at safe temperatures. Only 5 out of 51 who said they served leftover food stored it in refrigerators. This could be due to economic constraints, especially since the majority said they earned between 0 and 194 USD per month. This makes it hard for these caregivers to buy a refrigerator, which is a luxury and not a necessity.

Study strengths and limitations

The findings of this study provide important insights into food hygiene knowledge and practices of caregivers of malnourished children in Uganda. However, these findings may not be generalizable to the entire population. The final sample size was smaller than the initially calculated one due to the availability of participants during the study period. This was a cross-sectional study, and therefore, food safety practices cannot be linked to diarrhoea and malnutrition. This study also lacked a qualitative component that could have contributed to the depth of the results.

Conclusion

The results show that caregivers of malnourished children have limited knowledge regarding food hygiene despite generally reporting good practices. While many are aware of the basic food hygiene measures such as handwashing and covering food, gaps remain in critical areas such as safe handling of leftover food. This calls for education of caregivers on minimizing the use of leftover food and reheating food to appropriate and safe temperatures before feeding the child in order to reduce the risk of foodborne illnesses among children with malnutrition.

Recommendations

To Ministry of Health

1. Develop more Information, Education and Communication (IEC) materials about food hygiene and health education manuals for health workers incorporating messages such as leftover food storage.
2. Develop audio-visuals such as videos that talk about the effects of poor food hygiene practices, including storage of leftover food. These videos

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could be broadcast on television stations or shown to caregivers at health facilities.

To MNU and Kisenyi HCIV

1. Health workers should educate caregivers about the safe use of leftover food.
2. Health workers should educate mothers about signs, symptoms, and effects of foodborne illnesses.
3. Work closely with VHTs where the caregivers whose children have been discharged reside so that follow-up can be done.

To VHTs

1. Engage caregivers on food hygiene during their routine home visits.
2. Form peer groups, especially comprising mothers of young children, and promote discussions of food hygiene.

To caregivers

1. Minimize serving children leftover food as much as possible.
2. Reheat leftover food to appropriate temperatures before serving their children.

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Author contributions

JN designed the study, conducted data collection, cleaned and analysed the data, and wrote the draft of the manuscript. AWW and SK supervised all stages of research from conceptualization to writing the manuscript. DM provided mentorship as well as reviewed the manuscript.

Author biographies

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The authors declare no conflict of interest.

Data availability
Data will be available on request to the corresponding author.

Abbreviations and acronyms

E.coli	*Escherichia coli*
HC	Health Centre
ITC	In-patient Therapeutic Care
KCCA	Kampala Capital City Authority
KII	Key Informant Interview
LMICs	Low- and Middle-Income Countries
MAM	Moderate Acute Malnutrition
MNU	Mwanamugimu Nutrition Unit
MoH	Ministry of Health
OPD	Out-Patient Department
OTC	Outpatient Therapeutic Care
SAM	Severe Acute Malnutrition
SDG	Sustainable Development Goal
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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