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Caregivers' perceptions of factors influencing undernutrition among under five in Ubungo, Dar es Salaam, Tanzania

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Abstract

Background Undernutrition in children is predominantly linked to lack of a balanced diet resulting from inadequate nutrition intake. This form of malnutrition remains a leading cause of morbidity and mortality under-five children, especially prevalent in low-income countries. Understanding the specific factors contributing to undernutrition among this group, particularly those associated with caregivers, is vital yet insufficiently explored. Therefore, this study aimed to investigate and evaluate caregivers' perceptions regarding the factors influencing under-nutrition among children under-five in Ubungo, Dar es Salaam, Tanzania.

Methods A qualitative study was conducted at Sinza Palestina Hospital in Ubungo Municipal Council, Dar es Salaam, from January 2019 to December 2019. In-depth interviews were carried out with caregivers of undernourished children to explore their thoughts, perceptions, and views on the factors contributing to under-nutrition among this demographic. A semi-structured interview guide facilitated data collection, allowing for comprehensive exploration. Recorded data underwent transcription. And thematic content analysis was utilized to identify caregivers' perceptions and views, highlighting codes and subcategories that represented factors influencing under-nutrition. A total of 26 participants were purposefully selected among caregivers who provided consent during the study period was included.

Results The study revealed several primary factors contributing to under-nutrition among under-five children. Among these, poor adherences to WHO recommended feeding practices by caregivers, exacerbated by poverty resulting from low monthly income. This economic limitation impeded families' ability to provide essential nutritious foods for their children. Additionally, limited time available for childcare emerged as main factors contributed to under-nutrition. Notably, while caregivers exhibited a good understanding of malnutrition and its causes, their perceptions did not align with WHO definition of under-nutrition.

Conclusion Addressing nutrition among under five children necessitates comprehensive support for caregivers, including economic empowerment and education on WHO-recommended feeding practices. Encouraging adherence to these practices is vital. Additionally, care givers should allocate sufficient time for breastfeeding and preparing complementary food for their children.

Keywords Undernutrition, Under-Five Children, Feeding Practices, Dar es Salaam, Tanzania, Child Malnutrition, Stunting, Wasting, Underweight

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Introduction

Undernutrition remains a significant global public health concern, particularly affecting children under five years old [1]. In 2017, globally, an estimated 162 million children under five were affected by undernutrition, with 99 million underweight and 51 million wasted [2], contributing to 41% of under-five deaths, equivalent to 2.3 million children in the worldwide [3].

According to a 2022 report by UNICEF and WHO, 23.3% of all children under-five were stunted, 45 million were wasted, and 35 million were overweight globally [4]. This challenge is most prevalent in developing nations, particularly in Africa and Asia, where over 90% of stunted children reside [5] with distribution rates of 40% in Africa and 39% in Asia [6]. Among these, 80% live in just fourteen countries, including Tanzania [7]. In Africa, 32.2% of under-five children suffer from stunting, 5.2% overweight and 7.4% are wasted [8]. Undernutrition in children is categorized based on three nutritional indicators: stunting, wasting, and underweight [9]. In Tanzania also, undernutrition, manifested as stunting, underweight, and wasting, continues to be a critical issue among children under-five years. Statistics from 2016 estimated that about 42% of children were stunted, 16% were underweight and 5% were wasted [10, 11]. The implication of childhood malnutrition are extensive, impacting not only survival but also long term well-being, human capital, economic productivity, and national development [12].

Despite of these concerns, regional disparities persist, with varied rates of undernutrition across Tanzania. For instance, the prevalence ranges from 15% in Dar es Salaam to 56% in Rukwa. [13, 14]. Consequently, addressing the issue of malnutrition should be a significant priority for policy makers in Tanzania [15].

There are factors contributing to undernutrition among children under-five, including inadequate diet, water supply, hygiene, sanitation practices, maternal nutrition, low birth weight, and susceptibility to infections like acute respiratory infection, urinary tract infections, diarrhea and malaria [16–18].

Malnutrition refers to deficiencies, excesses, or imbalance in a child's intake of energy and nutrients and it includes undernutrition, micronutrient related malnutrition and overweight or obesity of child [19]. Malnutrition in under-fives not only leads to mortality and morbidity but also leads to physical and mental impairments [20]. Prolonged states of malnourishment impact physical growth, cognitive ability, school performance, behavioral aspects, diseases susceptibility, reproductive health and economic productivity [21, 22].

Caregivers, primarily parents or family members, play a vital role in shaping children's nutritional practices, feeding habits and overall well-being. They have a significant

role in ensuring children have access to nutritious foods and well protected from any form of malnutrition and under nutrition [23]. Linking malnutrition to its epidemiological causes and caregivers' perception for under-five children involves understanding various factors contribute to malnutrition and perceptions of caregivers to respond to the factors [24, 25].

Malnutrition children are at greater risk of infection and diseases due to poor immune function, and a large percentage of malnourished children experience frequent sickness and hospitalization [26]. Understanding caregivers' perception, belief, and experiences regarding undernutrition is crucial as they are primarily influencer of children's nutrition related decisions [27].

Numerous strategies and programs aimed at addressing undernutrition among under-five years have been implemented both at internationally and in Tanzania. These programs include education on hygiene, feeding patterns, required nutritious foods for child development, general childcare, and vaccination [28]. However, despite these efforts, undernutrition persists, necessitating a deeper understanding of associated factors, particularly those related to caregivers who play a pivotal role in child health and development [26, 27].

While various studies explored the epidemiology and causes of undernutrition among children under-five in Tanzania, there remains a research gap concerning caregivers' perceptions such as awareness, feeding practices, cultural belief, and perceived causes of undernutrition [29–31]. Investigating these perceptions can provide crucial insights into challenges, cultural beliefs, feeding practices, and barriers to accessing proper nutrition for under-five children [31]. Incorporating these insights into program planning and policy formulation can be tailored interventions to address community-specific challenges, enhancing their effectiveness and acceptability.

Therefore, this study aims to explore and assess caregivers' feeding practices, knowledge and awareness, cultural belief and practices, and economic constraints influencing undernutrition among under-five years in Ubungo District in Dar es Salaam. The findings will inform the Ministry of Health, nutritional officers and policy makers about caregiver-related factors contributing undernutrition among under-fives in Tanzania.

Methods and materials

Study design

The study used a cross-sectional study design to qualitative research approach. In-depth interviews (IDIs) were conducted among caregivers using semi-structured interview guides to explore their understanding and perceptions of childcare, nutrition, feeding practices, and the impact of undernutrition. The flexibility of this

method allowed for probing and gathering information until reaching the saturation point (where no new information emerged).

Study area

The study was conducted at Sinza Palestina Hospital in Ubungo Municipal, Dar es Salaam Region. Ubungo is one of the 5 districts within Dar es Salaam, situated in its western part. Formerly part of the Kinondoni District, Ubungo Municipal, as per the National Bureau of Statistics (2012), has a larger population (1.7 million) compared to Temeke (1.3 million) and Ilala (1.2 million). Ubungo Municipal was selected due to a previous study conducted at Bugando medical center, which reported high rates of undernutrition (55.8%), stunting (54.3%), underweight (23.3%), and wasting (3.7%) in this area [29]. The municipality's high population density offers potential diversity among study participants.

Study participants

Purposive sampling targeted caregivers attending the Reproductive and Child Health Clinic at Sinza Palestina Hospital were selected. Inclusion criteria included caregivers of under-five children admitted for nutritional counseling and treatment during the study period, aged 18 years and above. A total of 26 in-depth interviews were conducted with caregivers who were attending the hospital, utilizing the semi structured interview guide. Interviews were audio-recorded and transcribed with the permission of the respondents.

Operational definition

Undernutrition

Undernutrition for underfive children can be operationally defined using several key indicators that assess different aspects of child's nutritional status. The most common ones are stunting, wasting and underweight.

Stunting

Stunting underfive children refers to low height-for age, indicating chronic malnutrition.

Wasting

Wasting underfive children refers to low weight-for-height, indicating acute malnutrition.

Underweight

Underweight for underfive children refers to low weight-for-age, which can indicate both acute and chronic malnutrition.

Proper breastfeeding technique

Proper breastfeeding technique refers to initiating breastfeeding within the first hour of birth, exclusive breastfeeding, positioning baby to mother, frequency, and duration of breast feeding.

Appropriate pre-lactating feeding practices

This refers to the recommended and safe feeding behaviors given to newborn before the initiation of breastfeeding within the first few hours after birth.

Data collection

Before data collection, we prepared semi-structured questions that can answer our research questions according to scholar Boyce 2006 [32]. Then, we conducted in-depth interviews, lasting approximately 15 to 40 min each, which were conducted in Swahili by the primary researchers and assistants, in a suitable environment such as free from noise, with comfortable seating, and private within the hospital. Nurse staff working outpatient departments were used to collect data to reduce potential biases during data collection. Besides, socio-demographic data was collected during interviews. Consent forms were signed by participants before data collection, and interview venues were chosen by participants. A pretest of the interview guide was conducted among 3 participants, 2 females and 1 male at Mwananyamala Referral Hospital in Kinondoni Municipality, a location with a population like our sampling population in Ubungo District. During the pretest, we identified several questions that required revision for clarity and relevance. As a result, some questions were modified to better align with the study objectives, and a few questions were removed entirely due to redundancy or lack of pertinence. All participants participated voluntarily, and no incentives were given to their participation.

Data management and Analysis

Data was managed by recording the interviews, transcribing them, organizing the transcripts, and regularly backing up files to prevent loss. The transcripts were read and re-read the transcript multiple times, with key points. Then, data analyzed using the following steps including familiarization with data, generating initial codes, integration of codes into descriptive themes, synthesis of descriptive themes into analytical themes and report writing [33]. During the analysis, the following themes and sub themes were identified such as participant knowledge on under nutrition, caring practices,

economic factors including under nutrition, caregiver condition during and after delivery.

Ethical consideration

Ethical approval was obtained from the Muhimbili University of Health and Allied Sciences ethical review committee with the reference number (Ref.No.HD/MUH/T.543/2017). Permissions were acquired from all appropriate authorities starting from the Regional Administrative Secretary (RAS), and District Executive Director (DED) for Ubungo. Also, permission was requested by the District Medical Officer in charge, who recommended permission to hospital authorities to participate in data collected. Written consent was obtained from each caregiver who participated in the study. Voluntary participation was encouraged, and the participants were assured of confidentiality. Privacy and confidentiality were highly maintained by avoiding unauthorized people from accessing study information. Anonymity was maintained by using the participant's identity and no name of the participants was recorded during the interview. Prior to consenting, details including purpose of the study and associated benefits were clearly explained to the study participants. All audio interviews and transcripts were saved in a password-protected computer to avoid access from unauthorized personnel. Participants were assured that there was no possibility of harm due to their participation in this study, including any impact on the care they received at the hospital.

Results

Socio demographic characteristics of the caregiver's

A total of 26 caregivers of children under-age of five participated in in-depth interviews. Most of the age composition of caregivers were 26–31 years and caring for children less than 12 months of age. Out of the twenty-six participants interviewed, twenty-one were married, and the average family size was between four to five members.

The educational background of the caregivers varied: 14 had received primary education, while 8 had completed secondary education. Household populations ranged from 1–3 members for 13 participants, 4 to 5 members for 7 participants, and 6 or more for 6 participants. Most of the participants were female only one was a male caregiver. There were seventeen female children and nine male children among participants, as indicated in the Table 1.

Caregivers' education level in relation to understanding of under-five nutrition

The findings indicated that older caregivers had better perceptions of the factors influencing undernutrition

Table 1 Demographic Characteristics of the study participants ($n = 26$)

Characteristics	Number	%
Age of the participants		
26–30 years	15	57.7
31–35 years	11	42.3
Sex of caregivers		
Male	1	3.8
Female	25	96.2
Marital Status		
Married	21	80.8
Single	5	19.2
Education Status of caregivers		
Primary education	14	53.8
Secondary education	8	30.8
Diploma and above	4	15.4
Total Household population		
1–3 Members	13	50
4–5 Members	7	26.9
6 and above members	6	23.1
Caregivers' income		
Income of less than 100000 Tsh per months	11	42.3
Income between 100000 Tsh and 500000 Tsh per months	8	30.8
Income of greater than 500000 Tsh per months	7	26.9

among under-five children, resulting in healthier compared to younger caregivers. Caregivers with secondary education and higher demonstrated better knowledge of the importance of breastfeeding practices. There was a high number of malnourished under-five children observed such as stunting, wasting and underweight among under-five in the care of single caregivers compared to those who were married. Families with four to five children had more instances of under-fives with malnutrition compared to families with one to three members. Caregivers with primary education had a higher number of children experiencing malnutrition compared to those with secondary education or higher.

Most caregivers had a monthly income of less than 100,000 Tsh (Tanzanian Shilling). Eleven caregivers fell into this category, while eight reported an income ranging between 100,000 Tsh and 500,000 Tsh per month. Seven caregivers reported an income exceeding 500000 Tsh per month (Table 1).

Caregiver's economic status impacting nutrition status among under-five years

The study found that caregivers earning less than 100,000 Tsh per month perceived that the undernutrition status of their children was influenced by financial constraints.

Specifically, they expressed difficulty affording nutritious food for them, which in turn affected their ability to engage in pre-lacteal feeding to produce adequate mother's milk and provide nourishing foods for their babies. This sentiment is quoted below:

"Financial hardship is a major factor contributing to undernutrition for my child. Because children need a variety of food, kinds of stuff such as multivitamins flour which is good for the health of the baby. But you find even getting food for all members of the family is difficult, let alone ensuring that the child gets on a balanced diet. I think the economic status of most parents contributes towards malnourished conditions for our children." (Caregiver with financial problems).

"Financial hardship is a very serious problem causing undernutrition among under-fives years of age children's, the problem is very severe especially for a housewife like me, who depend on everything from my husband, you only wait for what, you husband gives, in this case, you can't afford buying pre lacteal foods for producing mothers milk and that, multivitamin flours for making child looks healthier." (Caregiver with financial challenges)

Caring practices of under-fives

Most caregivers were found not to be practicing proper breastfeeding techniques with their children. This could be attributed to several reasons mentioned by caregivers, including the unstable health condition of the caregivers, such as eclampsia, postpartum hemorrhage, high blood pressure, and the HIV status of the mother. Consequently, the compromised health condition of the expectant mothers, along with complications during delivery, has been identified as contributing to inadequate feeding of newborns after birth. This is evident as shown on the quotes below from different participants:

"I did not immediately breastfeed my child after delivery because I had a problem of eclampsia, therefore, nurses had to ensure my condition is back to normal, so after one week, then I started to breastfeed my child" (Caregiver who experienced eclampsia).

"I was bleeding too much, and I was feeling very bad, so I could not breastfeed my baby soon after delivery. Nurses said that, until bleeding stops, and then will bring my baby for breastfeeding my child" (Caregiver experienced with post hemorrhage problem).

"I did not immediately start breastfeeding my baby after delivery, because, I had a problem of high blood pressure, therefore, nurses needed to ensure my pressure is back to normal before they could give my

baby. Due to pressure, I was feeling a headache most of the time" (Caregiver who experienced hypertension).

"I could not breastfeed my baby soon after delivery, because of my HIV status, therefore nurses had to ensure, I and my baby get started with ARV dose to prevent HIV vertical transmission from mother to child" (Caregiver with HIV).

Pre-lacteal feeding practices

A significant number of caregivers reported not following appropriate pre-lacteal feeding practices, leading to reduced milk secretion from the breast. Caregivers who practiced inadequate pre-lacteal feeding observed severe malnutrition in their infants, alongside difficulties in milk production. Those who utilized pre-lacteal feeding acknowledge its importance in stimulating increased milk production, suggesting that nutrients in these pre-lacteal foods stimulate breast nipple cells, thereby facilitating more milk production. This, in turn ensures a steady availability of breast milk and helps alleviate undernutrition issues arising from insufficient breast milk production among children under five.

The quote below explains the effect of poor adherence to advised food for lactating mothers and its effects on milk production:

"I have used pre-lacteal feeding which is not recommended for milk production; this is the reason why milk is not coming out properly" (Caregiver with milk secretion problem).

Benefits of exclusive breastfeeding in malnutrition among under-five children

Some of the study participants practiced exclusively breastfeeding, as advised by healthcare professionals, to reduce malnutrition among under-five children. Participants with children under 2 years old continued breastfeeding to mitigate malnutrition as quoted below:

"I have been encouraged to practice exclusive breast feeding of my children by health care provider and counselors as the best ways to reduce the problem of malnutrition among under-five years of age." (Caregiver with milk secretion problem).

Caregivers' perception about malnutrition and its causes

The majority of caregivers reported different perceptions on the concept of malnutrition based on their understanding. Generally, the participants are aware of what malnutrition is, and they all try to define it according to individual perceptions. However, none of the caregivers knew how to define malnutrition as per the WHO definition.

Mothers' conditions during and after delivery were identified as contributing factors to malnutrition among children under five. The major causes of malnutrition among this age group included parents being too busy to properly care for the baby, lack of a balanced diet, children's lack of appetite, frequency of illness, short interval between pregnancies, poor economic situations of parent, insufficient milk production, babies' inability to suckle, lack of proper feeding schedules, and not adhering to exclusively breastfeeding.

Attending clinics during the pre- and post-natal periods was also linked to the impact of malnutrition. Below are quotes representing caregivers' perception of their understanding of malnutrition and its causes:

"Malnutrition is lack of proper growth, weight decrease, lack of food, children with poor health status, lack of balanced diet, and improper breastfeeding." (Caregiver with different perceptions about malnutrition).

"The major causes for malnutrition among under-fives years of age were busy of the parents, poor caring of the baby, lack of balanced diet food among caregivers/mothers and lack of appetite among children's, no proper eating timetable for babies and poor adherence to exclusive breastfeeding." (Caregiver with malnutrition child)

"..... because of high blood pressure during delivery, I was not given my baby right away for breastfeeding and I think, this could be the reason for my baby to suffer from malnourishment." (Caregiver with hypertension).

Additionally, immunization among young children was then connected with prevention of malnutrition among under five children. Participants also reported that immunizing their children at Palestine health care centers was due to the importance of immunization in preventing diseases and reducing the incidence of malnutrition among under-fives:

"My children's have been immunized with different immunization as one way to fight other non-communicable diseases, including malnutrition after being counselled by health care providers on the importance of immunization for the prevention of diseases and reducing the problems of malnutrition among under-fives years of age." (Caregiver with milk secretion problem).

Caregiver responses after children being diagnosed with malnutrition

Caregivers have different perceptions and reactions after their children are diagnosed with malnutrition. These

include various approaches such as establishing proper feeding times and incorporating nutritious foods. Importantly, caregivers often seek medical advice from health-care providers like doctors and nurses, as indicated by the quote below:

"When my child gets malnutrition, the first thing I do is to seek medical advice from nurses and doctors on the best way to treat the condition, as this is very important because they will advise me on the proper eating timetable and formula for my child, the foods not recommended for under five of certain age group and proper medicine to use." (Caregiver with knowledge of medical advice as important mechanism to prevent malnutrition).

Perceptions on the importance of breast milk

Participants emphasized that breast milk is crucial for babies, providing protection against diseases, supporting brain development, boosting the immune system, increasing strength, improving weight and overall health.

"... breast milk is important in protection from diseases, brain development and boosting of the child body immunity." (Caregiver with knowledge of breastfeeding).

Additionally, some suggested that separating children's meals from adults' food could help reduce malnutrition after weaning. This approach allows better monitoring of a child's food intake. One participant remarked. The quotes below indicate participant perception on prevention of malnutrition:

, "Feeding babies alone on a separate plate is better than feeding on the same plate with an adult, because, feeding on a separate plate is easy to monitor the amount of food consumed by the baby and rectify accordingly, as the way to prevent malnutrition among under-five years of age children." (Caregiver with perception of feeding alone as way of preventing malnutrition).

Discussion

Our study explored insight into the caregivers' perceptions of factors contributing to undernutrition among children under-five in Ubungo, Dar es Salaam, Tanzania. The diverse perceptions and their implications offer a fresh perspective on the complex interplay between sociodemographic, educational, and economic factors impacting child nutrition.

Caregivers significantly influence their children's health. Older caregivers and those who are married exhibited a positive perception regarding factors affecting undernutrition in under-five. This correlation may

relate to their level of maturity and understanding of child health's significance. Additionally, comprehension of the support system plays a significant role in the nutritional status of under-five children. The study indicates that married caregivers generally possess a better perception of these factors.

Notably, caregivers with secondary education or higher have greater knowledge of the significance of breastfeeding practices (Table 1). This aligns with findings from other studies from Africa and other parts of world, which underscore how educational attainment among caregivers positively impacts children's nutritional outcomes [34–36].

Contrary to traditional African preference for larger family sizes for perceived security and support, our study suggests that children larger families face a greater risk of malnutrition compared to those in smaller families [37]. This shift in understanding may reflect resource constraints and the increased burden on caregivers in larger households, impacting their ability to provide adequate nutrition.

Gender roles and societal expectations also play a role, with women primarily shouldering on caregivers' responsibilities. However, men are often viewed as breadwinners, upon whom their wives heavily rely to provide nutritious food to younger children [38]. The finding aligns with the study and is supported by the different literature resources, which present the effects of malnutrition according to socio-demographic factors [39, 40].

Monthly income among caregivers impacts food consumption for young children and lactating mothers, affecting their access to nutritious foods. Economic factors emerged as crucial contributors to undernutrition among children under-fives. The study revealed that many caregivers faced financial difficulties due to low monthly income, limiting access to high-quality nutritious foods. This resonates with findings in other studies where poverty affected caregivers' ability to provide nutritious foods for children and impacted pre-lacteal feeding. Poverty influence extends childcare, leading to a higher prevalence of [41, 42]. Therefore, the findings of this study suggest that a high per capita income among caregivers could potentially improve complementary feeding practices and access to high-quality and nutritious foods and ultimately reduce the proportions of under-five with undernutrition.

However, the study also uncovered minimal caregiver understanding of malnutrition based on the WHO definition [43]. Caregivers' perception of malnutrition relies on information from healthcare providers and includes aspects like inadequate growth, weight loss, insufficient food, poor health imbalanced diets,

improper breastfeeding, and lack of appetite. Despite this vague understanding, caregivers' perceptions generally align with WHO's definitions.

Moreover, this study's findings, similar to research in Zambia, highlight poor practices in urban areas such as inadequate dietary intake and reliance on unbalanced food [43, 44].

Understanding the causes of malnutrition among children under-five caregivers is pivotal in improving their nutritional status. However, solely relying on understanding is not sufficient, economic opportunities are also crucial in providing nutritious food for both child and mother.

The study revealed caregivers' insufficient knowledge of malnutrition, with cited reasons including parental busyness, inadequate care, imbalance diet, children's lack of appetite, diseases, frequent fever, short intervals between pregnancies, poor economic situations, insufficient milk, and improper breastfeeding practices [44].

Similarly, caregivers perceived insufficient breast milk production, an imbalanced diet, stress, the child's inability to suckle, poor diet among lactating mothers, and lack of foods as factors contributing to undernutrition among children five at Sinza Palestina Hospital in Dar es Salaam.

These findings align with other similar to previous studies associating inadequate and poor feeding with severe acute malnutrition and under-five deaths, specifically when combined with diarrhea and other infectious [44, 45].

Concerning pre-lacteals feeding, inadequate knowledge among mothers was identified as a significant issue leading to milk secretion problems. Proper pre-lacteal feedings post-delivery aid in stimulating breast milk production and contributes to the baby's initial immune development. Similar findings were also reported by other researchers [46–48].

The findings from this study, concur with the previous study which revealed that inadequate knowledge of nutrition can worsen child-feeding practices [49].

Use of proper pre-lacteal feeding to boost milk production immediately after delivery ensures baby gets first initial milk which is good for the immune development of the body.

To reduce bias, the researcher continued sampling until saturation was reached, where no new themes or information emerged. The researcher tried to reflect the values, beliefs, and opinions of participants. We spent sufficient time in the research setting to build trust and rapport with participants, leading to more genuine and accurate data.

Strengths and limitations of the study

Strengths

1. In-depth exploration: This study utilized in-depth interviews, allowing for comprehensive insights into perceptions and practices of caregivers regarding undernutrition in children under-five.
2. Diverse participant pool: The study included a diverse range of caregivers, considering factors such as age, marital status, education level, household size, and income. This diversity potentially offers broader perspective on the issue.
3. Context-specific insights: We conducted study in Ubungo District, Dar es Salaam, the study provides context-specific that are highly relevant to local policymakers and health practitioners.
4. Practical implications: the study recommendation, such as the importance of proper pre-lacteal feeding and the significance of economic factors in nutritional outcomes, could have practical implications for healthcare providers and policy makers.

Limitations

1. Diverse population: Having diverse participants brings a wide range of perspectives, experiences, and cultural background, making data analysis more complex. Identify common themes and draw meaningful conclusions due to high variability in response.
2. Potential bias: the information collected heavily relies on self-reported data from the caregivers, which might be subjected to recall bias or social desirability bias. Impacting the accuracy and reliability of responses.
3. Limited generalizability: While in-depth interviews provide rich data but limited to only this population. Thus, it might be challenging to extrapolate these findings to a larger population.

Conclusion

This study provides an in-depth understanding of caregivers' perceptions regarding the factors influencing undernutrition among children under-five in Ubungo, Dar es Salaam, Tanzania. The finding highlights the multifaceted nature of undernutrition, influenced by socio-demographic factors, educational, economic constraints, and caregivers' practices in influencing undernutrition among children under-fives. The study found that children were not fed according to WHO recommendations. The study revealed that older, married, and more educated caregivers exhibited better

understanding and practices regarding undernutrition, highlighting the importance of these factors in shaping child health outcomes.

Recommendations

Developing targeted and comprehensive educational programs focusing on undernutrition and childcare practices should be conducted.

Implementing strategies to improve the economic status of caregivers, especially those with low incomes, should be initiated.

Providing additional training to healthcare professionals to emphasize the importance of educating caregivers on proper nutrition practices is essential. Breastfeeding and pre-lacteal feeding during antenatal and post-natal care visits should be recommended.

Establishing community-based support groups or networks to encourage and support caregivers in practicing optimal nutrition and childcare is important.

Advocate for policy changes or initiatives that promote and support exclusive breastfeeding, improve access to nutritious foods, and address socio-economic disparities affecting undernutrition in children under-five encouraged.

Conducting larger-scale studies with diverse populations to validate and expand upon the finding importance. Employing mixed method approaches together is essential.

Abbreviations

IDI	In-depth Interviews
Tsh	Tanzanian Shilling
WHO	World Health Organization,
MUH	Muhimbili University of Health
UNICEF	United Nations International Children's Emergency Fund

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12887-024-05239-3>.

Supplementary Material 1.

Supplementary Material 2.

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Authors' contribution

Authors' contribution Conceptualization and design: NM, FW, EM, TAA Analysis: FW, NM, EM Writing- original draft: NM, FW, EM, TAA Writing- review & editing: FW, TAA, HN All authors have read and approved the final manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations**Ethics approval and consent to participate**

Ethical approval was obtained from the Muhimbili University of Health and Allied Sciences ethical review committee with the reference number (Ref. No.HD/MUH/T.543/2017). Permissions were acquired from all appropriate authorities starting from the Regional Administrative Secretary (RAS), and District Executive Director (DED) for Ubungo. Also, permission was requested by the District Medical Officer in charge, who recommended permission to hospital authorities to participate in data collected. Written consent was obtained from each caregiver who participated in the study. Voluntary participation was encouraged, and the participants were assured of confidentiality. Privacy and confidentiality were highly maintained by avoiding unauthorized people from accessing study information. Anonymity was maintained by using the participant's identity and no name of the participants was recorded during the interview. Prior to consenting, details including purpose of the study and associated benefits were clearly explained to the study participants. All audio interviews and transcripts were saved in a password-protected computer to avoid access from unauthorized personnel. Participants were assured that there was no possibility of harm due to their participation in this study, including any impact on the care they received at the hospital.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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