



Prevalence of Malnutrition among Preschool Children in the Katuba Health District. Case of the Katuba General Reference Hospital in the Democratic Republic of Congo

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Abstract

Introduction: Malnutrition is one of the main causes of mortality in Africa among children aged from 0 to 5 years old. It is a real public health problem.

Methodology: We conducted a cross-sectional study on malnutrition in preschool children at the Katuba General Reference Hospital. **Results:** Edema was present in 25% of cases and 73 or 42.69% of the children were in the age group of 13 to 18 months; 69.59% were females. We observed that 58.48% of the children were vaccinated against 41.52 who were not vaccinated. Many parents of children were married (52.6%). Most parents had a liberal profession (53.8%) parents with a liberal profession were in the majority (53.8%). Moderate acute malnutrition represented 9.36% according to Z-score Weight for age and 12.28% Severe acute malnutrition according to arm circumference. **Conclusion:** Malnutrition remains a scourge in Lubumbashi. It is important that a communication campaign be favored to promote local foods rich in essential elements, accessible to fight against malnutrition.



Subject Areas

Public Health

Keywords

Katuba, General Referral Hospital, Malnutrition Preschool Age

1. Introduction

In developing countries, child malnutrition and developmental delays are two major public health challenges. To realize the vision of the Sustainable Development Goals within a broader health perspective, early identification of developmental delays and rapid intervention is essential (Saleem *et al.*, 2021) [1].

Severe acute malnutrition (SAM) in children under five is an important public health problem due to the associated high mortality and long-term health consequences. Research on the dietary causes of SAM, in particular the role and relative importance of dietary protein, in the etiology of edematous malnutrition, has given rise to much debate and controversy (Bharati-Kulkarni and Raja-Sriswan-Mamidi, 2019) [2].

Protein-energy malnutrition is a major public health problem in low-income countries. It contributes significantly to the increase in mortality among children aged 0 - 59 months (Ngandu-wa-Ngandu *et al.*, 2021) [3].

In developing countries, feeding practices are very often inadequate and incompatible with the recommendations of the World Health Organization (WHO) (World Health Organization, 2001) [4].

2. Methodology

2.1. Study Framework

Our study will be conducted at the General Reference Hospital of Katuba, in the Provincial Division of Haut Katanga in the Democratic Republic of Congo.

This study was carried out at the KATUBA General Reference Hospital.

We conducted a cross-sectional descriptive observational study. The documentary review served as a technique for data collection. This study will cover a period of 6 months, from 01/01 2022 to 30/06/2022.

2.2. Study Population

Malnourished children of preschool age and received at the General Reference Hospital of Katuba constituted our study population.

2.3. Inclusion and Exclusion Criteria

Were included in our study, any malnourished child of preschool age and re-

ceived at the General Reference Hospital of Katuba during our study period from 01/01 2022 to 30/06/2022.

Were not included in our study, any malnourished child of preschool age and received at the General Reference Hospital of Katuba outside our study period, *i.e.* from 01/01 2022 to 30/06/2022, any child malnourished children of preschool age received at the General Reference Hospital of Katuba during our study period but for whom certain variables of interest are missing, as well as any malnourished child received at the General Reference Hospital of Katuba during our study period but whose age is greater than Five (5) years.

2.4. Sampling and Sample Size

Our sampling was exhaustive, and its size is made up of all the malnourished children who were received at the General Reference Hospital of Katuba during our study period and whose file is complete.

We collected 171 children received in preschool consultation at the Katuba General Reference Hospital during our study period. It should be noted that 351 children were identified at the level of the preschool consultation service at the general reference hospital of Katuba during our study period.

2.5. Data Collection Materials

A sheet made up of the variables of interest was created for the collection and these variables come from the various sheets and registers existing at the center for the treatment of malnourished children.

We also used a ballpoint pen, pencil, eraser, and a register book.

2.6. Statistical Analysis Methods

Frequency analyzes and proportions were performed (univariate analyses) for the qualitative variables. The mean and the standard deviation were calculated for the quantitative variables.

We carried out a statistical analysis of the data using Epi Info software version 7.2.5.0, ENA and Excel 2013 which allowed us to present the results in the form of tables and figures, the Mendeley software among us to generate the references.

3. Results

We carried out a statistical analysis of the data using Epi Info software version 7.2.5.0, ENA and Excel 2013 which allowed us to present the results in the form of tables and figures, the Mendeley software among us to generate the references.

Table 1 tells us that 73 or 42.69% of the children were in the age group of 13 to 18 months, followed by a group of 6 to 12 months with 64 or 37.43%.

As shown in **Table 2**, nearly 7 out of 10 children (119) or 69.59% of children received in preschool consultation at the Katuba General Reference Hospital were female against male with 78 or 45.61%. Sex ratio M/F = 0.8.

As shown in **Table 3**, most of children live in the commune of Katuba (69.6%) against those who live in the commune of Kampemba (2.3%).

Regarding the vaccination status, 58.48% of the children were vaccinated against 41.52 who were not vaccinated (**Table 4**).

As shown in **Table 5**, the majority of parents of children were married (52.6%) versus single (13.5%).

As shown in **Table 6**, the majority of parents had a liberal profession (53.8%) parents with a liberal profession were in the majority (53.8%).

Table 1. Distribution of children by age.

Ages in months	Number	Frequency	Percentage
6 to 12		64	37.43
13 to 18		73	42.69
19 mois et plus		34	19.88

Table 2. Distribution of children by gender.

Gender	Frequency	Percentage
Féminin	93	54.39
Masculin	78	45.61

Table 3. Distribution of children by municipality.

Municipality	Frequency	Percentage
Annexe	34	19.88
Kampemba	4	2.34
Katuba	119	69.59
Kenya	14	8.19

Table 4. Distribution of children according to the vaccination schedule.

Vaccination schedule	Frequency	Percentage
No	71	41.52
Yes	100	58.48

Table 5. Distribution of children according to marital status of parents.

Marital status	Frequency	Percentage
Single	23	13.45
Divorce	40	23.39
Married	90	52.63
Widow or widower	18	10.53

Table 7 indicates 30.4% of mild nutrition according to Z-score Weight for age.

As shown in **Table 8**, mild malnutrition represents 29.8% according to height-for-age Z-score.

Table 9 indicates that 75 children out of 171 had presented a Z-score normal height according to weight-for-height Z-score.

Table 10 shows that 121 or 70.76% of children had mild malnutrition, followed by moderately acutely malnourished children with 29 or 16.96%.

Table 6. Distribution of children according to parents' profession.

Profession	Frequency	Percentage
State agent	40	23.39
Farmer	27	15.79
Guardian	12	7.02
Liberal	92	53.8

Table 7. Distribution of respondents according to Z-score Weight for age.

Z-score Weight for age	Frequency	Percentage
Moderate acute malnutrition (Z-score between -3 to -2)	16	9.36
Severe acute malnutrition (Z-score < -3)	7	4.09
Mild malnutrition (Z-score between -2 to -1)	52	30.41
Normal (Z-score \geq -1)	96	56.14
Total	171	100

Table 8. Distribution of respondents according to height-for-age Z-score.

Height-for-age Z-score	Frequency	Percentage
Moderate acute malnutrition (Z-score between -3 to -2)	25	14.62
Severe acute malnutrition (Z-score < -3)	18	10.53
Mild malnutrition (Z-score between -2 to -1)	51	29.82
Normal (Z-score \geq -1)	77	45.03
Total	171	100

Table 9. Distribution of respondents according to weight-for-height Z-score.

Weight-for-height Z-score	Frequency	Percentage
Moderate acute malnutrition (Z-score between -3 to -2)	28	16.37
Severe acute malnutrition (Z-score < -3)	2	1.17
Mild malnutrition (Z-score between -2 to -1)	66	38.60
Normal (Z-score \geq -1)	75	43.86
Total	171	100

Table 11 shows us that 31 or 18.13% of malnourished children were born with low weight against 140 or 81.87%.

Table 12 shows us that 43 or 25.15% of malnourished children had the presence of edema against 128 or 74.85%.

4. Discussion

Socio-demographic characteristics and vaccination status of children.

Table 1 shows us that 42.69% of the children were in the age bracket between 13 and 18 months versus those whose age is between 6 and 12 months (37.4% followed by a bracket of 6 to 12 months with 64 or 37.43% Fatoumata, in her study conducted at the Center Hospitalier Universitaire Gabriel Toure, showed that children aged between 12 and 23 were in the majority (58.5%) (Fatoumata. M. Traore, 2014) [5]. In Ethiopia, a study on malnutrition indicates that children aged between 12 and 35 are in the majority (Tesfay *et al.*, 2020) [6].

Of 171 children received at the Katuba General Reference Hospital, 93 or 54.39% were female versus 78 or 45.61% who represent the male sex with a sex ratio M/F = 0.8. Our results are similar to those of Mali and Morocco (Fofana, 2009 [7]; El-Badraouy, Aboussaleh and Correspondance, 2020 [8]) but contrary to those made by Aké-Tano in the Ivory Coast where male children were mainly represented (Aké-Tano *et al.*, 2010) [9]. Another study conducted in Lubumbashi found a predominance of male children (Ngoy *et al.*, 2022) [10].

Table 10. Distribution of children according to arm circumference in millimeters.

Arm circumference in millimeters	Frequency	Percentage
Moderate acute malnutrition ≥ 115 to 119 mm	29	16.96
Severe acute malnutrition < 115 mm	21	12.28
Mild malnutrition 120 to 124 mm	121	70.76
Total	171	100

Table 11. Distribution of children according to birth weight.

Low birth weight	Frequency	Percentage
No	140	81.87
Yes	31	18.13
Total	171	100

Table 12. Distribution of children according to the presence of edema.

Presence of edema	Frequency	Percentage
No	128	74.85
Yes	43	25.15
Total	171	100

Regarding the vaccination status, 58.48% of the children were vaccinated against 41.52 who were not vaccinated.

Sociodemographic characteristics of parents of malnourished children.

Table 2 indicates that the majority of parents of children were married (52.6%) versus single (13.5%); the parents being of liberal profession were the majority (53.8%) and those who have no level of study represent the large part (35%). In Mali, workers represented 52.5% against only 0.75% of civil servants (Savadogo *et al.*, 2007) [11].

4.1. Z-Score Weight for Age

The mean P/A Z-score is 0.41 (Std Dev = 2.50).

We observed that 52 children or 30.41% of children had mild malnutrition (Z-score between -2 to -1). In Ethiopia, the results of a study indicate that mild malnutrition represents 12.8% (Fentaw and Bogale, 2013) [12].

4.2. Z-Score Height for Age

By distributing the children according to the classification of malnutrition taking into account the Z-score height for age (**Table 8**) we observe that mild malnutrition represents nearly 30% of children followed by acute malnutrition (14.6%). Height deficit for Age was the majority (44%) in a study conducted in Kenya (Kwena *et al.*, 2003) [13]. Musimwa found 85% of children were chronically malnourished (Musimwa, 2017) [14].

4.3. Z-Score Weight for Height

The average Z-score P/T is 4.15 (Standard deviation = 5.0) and the majority of malnourished children, 43.86% of children had a normal Z-score, whereas for those who presented the malnutrition, the majority had a Z-score between -2 and -1 or 38.60%. These observations are different from those found by Cissouma (Cissouma, 2022) [15].

4.4. Malnutrition according to Arm Circumference in Millimeters

The distribution of malnourished children, arm circumference indicates that moderate malnutrition was observed in 29 children (16.9%).

Malnutrition by birth weight.

Almost 8 malnourished children did not have low birth weight (82%).

4.5. Malnutrition according to the Presence of Edema

In 74.9%, an absence of edema was generally observed in children seen in consultation at the Katuba General Reference Hospital versus those in 25.2% (**Table 8**). Our observation, which is superior, is similar to that of Cissouma who found that edema was observed in 2.34% of cases in malnourished children (Cissouma, 2022) [15].

5. Conclusions

We conducted a cross-sectional descriptive study on malnutrition in children aged 0 to 59 months received in preschool consultation at the Katuba General Reference Hospital.

Of a total of 351 children, 171 presented with malnutrition, a prevalence of 48.7%.

Our study observed that the height-for-age deficit was around 44% that of weight-for-age was in the proportion of 30%.

Arm circumference indicates that moderate malnutrition was observed in 29 children (16.9%). Almost 8 malnourished children did not have low birth weight (82%).

Most parents of children were married (52.6%) and parents with a liberal profession were in the majority (53.8%) and those with no level of education represent the majority (35%). Malnutrition is a real public health problem. Improving the nutritional status of populations is the sine qua non for achieving the SDGs.

Conflicts of Interest

The authors declare no conflicts of interest.

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