

Original Research Article

Perspectives of mothers and primary caregivers on undernutrition in children under 5 years in the Northwest region of Cameroon: a community based cross-sectional study

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ABSTRACT

Background: Cameroon is one of the sub-Saharan African countries where undernutrition is a significant public health concern, with a national prevalence of 29% among children under five. The Northwest Region of Cameroon in particular, faces a triple burden of undernutrition, with high rates of stunting (32%), wasting (6.5%) and underweight (17.2%). Caregivers play a critical role in the management of undernutrition. This study analyzed their knowledge, attitudes and predictors of knowledge levels on undernutrition.

Methods: A community-based cross-sectional study was carried out among 1279 mothers and primary caregivers of under five children from six health districts. Data on their knowledge and attitudes towards undernutrition was collected using a pre-tested questionnaire. Binary logistic regression analysis was used to identify predictors of nutrition knowledge levels.

Results: Overall, 78.5% of the caregivers had 'good knowledge' on undernutrition and 21.7% had 'poor knowledge'. Correct knowledge was highest on the causes of undernutrition and incorrect knowledge was highest on prevention of undernutrition in children especially as 32.9% didn't know that exclusive breastfeeding could prevent undernutrition in children below six months. Regarding attitude, 52.2% had a 'positive attitude' and 47.7% had a 'less positive or negative attitude'. The main predictors of knowledge levels among primary caregivers were sex of carer ($p=0.001$), household size ($p=0.001$), religion ($p=0.010$), residence status ($p<0.001$), occupation ($p<0.001$), and degree of urbanization ($p=0.002$).

Conclusions: Caregivers in Northwest Cameroon showed good undernutrition knowledge (78.5%), but lacked knowledge on prevention, especially breastfeeding benefits. Sociodemographic factors influenced knowledge. This could inform interventions to improve practices.

Keywords: Attitudes, Cameroon, Knowledge, Mothers, Northwest, Undernutrition

INTRODUCTION

Undernutrition, a condition characterized by insufficient intake of nutrients, remains a significant public health concern in Cameroon, affecting nearly 29% of children under five years of age. The Northwest Region is one of the four regions with the highest rates of malnutrition in

the country.¹ This region has consistently exhibited high rates of undernutrition among children under the age of five, with stunting prevalence exceeding 30% in recent years.² The 2018 Cameroon Demographic and Health Survey (DHS) revealed that the prevalence of stunting among children under five in the region is 32%, while the

prevalence of wasting is 6.5% and 17.2% for underweight.¹

Despite ongoing efforts to address this issue, undernutrition rates persist, highlighting the need for a deeper understanding of the underlying factors contributing to this problem.^{3,4} Previous studies have identified various contributing factors in Cameroon, including poverty, food insecurity, inadequate access to healthcare, and poor sanitation.⁵ However, the role of knowledge and attitudes among mothers and caregivers has not been extensively explored in the Northwest Region. Mothers and primary caregivers play a crucial role in child nutrition, as they are responsible for making decisions about feeding practices and healthcare for their children including food selection and preparation. Their knowledge and attitudes about nutrition can significantly influence a child's nutritional status. According to a study in Ghana, positive maternal knowledge and attitudes about nutrition are associated with improved child growth and development.⁶ Research in Cameroon has shown that mothers have varying levels of knowledge about the causes and effects of malnutrition in children, with education and number of children being key factors.⁵ Undernutrition is prevalent in the country, particularly among boys, younger children, and those of farming mothers.^{1,7} Socio-cultural factors, including poverty and lack of education, are also significant contributors to infant malnutrition.³ In terms of feeding practices, low breastfeeding rates and early introduction of complementary foods have been observed, with mother's education being a key factor in promoting good complementary feeding practices.⁸

Understanding the knowledge and attitudes of mothers and caregivers in the Northwest Region is crucial for developing effective interventions to address undernutrition. By identifying areas where knowledge is lacking or attitudes are unfavorable, targeted interventions can be designed to improve nutritional practices and enhance child health outcomes.

This study aims to assess the knowledge and attitudes of mothers and primary caregivers regarding undernutrition in the Northwest region of Cameroon. Specifically, the study was planned to investigate the following objectives: 1) To determine the knowledge of mothers and caregivers on undernutrition in children less than 5 years in the Northwest Region of Cameroon, 2) To assess the attitudes of mothers and caregivers towards undernutrition and 3) To identify the factors associated with knowledge levels on undernutrition among mothers and caregivers in the Northwest region of Cameroon.

The findings of this study will provide valuable insights into the knowledge and attitudes of mothers and primary caregivers in the Northwest Region of Cameroon, contributing to the development of context specific and effective interventions to address undernutrition and improve child health. The knowledge scores, attitude

scores and factors associated with knowledge levels have been reported in this article.

METHODS

Study design and setting

A quantitative approach involving a descriptive community based cross-sectional design was carried out to determine the knowledge and attitude of caregivers towards undernutrition over the 3 months' period from February to April 2023. The Northwest region is one of the ten regions of Cameroon with an estimated population of 2.6million people distributed over a surface area of 17,300 km². Agriculture and commercial businesses are the major sources of livelihoods for the population.^{9,10} This region has seriously been affected by armed conflict since 2017, resulting to pendula population movements, reduced agricultural production in some areas, food insecurity and malnutrition.^{9,11} The main subsistence crops include cassava, potatoes, beans, maize, plantains, yams, cocoyam and palm oil. The Region has unique natural features like mountains, crater lakes, forests and falls that permit year-round farming in many areas.¹⁰

Study population

The target for the study were mothers or primary caregivers with a child less than 5 years living within the Northwest region at the time of the study.

Inclusion criteria

Participants of both sexes were recruited into the study if they have been living in the area for atleast six months, live with a child less than 5 years, are responsible for the day-to-day feeding and care of the child, were willing and consented to participate and were able to communicate at the time of the study were included.

Exclusion criteria

Caregivers with a child less than 5 years, who were seriously ill and unable to communicate from any cause were excluded.

Sample size

A minimum sample size of 922 caregivers was calculated using the below single proportion formula for cross-sectional studies.¹²

$$n = Z^2 \times \frac{P(1-P)}{d^2} \times k$$

The Z=1.96 at 95% confidence level, the proportion of caregivers with adequate knowledge (P) from previous study within the area was 60% and the margin of error (d) was set at 5%.⁶ The obtained sample size was then multiplied by the design effect (k) of 2.5 to adjust for the

sampling strategy and to ensure the study is adequately powered and the results are reliable. *n* is the minimum sample size.

Sampling technique

A multi-stage sampling technique was used to select surveyed households. At the first stage, all 20 health districts in the Northwest were considered and six health districts (Bamenda, Bamenda III, Fundong, Ndop, Nkambe and Tubah) were randomly selected. At the second stage, the number of participants (households) surveyed were determined by a probability proportionate to size approach which considered the overall population of the health district. The selection of study participants followed a simple random sampling from each community for eligible households with a child less than 5 years. The mother or primary care giver in the absence of the mother was interviewed after consent was obtained. In case consent was denied, the next eligible household was considered.

Instrumentation

A structured questionnaire was designed on Kobo Collect mobile application and downloaded on the different smartphones that were used for data collection. The elements of the questionnaire were drawn from available literature. The questionnaire consisted of demographic and socio-economic characteristics of participating mothers or primary caregivers, knowledge of caregivers on the signs, causes, consequences, and prevention of undernutrition, and attitude of caregivers towards undernutrition. The questionnaire was pre-tested in a community in Santa health district, different from health districts where actual data collection took place but with similar characteristics. Enumerators were trained on the study methodology and interview techniques. Data control checks were conducted throughout data collection to ensure quality.

Questionnaire handling and storage

Data submitted on kobo Collect was downloaded and checked for accuracy, reliability and completeness. Missing data and invalid data were removed and data transformed into usable formats before data analysis. Smartphones used for data collection were password protected and only assessable to the enumerators or primary researcher. The computer in which the data was stored was password protected also and only accessible to the researcher for confidentiality. The response rate was 100% and a total of 1279 entries were considered for final analysis.

Data analysis

In presentation of study participants, the mean was used to summarize continuous variables alongside a standard deviation. Frequencies and percentages were used to

summarize categorical variables. For knowledge score, eighteen questions were asked on the signs, causes and prevention of undernutrition. Each correct response (agree) was scored one point, and each incorrect response (disagree) or "don't know" was scored zero. The total knowledge score was 18. The study participants were classified according to their respective scores as follows: scores >50% (10 to 18) were considered as good or adequate knowledge, while scores ≤50% (<10) were considered poor knowledge.¹³

Attitude score of caregivers towards undernutrition focused on perceived susceptibility and perceived severity. Perceived susceptibility (how likely a mother or primary caregiver think the child is to be undernourished) had three options (not likely, not sure and likely). The score for 'likely' is 3, 'not sure' is 2 and 'not likely' is 1, with 'likely' indicating a positive attitude and 'not likely' a negative attitude. Perceived severity (how serious do you think undernutrition is for a baby's health) had three options (not serious, not sure and serious). The score for 'serious' is 3, not sure 2 and 'not serious' 1, with 'serious' indicating a positive attitude and 'not serious' a negative attitude. The maximum attitude score was 6, and participants were classified into 2 groups based on the scores as follows: scores >67% (>4) were considered as positive attitude, while scores ≤67% (≤4) were considered negative attitude.⁶ A binary logistic regression analysis was conducted to identify the predictors of poor knowledge among caregivers. The dependent variable was dichotomized as "good knowledge" and "poor knowledge." The independent variables included caregiver gender, age, household size, religion, marital status, education level, residence status, occupation, monthly income and degree of urbanization. Odds ratios and 95% confidence intervals (95% CI) were calculated to understand the strength and significance of the association. Statistical significance was set at $p < 0.05$.

RESULTS

Presentation of respondents

A total of 1279 mothers and primary caregivers were recruited into the study from six health districts; Bamenda (26.1%), Bamenda III (15.6%), Fundong (8.9%), Ndop (17.0%), Nkambe (24.1%), and Tubah (8.2%). Majority (89%) were females with a mean age 31.17 ± 10.29 years (minimum 15 years and maximum 74 years). The average household size was 5.44 ± 2.27 persons, minimum of 2 and a maximum of 16 persons for surveyed households. Majority of the participants 818 (64%) were residents, with 381 (29.8%) engaged in farming as their main occupation. Participants surveyed were from four divisions; Mezam 639 (50%), Donga Mantung 308 (24.1%), Ngoketunjia 218 (17%) and Boyo 114 (8.9%). The demographic and socio-economic characteristics of the study participants have been presented in Table 1.

Knowledge of mothers and caregivers on undernutrition

From the study, 555 (43.7%) of caregivers had correct responses to all the eighteen (18) knowledge questions. On the specific knowledge areas, majority 1218 (95.2%) knew that loss of weight/thinness is a sign of undernutrition, 1237 (96.7%) knew that not getting enough food is a cause of undernutrition. Majority 1249 (97.7%) knew that not having enough money to buy food is one of the reasons why people do not get enough food. To monitor growth, 1121 (87.6%) knew that you can visit a health centre or ask a health professional to find out if the baby is growing well or not. If the baby is not gaining weight, 1249 (97.7%) knew that frequent illness is one of the possible causes. On prevention of undernutrition, 858 (67.1%) knew that exclusive breast feeding could prevent undernutrition in infants 0-6 months and 1171 (91.6%) knew that giving more nutritious food could prevent undernutrition in children 6-23 months.

According to the study, 448 (35%) of primary caregivers did not know that weakness of the immune system which causes a child to become ill easily or seriously ill is a sign of undernutrition. On causes, 482 (37.7%) are unaware that watery food or food that does not contain enough

nutrients is a cause of undernutrition. On prevention, 421 (32.9%) are not aware that exclusive breastfeeding can prevent undernutrition in a child aged 0-6 months. From the analysis, 78.3% had a 'good knowledge' score towards undernutrition and 21.7% had 'poor knowledge' score. Details are presented in Table 2.

Attitudes of mothers and caregivers on undernutrition

Most respondents (26%) trust hospitals or clinics as the most reliable source of information on undernutrition. Nearly half of the respondents (45.8%) believe their child is unlikely to be undernourished. Almost all respondents (97.1%) agree that undernutrition can be very serious for a baby's health. The majority of respondents (97.1%) believe that diversifying a child's diet daily is beneficial. A significant portion of respondents (26.6%) find exclusive breastfeeding for six months to be challenging. The majority of respondents (60.8%) feel confident in preparing enriched porridge for their children. Overall, the majority of respondents (52.2%) have a positive attitude towards undernutrition prevention. All aspects of attitudes measured in this study have been summarized in Table 3.

Table 1: Socio-demographic characteristics of the study participants.

Variable	Categories	Frequency (N)	Percentage (%)
Sex of carer	Female	1138	89.0
	Male	141	11.0
Age group of carer (years)	Under 18	36	2.8
	18-35	943	73.7
	Above 35	300	23.5
Household size	Less than three-persons	101	7.9
	Three to six-persons	843	65.9
	Seven or more-persons	335	26.2
Religion	Atheist	14	1.1
	Christian	1161	90.8
	Muslim	104	8.1
Marital status	Married	883	69.0
	Single	304	23.8
	Divorced/widowed	92	7.2
Education level	No education	51	4.0
	Primary	346	27.1
	Secondary (+high school)	721	56.4
	Tertiary	161	12.5
Residence status	Displaced	279	21.8
	Host	143	11.2
	Resident	818	64.0
	Returnee	39	3.0
Occupation	Business	337	26.3
	Farmer	381	29.8
	Government employee	78	6.1
	Housewife	189	14.8
	Private sector employee	161	12.6
	Student	133	10.4
Average monthly income	<50,000frs	730	57.1
	50,000frs-100,000frs	369	28.8

Continued.

Variable	Categories	Frequency (N)	Percentage (%)
	>100,000frs	180	14.1
Degree of urbanization	Rural	621	48.6
	Urban	658	51.4

Table 2: Frequency distribution of responses to knowledge questions on undernutrition.

Knowledge area	Knowledge items	Correct N (%)	Incorrect N (%)
Signs of undernutrition	Lack of energy/weakness: child cannot work, study or play as normal is a sign of undernutrition	922 (72.1)	357 (27.9)
	Weakness of the immune system (child becomes ill easily or becomes seriously ill), is a sign of undernutrition	831 (65)	448 (35)
	Loss of weight/thinness is a sign of undernutrition	1218 (95.2)	61 (4.8)
	Children do not grow as they should (growth faltering) is a sign of undernutrition	1211 (94.7)	68 (5.3)
Causes of undernutrition	Not getting enough food is a cause of undernutrition	1237 (96.7)	42 (3.3)
	Food is watery, does not contain enough nutrients is a cause of undernutrition	797 (62.3)	482 (37.7)
	Disease/ill and not eating food is a cause of undernutrition	1004 (78.5)	275 (21.5)
Reasons why people do not get enough food	Not having enough money to buy food (Access)	1271 (99.4)	8 (0.6)
	Food is not available (Availability)	848 (66.3)	431 (33.7)
How can you find out if the baby is growing well or not?	Go to the health centre/ask a doctor or nurse (health professional)	1121 (87.6)	158 (12.4)
If the baby is not gaining weight, what does that mean? What could be the possible cause?	The baby is not eating well/the baby does not want to eat	1027 (80.3)	252 (19.7)
	The baby may be sick often	1249 (97.7)	30 (2.3)
What should we do to prevent undernutrition among infants 0-6 months?	Breastfeed exclusively/give only breastmilk	858 (67.1)	421 (32.9)
	Go to the health centre/hospital and check that the child is growing	1002 (78.3)	277 (21.7)
What should we do to prevent undernutrition among young children 6-23 months?	Give more food	1171 (91.6)	108 (8.4)
	Feed frequently	930 (72.7)	349 (27.3)
	Give attention during meals	906 (70.8)	373 (29.2)
	Go to the health centre/hospital and check that the child is growing	1060 (82.9)	219 (17.1)

Table 3: Attitudes of caregivers on undernutrition.

Variable	Breakdown	N	%
Main source of information on undernutrition that you trust and respect the most	Hospital/clinic	957	26
	Health worker	775	21
	Friends	494	13
	Family	466	13
	Social media	390	11
	Health education program	296	8
	Mass media (radio, TV)	236	6
	School teacher	69	2
How likely you think your child is to be undernourished, that is they stop growing or lose weight	Likely	296	23.1
	You are not sure	397	31
	Not likely	586	45.8

Continued.

Variable	Breakdown	N	%
How serious you think undernutrition is for a baby's health	Serious	1242	97.1
	You are not sure	35	2.7
	Not serious	2	0.2
How good you think it is to give different types of food to your child each day	Good	1245	97.3
	You are not sure	34	2.7
	Not good	0	0
How difficult you think it is to breastfeed a baby exclusively for six months	Not difficult	546	42.7
	Average -not difficult nor easy	393	30.7
	Difficult	340	26.6
How confident you feel in preparing an enriched porridge for your child	Confident	777	60.8
	Some what	410	32.1
	Not confident	92	7.2

Predictors of undernutrition knowledge levels among caregivers

Following the binary logistics regression, knowledge levels were significantly associated with sex of carer ($p=0.001$), household size ($p=0.001$), religion ($p=0.010$), residence status ($p<0.001$), occupation ($p<0.001$), and degree of urbanization ($p=0.002$). Female caregivers were

11 times more likely to have 'poor knowledge' on undernutrition than their male counterparts (AOR=11.29). Host caregivers were 4 times more likely to have 'poor knowledge' on undernutrition than their counterparts (AOR=4.02). In terms of occupation, private sector employees were 7 times more likely to have poor knowledge on undernutrition than farmers (AOR=7.12). Details of all factors associated with poor knowledge have been summarized in Table 4.

Table 4: Predictors of poor knowledge among caregivers on undernutrition.

Variables	N	Good knowledge %	AOR	95% CI		P value
				Lower	Upper	
Sex of carer						
Male	1138	89.4	1			0.001
Female	141	77.0	0.35	0.186	0.65	
Age group of carer (years)						
<18	36	52.8	1			0.832
18-35	943	77.1	1.18	0.45	3.074	
>35	300	85.3	1.04	0.368	2.917	
Household size						
<3 persons	101	66.3	1			0.001
3-6 persons	843	75.4	0.85	0.414	1.723	
>7 persons	335	89.3	0.33	0.137	0.775	
Religion						
Atheist	14	50.0	1			0.010
Christian	1161	77.0	1.92	4.991	7.418	
Muslim	104	97.1	0.32	1.512	2.016	
Marital status						
Single	883	80.5	1			0.300
Married	304	72.0	0.32	0.13	0.801	
Divorced	92	78.3	0.54	0.198	1.471	
Education level						
Tertiary	161	69.6	1			0.429
Secondary (+high school)	721	75.0	1.16	0.634	2.13	
Primary	346	86.7	1.03	0.48	2.225	
No education	51	96.1	0.65	0.127	3.263	
Resident status						
Resident	818	83.7	1			<0.001
Displaced	279	77.8	1.17	0.728	1.891	
Host	143	48.3	4.02	2.238	7.209	
Returnee	39	79.5	1.12	0.459	2.75	

Continued.

Variables	N	Good knowledge %	AOR	95% CI		P value
				Lower	Upper	
Occupation						
Farmer	381	88.5	1			<0.001
Business	337	81.6	0.65	0.372	1.121	
Government employee	78	75.6	1.08	0.446	2.602	
Private sector employee	161	49.1	0.83	0.456	1.526	
Housewife	189	87.8	4.59	2.84	7.402	
Student	133	64.7	2.81	1.568	5.028	
Degree of urbanisation						
Urban	658	78.0	1			0.002
Rural	621	78.7	0.56	0.392	0.805	

N: frequency, AOR: adjusted odds ratio, CI: confidence interval. Decision $p < 0.05$.

DISCUSSION

The study found that 78.3% of mothers and caregivers in the Northwest region of Cameroon had 'good knowledge' of undernutrition. They know the signs, causes, and prevention of undernutrition which is consistent with a study in the same region.¹⁴ This study results are consistent with other studies in Cameroon that have found that caregivers have good knowledge of undernutrition.^{5,7,15} However, there are some gaps in knowledge, such as the knowledge of weakness of the immune system as a sign of undernutrition and the knowledge of watery food/food without nutrients as a cause of undernutrition. This study also found some gaps in knowledge on the signs and causes of undernutrition, which is not consistent with other studies.⁷ This difference could be attributed to the fact that the study in Cameroon collected data from children in nursery schools, hospitals and communities while this study was purely a community based one.⁷ Differences in sample size that could account for this discrepancy.

Studies conducted in other countries have reported varied percentage of mothers and caregivers with good knowledge. A study in Asia reported only 8% of mothers/caregivers with good knowledge on undernutrition, while a significant majority 92% had poor knowledge specifically on the prevention and management of nutritional problems in children.¹⁶ This difference could be due to the small sample size of 50 participants and the convenient sampling method used to select participants. Another study in Kenya reported 92.7% of caregivers with low nutritional knowledge levels.¹⁷ This difference could be attributed to the small sample size of 138 participants and the open ended nature of the questionnaires used in the study. The large and representative sample size of this study is a strength and the weakness is its cross-sectional design which cannot determine causality.

The findings of this study suggest that there is a need for more education and training for caregivers on undernutrition. This education and training should focus on the signs, causes, and prevention of undernutrition. However, the most effective ways to educate and train

caregivers on undernutrition remains unanswered in this study. This study did not also collect data on the caregivers' access to healthcare, which may also be a contributing factor in their knowledge of undernutrition. The findings of the study can be used to inform the development of context-specific interventions to improve caregivers' knowledge and ultimately improve child health.

The study's findings reveal a generally positive attitude (52.2%) among mothers and caregivers towards undernutrition prevention in the Northwest region of Cameroon. The results are consistent with findings from a study in Asia that found out that 56% of mothers had a favorable attitude towards dietary practices in prevention of malnutrition.¹⁸ Most respondents (26%) recognize the importance of seeking information from healthcare providers. The findings on trusted sources of information are consistent with findings from a study in Australia that highlighted health care professionals as a key source of information for pregnant women, noting that they also rely on friends, family, and the media.¹⁹ Health care professionals need to proactively support clients' informational needs and address encountered nutrition misinformation. Further research is necessary to establish the nature and accuracy of dietary information in the mass media.

Also, 97.1% of respondents acknowledged the severity of undernutrition, and an equal 97.1% value the benefits of a diversified diet for their children. This is a good sign, because according to WHO and UNICEF, when individuals perceive malnutrition as a serious threat, they are more likely to take action to prevent or address it and when individuals believe that there are significant benefits to be gained from addressing undernutrition, they are more likely to invest time, effort, and resources in doing so.^{20,21}

A notable portion of respondents (26.6%) perceive exclusive breastfeeding for six months as challenging, suggesting a potential barrier to optimal infant feeding practices. According to WHO, exclusive breastfeeding for the first six months of life is the optimal infant feeding practice for child health and development.²² The 2018

DHS in Cameroon revealed that only 40% of children are exclusively breastfed.¹ Previous studies have reported several factors that might contribute to the perception that exclusive breastfeeding for six months is difficult. These include lack of social support for mothers either from friends, families or healthcare providers, concerns about quantity of milk supply for the six months, difficulties with breastfeeding or work place challenges. These studies collectively underscore the importance of addressing knowledge gaps, providing support, and addressing practical barriers to promote exclusive breastfeeding.^{24,25} The practice of mixed feeding and supplementation is common as the 2018 DHS revealed that children are exclusively breastfed for an average 3.4 months.¹ However, majority of respondents (60.8%) expressed confidence in their ability to prepare nutritious porridge for their children, indicating a positive self-efficacy regarding undernutrition prevention measures.

The study's findings indicate that several factors are significantly associated with caregivers' knowledge of undernutrition. These six factors include: sex of caregiver, household size, religion, occupation, residence status and degree of urbanization. These findings are contrary to those reported in a study in Batouri Cameroon, where five factors were identified as significantly associated with poor knowledge on malnutrition including mother's age, child's age, mother's educational level, mothers who had family planning information, and the source of tap water.¹⁵ This difference could be attributed to the fact that the study in Batouri Cameroon used a lower sample of 100 mothers and the age limit for children was 24 months instead of the 59 months for this study and the 1279 study participants. The findings from this study are consistent with those reported in a study in Muea Cameroon and another in South India who respectively reported that the number of children play a role in mothers' knowledge of malnutrition and gender and socioeconomic factors were stronger risk factors for malnutrition than health-care availability and health-care-seeking attitudes.^{5,26}

The association between household size, religion, occupation, and degree of urbanization with knowledge levels suggests that socioeconomic factors play a significant role in shaping caregivers' understanding of undernutrition. Addressing these factors through education, community engagement, and economic empowerment could enhance overall knowledge levels. The higher likelihood of host caregivers having poor knowledge compared to displaced suggests that cultural norms, access to information, and healthcare resources may vary across different locations. Tailoring interventions to specific regions and addressing local challenges could optimize knowledge dissemination and uptake.

The study's cross-sectional design limits the ability to establish causal relationships between caregiver knowledge, attitudes, and child undernutrition. Further

research using longitudinal designs or mixed methods approaches is needed to establish causal links.

CONCLUSION

This study sheds light on caregivers' knowledge, attitudes, and factors influencing their knowledge on undernutrition in Cameroon's Northwest Region. While a significant portion (78.5%) demonstrated good knowledge, there were gaps in knowledge about preventive measures, particularly regarding exclusive breastfeeding. Additionally, the study identified sociodemographic factors affecting knowledge levels. These findings can inform interventions to improve caregivers' knowledge and practices regarding undernutrition prevention and management. This study advances knowledge and understanding of malnutrition by highlighting the prevalence of good knowledge on undernutrition among caregivers in the Northwest Region of Cameroon, identifying gaps in knowledge, specifically regarding preventive measures such as exclusive breastfeeding, and demonstrating the influence of sociodemographic factors on caregivers' knowledge levels. These findings can be used to develop targeted interventions to improve caregivers' knowledge and practices on undernutrition prevention and management. For example, interventions could focus on educating caregivers about the benefits of exclusive breastfeeding for preventing undernutrition in children under 6 months. Additionally, interventions could be tailored to address the specific needs of different caregiver subgroups based on their sociodemographic characteristics. Overall, this study provides valuable insights that can inform strategies to improve child nutrition outcomes in Cameroon's Northwest Region.

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