Avicenna Medical Research

ISSN 2800-129X

DOI Prefix: 10.34118/amr

PREVALENCE AND FACTORS ASSOCIATED WITH INEQUALITIES OF DIFFERENT FORMS OF MALNUTRITION IN THE TERRITORIES OF KENGE AND BEFALE, IN THE DRC, 2022

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ARTICLE HISTORY

Received: 09 January 2026
Final Revision: 25 APRIL 2026
Accepted: 15 may 2026
Online Publication: 01 july 2026

KEYWORDS

Prevalence, inequalities, malnutrition, children aged 6 to 59 months, DRC

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DOI

10.34118/amr.v5i2.4651

A B S T R A C T

Background: Malnutrition remains a major public health challenge in the Democratic Republic of Congo, increasing health care costs, reducing productivity, and slowing economic growth. Despite high prevalence, disparities exist between and within provinces. This study aimed to determine the prevalence and identify factors associated with malnutrition among children aged 6–59 months in Befale and Kenge in 2022.

Materials and Methods: Secondary data from a cross-sectional study conducted by PRONANUT were analyzed. Variables included age, sex, weight, height, and illness status in the preceding two weeks. Global acute malnutrition (Z-score ≤ -2), severe acute malnutrition (Z-score < -3), underweight, and stunting were assessed. Chi-square tests and logistic regression determined associations with demographic and health factors.

Results: In Kenge, global acute malnutrition was 11.4%, with 2.6% severe cases; in Befale, prevalence was 11.3%, with 2.5% severe cases. Stunting affected 44.6% of children in Kenge and 44.9% in Befale. Underweight prevalence was 29.7% in Kenge and 24.7% in Befale. Underweight and stunting were statistically associated with age (ORa = 1.4–3.7, p = 0.001–0.06 depending on age group) and sex (female gender, ORa = 1.5–1.7, p = 0.003–0.00) in both territories.

Conclusion: Malnutrition in Befale and Kenge shows disparities by form and location. Addressing demographic factors (age and sex) alongside socio-ecological determinants is essential to reduce malnutrition and improve child health outcomes in these regions. Nutrition programs must be age- and sex-sensitive, locally adapted, and integrated with socio-ecological interventions to ensure equitable, sustainable improvements in child health outcomes.

1. Introduction

Malnutrition remains a major public health problem in the Democratic Republic of Congo (DRC). For decades, the prevalence of stunting among children under five has exceeded the WHO critical threshold of 40%. National surveys consistently report alarming figures: in 2014, 43% of children aged 0–59 months were stunted, with 23% severely affected; 23% were underweight (7% severe); and 6.5% suffered acute malnutrition (2% severe) [1]. The MICS 2018 confirmed similar trends, with 41.8% stunted, 23.1% underweight, and 6.5% acutely malnourished [2]. More recently, the 2023 national nutrition survey estimated global acute malnutrition (GAM) at 8.2% (2.6% severe), stunting at 47.9%, and underweight at 26.7% (9.6% severe), highlighting both the persistence and severity of malnutrition in the country [3].

Provincial disparities are striking. Kwango and Tshuapa consistently report higher rates than the national average: in Kwango, stunting rose from 45.6% in 2014 to 54.6% in 2018, reaching 63% in 2023, while in Tshuapa prevalence remained high at 47.8% in 2014, 45.3% in 2018, and 49.2% in 2023 [1–3]. These differences reflect unequal exposure to risk factors

such as poor dietary diversity, recurrent infections, household food insecurity, limited coverage of nutrition interventions, and inadequate maternal and child care. The COVID-19 pandemic further aggravated inequalities by restricting movement, disrupting food supply chains, and increasing reliance on subsistence production. Insecurity and poor infrastructure also limited access to markets and services, contributing to geographic disparities in malnutrition [5,6]. Despite multiple interventions by UNICEF, the World Bank, and Action Against Hunger—including cash transfers, community-based nutrition, and infant and young child feeding (IYCF) programs—the nutritional situation in Kwango and Tshuapa has worsened, with many households in Kenge (Kwango) and Befale (Tshuapa) remaining food insecure above IPC phase III [4].

Recent surveillance data illustrate the severity of the problem: between January and March 2023, 11% of children in Kenge had a MUAC below 125 mm compared to 22% in Befale; edema was observed in 2% of children in Kenge versus 10% in Befale; and 2% of children in Kenge were born with low birth weight compared to 10% in Befale [7]. Given the disastrous socio-economic context and weak infrastructure, children in Kenge and Befale present different forms of malnutrition whose prevalence remains poorly documented. Identifying the factors underlying these inequalities is essential to guide targeted interventions and reduce stunting, which has persisted at critical levels for decades. This study therefore aims to determine the prevalence and associated factors of malnutrition among children aged 6–59 months in Kenge and Befale, highlighting comparative disparities to inform more effective, context-specific nutrition strategies.

2. Methods

Study framework

The study was conducted in Kenge (Kwango) and Befale (Tshuapa). Kenge's sandy soils, poor infrastructure, and limited markets exacerbate food insecurity and disease burden [4]. Befale relies on agriculture, fishing, and livestock, yet over 35% face IPC phase ≥3 food insecurity due to conflicts, climate shocks, pests, and degraded roads [8]

Design

We analyzed secondary data from a cross-sectional study conducted in February 2022 by the National Nutrition Program (PRONANUT), targeting children aged 6–59 months in Kenge (Kwango) and Befale (Tshuapa).

Unlike standard SMART surveys, this study emphasizes comparative analysis between two territories with distinct ecological and socio-economic contexts, thereby highlighting geographic disparities in malnutrition. This comparative focus represents a scientific innovation, as most prior surveys have reported aggregated provincial or national data without exploring intra-provincial differences.

Study Population

The study population consisted of children aged 6–59 months residing in the territories of Kenge (Kwango) and Befale (Tshuapa). Inclusion criteria required permanent residence and complete anthropometric data. Exclusion criteria included children outside the age range, incomplete records, or households refusing participation. This ensured representativeness while minimizing bias. The focus on young children reflects their heightened vulnerability to malnutrition and its long-term developmental consequences.

Sampling

The study was conducted using a two-stage(village and households) cluster sampling of selected households using the Standardized Monitoring and Assessment for Relief and Transition (SMART) approach (4). The statistical units corresponding to the various degrees of sampling were villages at the first level and households at the second level.

In Kenge, 50 villages out of 67 were randomly chosen (first stage), with 25 households chosen per village (second stage), totaling 784 children selected (third stage). In Befale, 52 villages out of 63 villages were randomly selected, with 25 households chosen. were chosen for every village, and 1088 households' worth of children under the age of six to fifty-nine months were included.

Variables of Interest

The study focused on child-level demographics (age, sex, weight, height, and MUAC), household socio-economic characteristics, and morbidity indicators (malaria, diarrhea, and acute respiratory infections within the past two weeks). Anthropometric outcomes—underweight, stunting, and wasting—were derived from Z-scores using ENA software, with thresholds set at ≤ -2 for global malnutrition and < -3 for severe forms. The frequency of global and severe acute malnutrition, underweight, and stunting was assessed to capture both prevalence and severity, ensuring a comprehensive understanding of nutritional disparities in the study territories

Data collection

After obtaining the authorization clearance by the KSPH(ESP/DIR/MK/1356/NM/2024), and then by PRONANUT (N/MSPHP/1251/PRONANUT/DIR/BBS/121/2024) to use the data, we had the databases which helped us to proceed with the processing and then analysis.

The collection of information from households was carried out using tablets, with Kobo Collect .

The children were weighed using SECCA type electronic scale, the height was measured using wooden measuring rods (in a lying position for children whose height was less than 87 cm; and in a standing position for children with a height greater than or equal to 87 cm), the MUAC was taken using the MUAC tape graduated in mm for children.

Data processing and analysis

Data were collected in the field using tablets and uploaded to the PRONANUT central server, where they were stored in SMART survey databases. Only children aged 6–59 months with complete anthropometric data were retained; those with missing values were excluded to ensure data quality. Nutritional status was determined using Z-scores calculated with ENA (Emergency Nutrition Assessment, 2020), defining global malnutrition as $Z \leq -2$ and severe malnutrition as $Z < -3$. WHO thresholds were applied to classify prevalence levels for wasting, stunting, and underweight (acceptable, precarious, concerning, and critical).

Wasting, Stunting and Underweight :

Acceptable (Low) : < 5%, 0-19%, < 10%

Precarious (Medium): 5-9.99% , 20-29% , 10-19%

Concerning : 10-14.99%, 30-39%, 20-29%

Critical: ≥ 15%, ≥40%, >30%

Secondary data analysis was performed with STATA version 16.0. Descriptive statistics summarized age, sex, anthropometric measures, and morbidity over the past two weeks, while frequencies of global and severe acute malnutrition, stunting, and underweight were calculated. Inferential analysis used Pearson's chi-square, odds ratios (OR), and 95% confidence intervals to explore associations between malnutrition and child-level variables.

To highlight intra-territorial disparities and village-level inequalities, explanatory variables were selected through a stepwise logistic regression procedure. This approach was

justified by the need to identify the most significant demographic, socio-economic, and ecological predictors of malnutrition while reducing collinearity. Inspired by the UNICEF conceptual framework, the model emphasized both individual and contextual determinants, ensuring scientific rigor and practical relevance for guiding targeted interventions.

Ethical Aspect

The main study protocol was submitted to and approved by the ethics committee of the Ministry of Health. The protocol of the present study was submitted and approved by the School of Public Health Ethics Committee under the number ESP/CE/71/2024. The samples in the initial study were collected with the free and informed verbal consent of parents after a brief explanation of the study's aim. The data were analyzed without identifying participants to preserve human dignity. This study relied on secondary data and therefore did not require informed consent. However, in the original survey, verbal informed consent was obtained from mothers or guardians of children under five years of age. Before data collection, the purpose and objectives of the survey were clearly explained, and respondents were free to accept or decline participation. No one was coerced, and consent was entirely voluntary.

3. Results

Sociodemographic Characteristics

Underweight: Children aged 24–59 months were most affected, with 25.4% in Befale and 33.9% in Kenge. Male children were consistently more vulnerable, with nearly 3 in 10 boys underweight in Befale and 4 in 10 in Kenge. Underweight was statistically associated with age in Kenge and with sex in both territories.

Stunting: More prevalent among boys and older children (24–59 months) in both territories, with significant correlations observed.

Global Acute Malnutrition (GAM): In Befale, GAM was more frequent among children aged 24–59 months, while in Kenge it was higher among those aged 12–23 months. Male sex was linked to GAM in both territories, but statistical significance was found only in Befale.

It appears from this Table II that no history of illness is statistically associated with malnutrition in the two territories.

Prevalence of Malnutrition

The Prevalence of different forms of malnutrition among children aged 6-59 months in the Kenge and Befale territories are presented in Figure 1

About one in ten children suffered from global acute malnutrition, with severe cases at 2.6% in Kenge and 2.5% in Befale. Four in ten children were stunted in both territories. Underweight prevalence was nearly 30% in Kenge compared to 25% in Befale

Village-Level Disparities

GAM affected 11.5% of children, present in 82% of villages, with 15% exceeding 20% prevalence (notably Koloso and Bitari). Stunting was universal, with 59% of villages above 40% (Fangulu, Bitari, Tonga most affected). Underweight exceeded 20% in 67% of villages, particularly Dunda and Factory Camp.

The prevalence of malnutrition in the villages of Befale are presented in Figure 4 below:

GAM affected 11.3% of children, with five villages above 20% (Lifumba, Esanga, Engunda). Stunting reached 44.9% overall, with 76% of villages above 40% (Esanga, Bolima Nkoko, Lokonge, Loolo). Underweight ranged between 24.7–29.7%, with 76% of villages above 20% (Bonkita, Lolunga, Bolima Nkoko).

GAM was present in 82% of villages in Kenge (15% >20%) versus 90% in Befale (10% >20%). Stunting affected all villages, with 59% above 40% in Kenge compared to over three-quarters in Befale. Underweight exceeded 20% in 67% of villages in Kenge and in more than three-quarters of villages in Befale

Factors Associated with Different Forms of Malnutrition among Children Aged 6–59 Months in Kenge and Befale Territories

It appears from Table III that no variable significantly influenced the occurrence of global acute malnutrition in Kenge. However, female children were 1.5 times more likely to develop stunting (ORa = 1.5, p = 0.003). Similarly, being female (ORa = 1.7, p = 0.00), having diarrhea in the past two weeks (ORa = 2.4, p = 0.04), and being aged 12–23 months (ORa = 1.8, p = 0.003) were all associated with a higher risk of underweight. These findings highlight sex and age disparities, as well as the impact of recent illness, in shaping nutritional outcomes among children in Kenge.

It appears from Table IV that no factor significantly influenced the occurrence of global acute malnutrition in Befale. However, female children were 1.6 times more likely to develop stunting (ORa = 1.6, p = 0.03). Younger age groups also showed elevated risk: children aged 6–11 months were 2.6 times more likely (ORa = 2.6, p = 0.03), and those aged 12–23 months were 3.7 times more likely (ORa = 3.7, p = 0.001) to be stunted. No variable was found to have a significant association with underweight in Befale

4. Discussion

This study aimed to determine the prevalence of different forms of malnutrition among children aged 6-59 months in the territories of Befale and Kenge as well as the factors associated with disparities in this malnutrition.

The results of this study showed that one child in ten suffered from global acute malnutrition in Kenge as well as in Befale, including 2.6% of children presenting severe acute malnutrition in Kenge and 2.5% in Befale. Four out of ten children had stunting in the two territories, and almost three out of ten children were underweight in Kenge compared to almost a quarter of children in Befale.

Among the factors incriminated, we noted the female gender which exposes one to developing stunting in the two territories, the age between 12-23 months which exposes one to developing underweight in children aged 6-59 months in the Kenge territory and stunting in Befale while having diarrhea in the last two weeks exposed children aged 6-59 months to developing underweight in Kenge territory.

Prevalence of malnutrition in Kenge and Befale

The prevalence of malnutrition in Kenge and Befale remains a major public health concern, with global acute malnutrition (GAM) exceeding the WHO emergency threshold of 10% in both territories (11.4% in Kenge and 11.3% in Befale). These figures are slightly higher than those reported in MICS 2018 (Kwango 9.3%, Tshuapa 10.6) [2] and comparable to the National Nutrition Survey 2023 (Kwango 10.4%, Tshuapa 13.6) [3]. Despite repeated interventions by PDSS, UNICEF, and other partners, the persistence of GAM above emergency thresholds suggests that current strategies have not adequately addressed the structural drivers of malnutrition, such as food insecurity, poor infant feeding practices, and weak health systems.

Stunting prevalence was also critical, surpassing 40% in both territories (44.6% in Kenge and 44.9% in Befale). Compared to EDS 2014 (Kwango 39.2%, Tshuapa 38.2) [1], MICS 2018 (Kwango 54.6%, Tshuapa 45.3) [2], and ENN 2023 (Kwango 63%, Tshuapa 49.2) [3], the trend shows a marked increase, particularly in Kwango (+23.8% since 2014). This rise

underscores the urgent need for community-based nutrition programs and strengthened promotion of optimal infant and young child feeding (IYCF) practices during the first 1,000 days. Without such targeted interventions, the cycle of chronic malnutrition will persist, undermining child growth and development.

Underweight prevalence was alarming, with 29.7% in Kenge and 24.7% in Befale. Although lower than MICS 2018 (Kwango 37.9%, Tshuapa 29.3) [2], these rates remain high compared to the National Nutrition Survey 2023 (Kwango 48.7%, Tshuapa 32.9) [3]. The sharp increase in Kwango (+23.4% since 2014, including +19% between 2022–2023) reflects deteriorating household living conditions and fragile health systems, as confirmed by the ACF 2019 survey showing limited nutritional care [4]. These findings are consistent with Mudekereza Musimwa et al. in Lubumbashi, who reported severe underweight (42.9%), stunting (76.1%), and acute malnutrition (17.5%) [5,9]. Taken together, the evidence highlights the need for territory-specific approaches, integration of nutrition into local health policies, and stronger community-based programs to address the persistent inequalities and structural causes of malnutrition

Prevalence of Malnutrition in Villages of Kenge and Befale

The distribution of malnutrition across villages in Kenge and Befale reveals significant inequalities. In Befale, five villages recorded global acute malnutrition (GAM) rates above 20%, while in Kenge, 82% of villages were affected, with 15% surpassing the 20% threshold. Bitari and Koloso were the most impacted in Kenge, whereas Lifumba, Esanga, and Engunda showed the highest GAM in Befale. Stunting was universal, with 59% of Kenge villages and over 75% of Befale villages exceeding 40%. Fangulu, Bitari, and Tonga were most affected in Kenge, while Esanga, Bolima Nkoko, Lokonge, and Loolo were most affected in Befale. Underweight prevalence was also high, exceeding 20% in 67% of Kenge villages and more than 75% in Befale, with Dunda, Factory Camp, and Bonkita most impacted in Kenge, and Lolunga and Bolima Nkoko in Befale.

These disparities highlight the uneven burden of malnutrition within territories, suggesting that village-level socioeconomic conditions play a critical role. Factors such as food insecurity, limited agricultural production, poor accessibility of farming tracks, and weak local economies contribute to these variations. Moreover, the insufficient availability and use of inputs in Nutritional Outpatient Treatment Units (UNTA) and Intensive Nutritional Treatment Units (UNTI) further exacerbate the situation. The absence of robust community-based nutrition services and the irregular functioning of treatment structures leave many villages without adequate support, perpetuating high malnutrition rates.

These findings emphasize the need for localized interventions that go beyond provincial averages. Strengthening village-level nutrition programs, ensuring consistent supply of therapeutic inputs, and improving agricultural infrastructure are essential steps. Integrating nutrition into local development plans and reinforcing community-based approaches could help address structural inequalities. By tailoring interventions to the specific vulnerabilities of each village, policymakers can move closer to reducing the persistent disparities in malnutrition across Kenge and Befale

Factors Associated with Inequalities in Malnutrition

The analysis of malnutrition in Kenge and Befale highlights several associated factors, notably female gender in stunting, the age group of 12–23 months in underweight in Kenge, and diarrhea in relation to stunting in Befale. These findings partially align with international evidence but also reveal inconsistencies. For example, Fentaw and Ayalneh reported higher prevalence rates of underweight (46.1%), wasting (12.8%), and stunting (67.8%) among children aged 6–59 months [10], while Diouf, Diallo, and Camara found wasting at 8% and chronic malnutrition at 34.7% [11].

Similarly, EDS 2014 showed stunting increasing rapidly with age, peaking at 54% among children aged 36–47 months, with boys more affected than girls [1]. In contrast, our study found higher stunting among girls in Befale, diverging from Kismul's findings that boys are more vulnerable [12]. These contradictions suggest that gender differences in malnutrition may be context-specific rather than biologically determined, requiring further investigation.

Illnesses reported within the last two weeks did not show significant associations with malnutrition in our study, which contrasts with Costa Kazadi's findings linking chronic malnutrition and wasting to advanced HIV infection in Lubumbashi [13]. Dreyfuss also emphasized that infections, bacterial, viral, parasitic, or fungal, can exacerbate nutritional deficiencies and worsen clinical outcomes [14]. The absence of associations in our data may reflect delayed diagnosis and the difficulty of establishing causality between recent illness and nutritional status.

This underscores the need for longitudinal monitoring of children's health and nutrition, rather than relying solely on cross-sectional data. Continuous follow-up during preschool consultations and systematic nutritional reassessment after infections could provide more accurate insights into the interplay between disease and malnutrition.

These findings call for multi-sectoral strategies that address both immediate and structural determinants of malnutrition. Recurrent conflicts and population displacement in these regions exacerbate vulnerabilities, particularly among women and children. Strengthening Infant and Young Child Feeding (IYCF) practices during the first 1,000 days remains critical, but must be complemented by improved access to health services, agricultural production, and functioning nutritional units (UNTA/UNTI). Local governments should integrate nutrition into broader development policies, ensuring that interventions are tailored to village-level disparities and that monitoring systems capture both health and socioeconomic drivers. By linking nutrition programs with community resilience and local economic development, policies can reduce inequalities, lower child mortality, and foster sustainable improvements in child health [3,15].

Limitations and strengths of the study

The strength of this study lies in its large, representative sample, allowing extrapolation to the populations of Kenge and Befale. However, several limitations must be acknowledged. First, the use of secondary data introduces constraints, as key variables such as parental food security, detailed sociodemographic information, and follow-up outcomes of diagnosed children were unavailable. Second, selection bias may have occurred since only children aged 6–59 months with complete data were included, potentially excluding vulnerable groups with missing information. These limitations highlight the need for future studies to integrate primary data collection on household conditions and feeding practices, ensuring more comprehensive evidence to guide local nutrition policies and interventions

5. Conclusion

This study reports the prevalence and distribution of malnutrition in Kenge and Befale, revealing that global acute malnutrition (GAM) exceeded the WHO emergency threshold (10%) and that several villages had rates above 20%. Stunting affected more than 40% of children, while underweight remained widespread.

These findings highlight disparities according to age, sex, and geographic location, but, due to its cross-sectional nature and

the use of secondary data, it cannot establish causal relationships. Despite these limitations, the study provides valuable data for the development of local nutrition policies. It is essential to strengthen infant and young child feeding (IYCF) practices during the first 1,000 days, to tailor interventions to vulnerable groups, and to integrate nutrition into community development strategies.

Future research should focus on addressing the identified gaps to better inform sustainable and context-appropriate interventions.

What we already know about this subject

The nutritional situation in the DRC and in the province of Kwango and Tshuapa remains worrying there are disparities in the prevalence of different forms of malnutrition between the provinces and within the provinces

What this study adds

This study confirms the idea that inequality of different forms of malnutrition exists in the territory of Befale and Kenge, and between the villages of this territory. The specific sex and age of the child were associated with underweight and malnutrition in theses territories, with high prevalence in some villages compared to others.

The study provides a prevalence of global acute malnutrition above 10%, that of stunting the threshold of 40% and that of underweight the threshold of 20% in theses territories.

Competing interests

The authors declare no competing interests.

Author contributions

BKN designed the entire study, conducted the data collection, and wrote the master's thesis from which this manuscript is drawn.

M. Ali , JBM and MB added few ideas in the background, the results and discussion sections.

MCM supervised and facilitated the entire process of producing this dissertation as part of the completion of the Master in Public Health. She evaluated the different versions of the dissertation protocol and gave guidance on the manuscripts

Acknowledgements

To the direction of National program of Nutrition and committed of KSPH, and facilitators of this paper.

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Tables

Table I. Malnutrition by Sociodemographic Characteristics of children aged 6-59 months in Kenge and Befale

Characteristics	Prevalence of Underweight	Prevalence of Underweight	Prevalence of Stunting	Prevalence of Stunting	Prevalence of Global Acute Malnutrition	Prevalence of Global Acute Malnutrition
Characteristics	Befale	Kenge	Befale	Kenge	Befale	Kenge
Characteristics	(%)	(%)	(%)	(%)	(%)	(%)
Age (months)						
6-11	23.8	26.2	23.8	38.3	11.3	8.5
12-23	21.6	21.9	31.5	40.0	10.5	12.9
24-59	25.4	33.9	49.5	48.4	11.5	11.8
p-value	0.576	0.006	0.001	0.034	0.938	0.441
Sexe						
Female	20.8	23.6	40.5	39.1	8.0	10.8
Male	28.8	35.5	49.5	49.9	14.8	11.9
p-value	0.002	0.001	0.003	0.002	0.001	0.603

Table II. Malnutrition by History of Illnesses among children aged 6-59 months in the territories of Kenge and Befale

History of illnesses	Stunting	Stunting	Global acute malnutrition	Global acute malnutrition	Underweight	Underweight
	Befale	Kenge	Befale	Kenge	Befale	Kenge
	(%)	(%)	(%)	(%)	(%)	(%)
Presence of cough						
Absence	45.1	45.2	11.2	11.5	24.8	29.6
Presence	40.4	37.3	12.8	9.8	23.4	31.4
p-value	0.524	0.269	0.746	0.716	0.830	0.789
Presence of Malaria						
Absence	45.2	44.5	11.5	11.3	24.4	30.1
Presence	40.4	50.0	9.8	12.5	27.5	16.7
p-value	0.552	0.596	0.600	0.859	0.503	0.155
Presence of diarrhea						
Absence	45.1	44.5	11.2	11.1	24.7	29.2
Presence	43.2	48.0	12.3	20.0	24.7	44.0
p-value	0.744	0.736	0.759	0.167	0.994	0.112

Table III. Factors Associated with Malnutrition among Children Aged 6–59 Months in Kenge Territory

Variables in the Malnutrition equation	Variables in the Malnutrition equation	ORa	95% CI	95% CI	p-value
			Lower	Superior	
GAM	Female gender	1.0	0.7	1.7	0.6
	Presence of Diarrhea	2.2	0.7	6.7	0.1
	Presence of Cough	0.9	0.3	2.6	0.8
	Presence of Malaria	1.3	0.3	5.1	0.6
	Age 6-11 months	1.4	0.7	2.7	0.2
	Age 12-23 months	0.9	0.5	1.5	0.7
Stunting	Female gender	1.5	1.1	2.0	0.003
	Presence of Diarrhea	1.3	0.5	3.1	0.5
	Presence of Cough	0.7	0.3	1.4	0.3
	Presence of Malaria	1.5	0.6	3.8	0.3
	Age 6-11 months	1.4	0.9	2.1	0.06
	Age 12-23 months	1.4	0.9	2.0	0.05
Underweight	Female gender	1.7	1.3	2.4	0.00
	Presence of Diarrhea	2.4	1.0	5.8	0.04
	Presence of Cough	1.2	0.6	2.5	0.5
	Presence of Malaria	0.6	0.1	1.9	0.4
	Age 6-11 months	1.3	0.8	2.1	0.1
	Age 12-23 months	1.8	1.2	2.8	0.003

Table IV. Factors Associated with Malnutrition among Children Aged 6–59 Months in Befale Territory

Equation variables	Equation variables	ORa	95% CI	95% CI	p-value
			Lower	Superior	
GAM	Female gender	2.1	0.9	4.6	0.07
	Presence of Diarrhea	1.2	0.5	2.9	0.5
	Presence of Cough	1.1	0.3	3.1	0.8
	Presence of Malaria	0.9	0.4	2.1	0.8
	Age 12-23 months	0.8	0.3	2.1	0.6
Stunting	Female gender	1.6	1.0	2.7	0.03
	Presence of Diarrhea	0.9	0.5	1.6	0.7
	Presence of Cough	0.9	0.4	1.7	0.7
	Presence of Malaria	0.8	0.5	1.5	0.6
	Age 6-11 months	2.6	1.0	6.8	0.03
	Age 12-23 months	3.7	1.7	7.9	0.001
Underweight	Female gender	1.5	0.8	2.7	0.1
	Presence of Diarrhea	1.1	0.6	2.0	0.7
	Presence of Cough	0.9	0.4	1.9	0.8
	Presence of Malaria	1.4	0.8	2.5	0.2
	Age 6-11 months	1.7	0.5	5.3	0.3
	Age 12-23 months	1.2	0.5	2.7	0.5

Figures

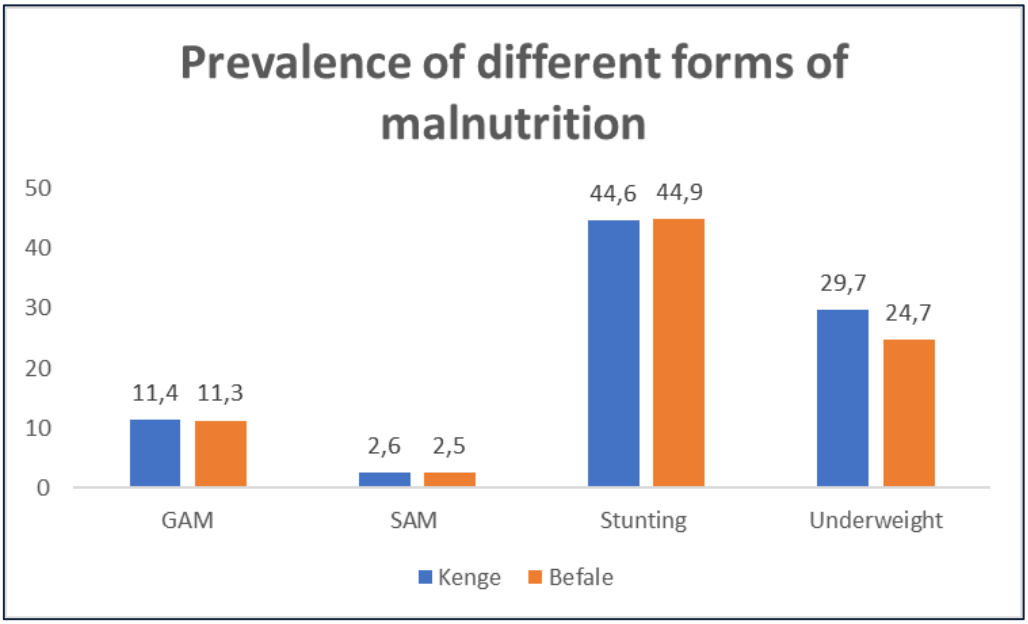

Figure 1. Prevalence of Malnutrition Forms in Kenge and Befale

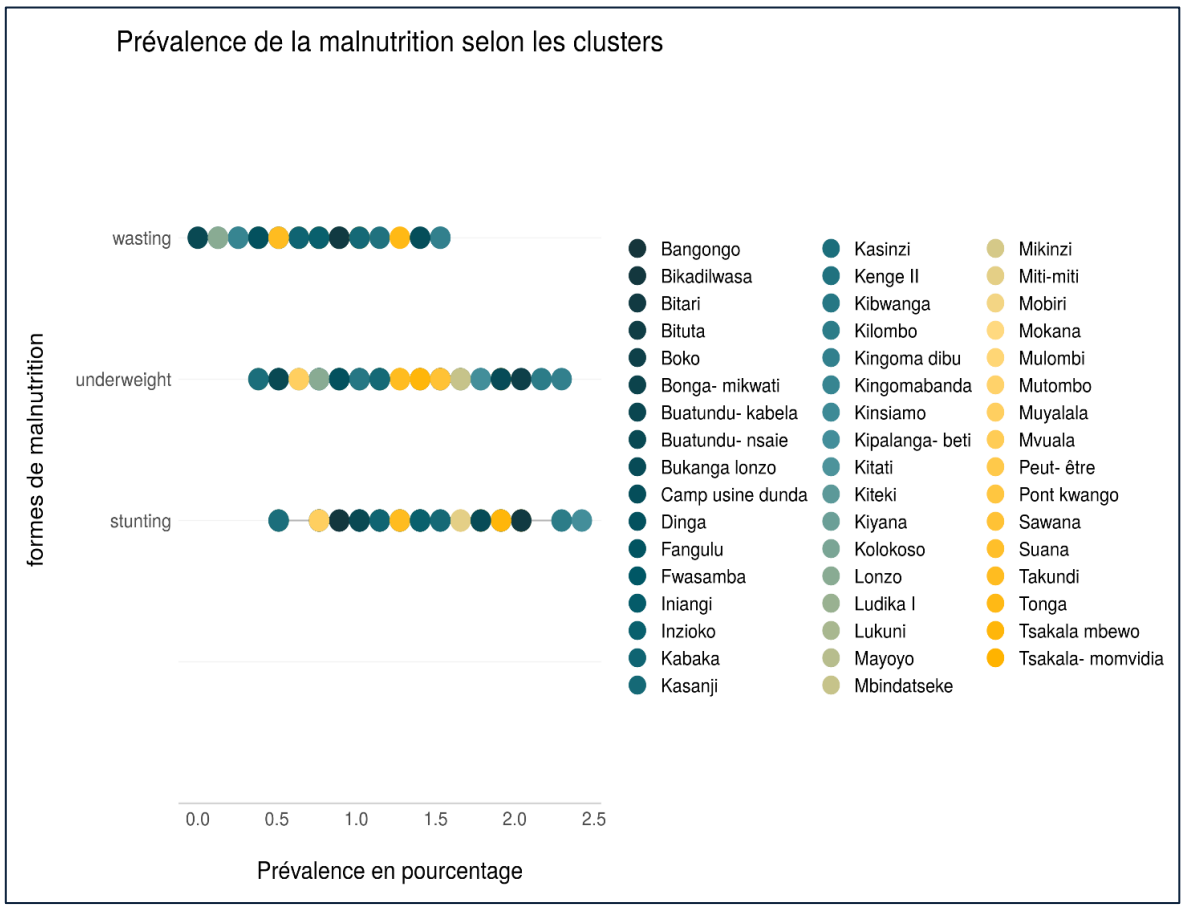

Figure 2. Malnutrition Prevalence by Village in Kenge

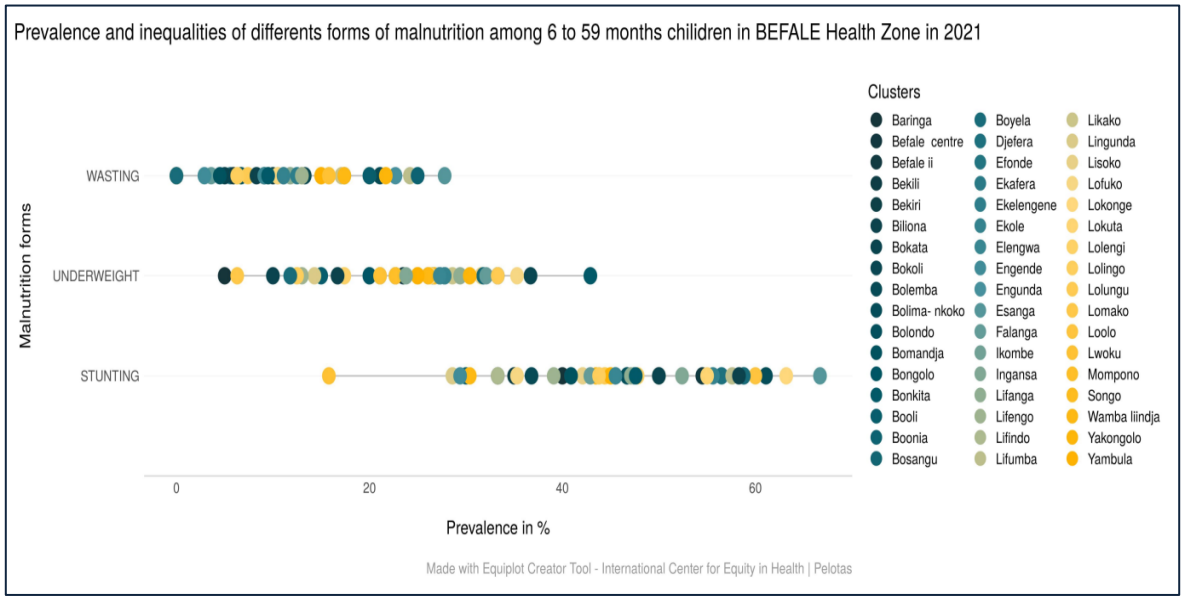

Figure 3. Malnutrition Prevalence by Village in Befale

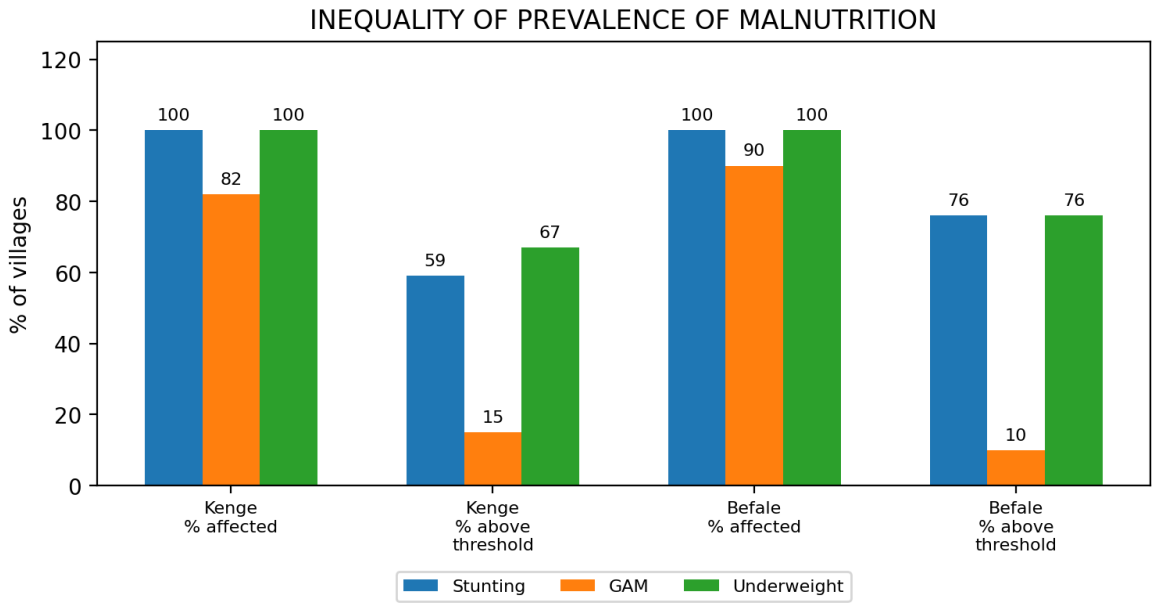

Figure 4. Comparative Inequalities in Malnutrition Prevalence between Kenge and Befale