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EPIDEMIC-CLINICAL PROFILE OF MALNUTRITION IN CHILDREN AGED 6 MONTHS TO 5 YEARS IN THE DJOLU HEALTH ZONE, DEMOCRATIC REPUBLIC OF CONGO

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ABSTRACT

This study aimed to determine the prevalence of malnutrition among children aged 6 months to 5 years in the Djolu Health Zone in the Tshuapa Province in the Democratic Republic of the Congo and to analyze the management of malnutrition. And this, during the period from April 24, 2023 to May 24, 2024. To carry out this study, we used the descriptive method of the cross-sectional type; from a population estimated at 285 children of mixed ages, we selected a sample of 71 children whose age varies between 6 months to 5 years and presenting a clinical picture dominated by malnutrition and admitted to the General Reference Hospital of Djolu. From this study the analysis showed that out of a total of 285 children followed, i.e. 24.4 % of study subjects had presented with malnutrition; the age group of 6 to 11 months was the most concerned, i.e. 63%; female subjects were in the majority, i.e. 56.3%; weight loss or 40.8% was the main complaint; no associated pathology was identified, i.e. 46.4%; acute malnutrition, i.e. 60.5%, was the most observed type; 100% of subjects had received vitamins and dewormer as medical treatment and benefited from nutritional treatment; 75 to 80% progressed normally well; 40.8% presented superinfection as a complication. Improved nutrition, health education and access to care could have a direct impact on reducing malnutrition. These efforts must include continuous monitoring of vulnerable children and early interventions, especially in the absence of associated pathologies.

Keywords: Malnutrition, Child, Clinic, Epidemic, Profile.

1.0 INTRODUCTION

An individual's health depends largely on how well they eat. There is an old saying that you have to eat to live, but you still have to be able and "know" how to eat, because an unbalanced diet due to excess or lack of intake can be as harmful as a lack of food. This imbalance is a real public health problem throughout the world. On the one hand, it can be overnutrition with its consequences on health such as obesity, diabetes, heart disease and, on the other hand, undernourishment which leads to malnutrition due to deficiency commonly known as undernourishment or undernutrition (1).

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Malnutrition also affects a child's physical and brain development, jeopardizing his or her chances of leading a healthy and productive life. Malnutrition can be caused by a multitude of factors, including difficulties in obtaining nutritious food and lack of water and sanitation facilities, inadequate care practices, and problems accessing health services. These factors are often structural and linked to a high degree of poverty. They are aggravated in times of crisis (natural or man-made) (2).

According to the WHO [3], malnutrition has persisted in all its forms, with children paying a heavy price: in 2020, it is estimated that in 2020, more than 149 million children under the age of 5 were stunted, i.e. too short for their age; more than 45 million suffered from wasting, i.e. they were underweight for their height; and nearly 39 million were overweight. Three billion adults and children remain excluded from healthy diets, largely due to excessive costs. Globally, despite progress in some areas, more very young children, for example, are being fed exclusively within the world.

As we head into 2021, UNICEF is particularly concerned about the health and well-being of 10.4 million children who are expected to suffer from acute malnutrition (4).

The scourge of undernutrition is of considerable magnitude in South Asia. Malnutrition and underweight rates among children are among the highest in the world, meaning that many children are too short or underweight for their age (5).

In northeastern Nigeria, more than 800,000 children are expected to be acutely malnourished in 2021 and severe acute malnutrition poses an immediate life-threatening threat to nearly 300,000 of them. UNICEF estimated that in 2017, 400,000 children would be severely acutely malnourished in northeastern Nigeria. Nearly one in five children, more than 75,000, would die if they did not receive treatment (6). The situation is even more critical in the northwest of the country. In Kebbi State, the rate of chronic malnutrition stands at 66%, 20% higher than in Bornu State, in the northeast. In Sokoto State, also in northwestern Nigeria, nearly 18% of children suffer from wasting and 6.5% from severe wasting (7).

In South Sudan, the update of the Integrated Food Security Phase Classification published a few weeks ago signalled a further deterioration in food security: nearly 7.3 million people, or 60% of the population, were at risk of severe acute food insecurity in 2021. An estimated 1.4 million children are at risk of acute malnutrition in 2021, the highest level since 2013. At the same time, the number of children suffering from severe acute malnutrition is expected to increase from 292,000 this year to more than 313,000 children in 2021 (8).

The increase in household food insecurity and acute malnutrition is due to ongoing conflict and insecurity, as well as limited access to essential nutrition and health services, as well as water, sanitation and hygiene. Flooding in some areas in 2020 has increased the already high level of acute malnutrition among children (9)

In Burkina Faso, Mali and Niger, three countries in the Central Sahel, due to intensifying conflict, displacement and climate shocks, about 5.4 million people will struggle to meet their daily food needs during the next lean season. Compared to its five-year average, acute food insecurity increased by 16.7% in Burkina Faso, 34% in Mali and 39% in Niger (10). The number of children suffering from acute malnutrition could rise by 21%. The number of

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malnourished children in these three countries would then reach a staggering 2.9 million, including 890,000 severely acutely malnourished children.

In the Democratic Republic of Congo, an estimated 3.3 million children under the age of 5 were acutely malnourished in 2021, including at least one million from severe acute malnutrition. These alarming figures are the result of continued insecurity, the socio-economic consequences of the COVID-19 pandemic and the limited access of vulnerable children and families to essential services (11).

On average, more than 70% of acutely malnourished children in the Democratic Republic of Congo (DRC) did not have access to treatment in 2021. The malnutrition situation has remained worrying in this country for the past decades. The DRC is one of ten countries that account for 60% of the global burden of malnutrition among children under 5 years of age (12).

The General Assembly on Agriculture and Nutrition held in the Province of Tshuapa in October 2019 revealed that 43% of children were suffering from malnutrition (13).

This concern led us to conduct this research with the aim of reducing the rate of malnutrition and improving the care of malnourished children aged 6 months to 5 years in the Djolu Health Zone.

Specifically, this study aims to determine the prevalence of malnutrition among children aged 6 months to 5 years in the Djolu Health Zone and to analyze the management of malnutrition.

2.0 METHODOLOGY

2.1 Materials

2.1.1 Description de champ d'investigation

This study is being conducted in the Djolu Health Zone, located in the city of Djolu, in the territory of the same name, Tshuapa Province, in the Democratic Republic of Congo. It has 28 health centers, 1 general referral hospital, 2 polyclinics and 16 health posts for a total of 47 health facilities.

This health entity is bounded as follows: to the east by the Lopori River; to the west by the Mopono health zone; to the north by the Bokungu health zone and to the south by the Lingomo health zone.

2.1.2 Population and study sample

The population concerned by this study is made up of all the children who came for consultation at the Djolu General Reference Hospital during the study period, whose number was estimated at 285 children of all ages.

Based on this population, we selected a sample of 71 children whose age varies from 6 months to 5 years and presenting a clinical picture dominated by malnutrition and admitted to the General Reference Hospital of Djolu.

2.2 Method and techniques

2.2.1 Type of study

Our study is descriptive of the cross-sectional type conducted in the Djolu Health Zone in Tshuapa Province during the period from April 24, 2023 to May 24, 2024.

2.2.2 Data collection technique

To collect the data, we proceeded using the documentary analysis technique, which allowed us to consult the registers, patient files and service sheets of children residing in the Djolu Health Zone.

To achieve this, we have prepared a data collection sheet including the study variables for their analysis. These variables include age, sex, parental education, clinical monkeys, associated pathology, types of malnutrition, laboratory work-up, treatment, course and complication.

2.2.3 Data processing technology

The data collected in the various patient cards and files were grouped together in the frequency distribution tables and then transformed into a percentage for their analysis. We also used arithmetic mean calculation to analyze some variables.

3.0 RESULTS

From this study, the analysis emerged that out of a total of 285 children followed in the Djolu health zone, or 24.4 % of the subjects in the study had presented malnutrition, ranging from January 01, 2022 to December 31, 2023.

3.1 Age

Table I: Distribution of Study Subjects by Age Group

Age range (in months)	Frequency	%
< 6	7	10
6 to 11	45	63
12 to 60	19	27
Total	**71**	**100**

It can be seen from this table that the majority of the subjects in the study were in the age group of 6 to 11 months with 45 or 63%, followed by 12 to 60 months with 19 or 27%, and the age group of < 6 months with 7 or 10%.

3.2 Gender

Table II: Distribution of Study Subjects by Age Group

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Sex	Frequency	%
Masculine	31	43,6
Feminine	40	56,3
Total	**71**	**100**

Reading this table, we show that the majority of the subjects in the study were female with 40 or 56.3%, followed by male with 31 or 43.6%.

3.3 Parents' level of education

Table III: Distribution of subjects studied according to parents' level of education

Level of education	Frequency	%
Illiterate	30	42,2
Primary	20	28,1
Secondary	15	21,1
Higher education and university	6	8,4
Total	**71**	**100**

The analysis of this table shows us that the majority of the subjects studied were illiterate with 30 subjects or 42.2%, followed by the primary level with 20 cases or 28.1%, after those of the secondary level with 15 cases or 21.1% and then the higher and university level with 6 cases, or 8.4%.

3.4 Clinical signs

Table III: Distribution of Study Subjects by Clinical Signs at Admission

Clinical signs	Frequency	%
Emaciation	**29**	**40,8**
Edema of the lower limbs	19	**26, 7**
Lethargy, vomiting, diarrhea	14	**19,7**
Curly hair	9	**12, 6**
TOTAL	**71**	**100**

This table shows that the majority of the subjects in the study had as a complaint weight loss with 29 (40.8%), followed by edema of the lower limbs with 19 (27.7%), followed by lethargy, vomiting, diarrhea with 14 (19.7%), followed by curly hair with 4 (12.6%).

3.5 Associated pathologies

Table IV: Distribution of Study Subjects by Associated Diseases

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Associated pathologies	Frequency	%
Severe malaria	14	19,7
Tuberculosis	5	7,0
In bronchi, in bronchi	11	15,4
Dermatoses	8	11,2
No disease	33	46,4
TOTAL	**71**	**100**

The analysis of this table shows that the majority of the subjects in the study had no associated pathologies with 33 or 46.4%, followed by severe malaria with 14 cases or 19.7%, followed by dermatoses with 8 cases or 11.2 followed by bronchitis and pneumonia with 11 or 15.4% and tuberculosis with 5 cases or 7.0%.

3.6 Type of Malnutrition

Table V: Distribution of study subjects by type of malnutrition

Type of malnutrition	Frequency	%
Acute	43	60,5
Severe	28	39,4
Total	**71**	**100**

It appears from this table that the majority of the subjects in the study had acute malnutrition with 43 cases or 60.5%, and 12 cases or 39.4% had severe malnutrition.

3.7 Biological assessment

Table VI: Distribution of Study Subjects by Laboratory Findings

Bilan de labo	Frequency	%
Blood count	50	70,4
TDR paludisme	15	21,1
Test d' Emmel	5	7,0
Zheil	1	1, 4
Total	**71**	**100**

The analysis of this table shows that the majority of the subjects in the study had been taken from the blood count with 50 subjects or 70%, RDT Malaria with 15 or 21.1% followed by Emmel test with 5 cases or 7.0%, in order to Ziehl with 1 or 1.4SS%.

3.8 Processing

Table VII: Distribution of Study Subjects by Drug Treatment (71)

Treatment	Frequency obs	%

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Amoxicilline, paracétamol	43	60,5
Multivitamin, Vitamin A	71	100
Antimalarial	15	21,1
Vermox	71	100

This table shows that all the subjects in the study had received vitamins and vermox as treatment with 71 cases or 100%, followed by amoxicillin and paracetamol with 43 cases or 60.5%, as well as antimalarials with 15 cases or 21.1%

Table VIII: Distribution of Study Subjects by Nutritional Treatment (71)

Treatment	Frequency obs	%
Soy	71	100
But	71	100
Sorghum	71	100
Peanut	71	100
Fish	71	100

Analysis of this table shows that all study subjects had benefited from nutritional treatment with 71 subjects or 100%.

3.9 Evolutions

Table VIII: Distribution of Study Subjects by Evolution

Evolution	Frequency	%
Good	48	67,6
Bad	18	25,3
Decius	5	7,0
Total	**71**	**100**

It appears from this table that the majority of the subjects in the study had a good evolution with 48 subjects or 67.6%, followed by the poor evolution with 18 subjects or 25.3% and 5 (7.0%) had died.

3.10 Complications

Table IX: Distribution of Study Subjects by Complications

Complication	Frequency	%
Stunting	17	23,9
Superinfection	29	40,8
No	25	35,2
TOTAL	**71**	**100**

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This table shows that the majority of the subjects in the study had as complication, superinfection with 29 subjects or 40.8%, followed by no complications with 25 subjects or 35.2% and growth retardation with 17 subjects or 23.9%.

4.0 DISCUSSION

From this study, the analysis showed that out of a total of 285 subjects in the study, 24.9% of the subjects in the study had presented malnutrition.

This result, corroborated with the study conducted in Niger by Christopher Tidey on malnutrition in children under 5 years of age in 2021, had found 21.1%.

This is justified by the fact that the nutritional crisis faced by these countries in a difficult situation due to the fallout of conflicts, disasters and climate change is turning into an imminent catastrophe.

4.1 Age

It appears from this study that the majority of the subjects in the study were in the age group of 6 to 11 months with 63%.

Our result corroborates that of Antoine Dikoke in his study on the determinants of chronic malnutrition in children under 5 years of age in the Democratic Republic of Congo, in 2019, had found that the age group most affected by malnutrition were in the age group of 6 to 11 months with 60%.

Before 6 months, the child has all the nutrients available to their proper development thanks to breast milk, but from 6 months the milk becomes insufficient the weaning diet and often little varies, the children's diet loses quality and quantity in relation to their ages and weight, which explains why malnutrition is rare before 6 months.

4.2 Gender

This study shows us that the majority of the subjects in the study were female, i.e. 56.3%.

This corroborates with Tshiabela's study in 2016 in his study on the explanatory factors on malnutrition of children under 5 years old in Cameroon, had found 69% of female children suffering from protein-energy malnutrition.

There is no gender inequality in malnutrition, because it affects girls and boys in the same way

4.3 Clinical signs

The analysis of this study shows that the majority of the subjects in the study had a complaint of weight loss, i.e. 40.8%.

This result differs from that of Mukalenga mukalaye on the prevalence and determinants of malnutrition of children under 5 years old in Lubumbashi in 2019 who found that the majority had edema as well as weight loss with 41.8%.

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This reality is due to an insufficient food intake as well as its elements are part of the admission criteria for better care in a nutritional center.

4.4 Associated pathologies

The analysis of this variable showed that the majority of the subjects in the study had no pathology associated with 33 (46.4%). In the study by Gupta et al. (2015), out of a sample of 421 children with severe acute malnutrition, 37.3% had acute respiratory infection as the most common comorbidity, followed by acute gastroenteritis. In addition, 23% of cases were diagnosed with tuberculosis, while purulent skin infections were identified in 14.7% of cases.

We can deduce from these results that certain comorbidities such as gastrointestinal or respiratory infections are often associated with malnutrition. However, it is possible that some children did not present any significant comorbidities, depending on local conditions and the health context, which is in line with our observations in the Djolu Health Zone.

4.5 Type of Malnutrition

The study showed that the majority of the subjects in the study were acutely malnourished, 60.5 per cent.

Our result corroborates with that of Mukalenga Mukalaye on the prevalence and determinants of malnutrition of children under 5 years of age in Lubumbashi in 2019.

This is because it is the most common form.

4.6 Processing

The study showed that all study subjects had received vitamins and vermox as medical treatment and 100% of study subjects had also received nutritional treatment.

According to the WHO, nutritional management is based on the use of specialized nutritious food, water, meals, and medical care if children have SAM.

4.7 Evolutions

It appears from this table that the majority of the subjects in the study had a good evolution with 67.6%

In a study on the problem of managing malnutrition among children in HPRB in 2023 in South Kivu, he found that 75 to 80% were progressing well.

We can say that after being taken care of by a specific diet, the evolution is only good.

4.8 Complications

This table shows that the majority of the subjects in the study had as a complication, superinfection with 40.8%.

In a study on the problem of the management of malnutrition in children of HPRB in 2023 in South Kivu by Kambale, 75% of superinfection was found as a complication.

5.0 CONCLUSION

Malnutrition remains a major public health problem among children, with a high prevalence in this age group. The majority of malnourished children did not have associated conditions, which could reflect exposure to specific environmental or dietary factors rather than comorbidities.

The results indicate that targeted efforts to improve nutrition, health education and access to care could have a direct impact on reducing malnutrition. These efforts should include ongoing monitoring of vulnerable children and early intervention, especially in the absence of associated pathologies.

Thus, to alleviate the problem of malnutrition in the targeted age group, it is sufficient to strengthen community awareness programs and nutrition initiatives, which could improve the overall health status of children in the Djolu Health Zone.

The strategy emphasizes the importance of rapid and preventive intervention in the fight against malnutrition in disadvantaged areas.

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