



# Epidemio-therapeutic Survey on Malnourished Children Aged 0-5 Years Old in the Gbado-Lite Health Zone (Nord Ubangi Province, Democratic Republic of the Congo)

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## Abstract :

*Child malnutrition is one cause of death worldwide, but the greatest burden is borne by African countries, particularly in Sub-Saharan Africa. The Democratic Republic of Congo, despite its wealth of biodiversity, is confronted with this phenomenon which seriously hinders its development. A cross-sectional descriptive study was conducted in The Nord Ubangi Province from 01 to 31 December 2016 on a population of 133 malnourished children aged 0 to 5. The results show that the 2 to 3 year old age group (25-36 months) was the most affected by malnutrition. The most affected children were male, at 52.63%. Most of these children, 24.8%, resided in rural areas around Gbadolite. The majority of their parents, 61.6%, was farmers or only engaged in housework. 78.9% of respondents had edema in their bodies, and 91.7% did not meet the appetite test. These children were subjected to antibacterial treatment outside of ready-to-use therapeutic foods (ATPE). After this treatment, the cure rate was satisfactory at 73.6%.*

## Keywords :

*health public; child malnutrition; child morbidity; Nord-Ubangi; Democratic Republic of the Congo.*

## I. Introduction

Nowadays, malnutrition remains a major public health problem, particularly in developing countries. In all its forms, malnutrition hinders the child's physical and mental development, decreases resistance to disease, increases the risk of early death and leads to poor academic performance later in life [1, 2]. Malnutrition can have a variety of forms working synergistically such as protein-energy malnutrition and micronutrient deficiency disorders [2]. According to UNICEF, nearly 12 million deaths occur each year in the developing world among children under five, 55% can be attributed directly or indirectly to malnutrition [2].

In the Democratic Republic of the Congo (DRC), UNICEF estimates that 6 million of children under five years old are chronically malnourished or stunted while 1.9 million children who suffer from severe acute malnutrition and 1.5 million suffer from moderate acute malnutrition [3]. According to the Demographic and Health Survey (EDS) 2013-2014, 8% of children under the age of five are acutely malnourished (3% in severe form) and 43% are chronically malnourished [4]. The same survey reported that in DRC, the prevalence of acute malnutrition exceeds the critical threshold of 10% in several provinces.

The province of Nord Ubangi is heavily affected by child malnutrition; however, no studies have so far been initiated to assess the impact of this scourge on the population lifestyle in this

part of the DRC. Henceforth, the main aim of the current research work was to assess the prevalence of malnutrition among children aged between 0 to 5 years in Gbado-Lite city. The findings of this study can help to define the need to establish a care center in order to improve the strategy in the fight against malnutrition.

## II. Metodology

This study has a cross-sectional and descriptive design. It was carried out in Gbado-Lite city in Nord Ubangi, DRC between January 1<sup>st</sup> and December 31<sup>st</sup>, 2016. The sample size was of 133 cases of malnourished children under five in General Hospital of Reference of Gbado-Lite city.

The following parameters were selected: socio-demographic parameters (Patient age in month; Sex; location, Parent's profession), brachial perimeter; Edema; Appetite test; Signs at admission; treatment and release form. All data were computed and analyzed using Graph pad version 6 whereby descriptive statistics (frequency, percentage) were considered.

For ethical reasons, the aim of the research was presented to the participants who were to assess the prevalence of malnutrition among children aged fewer than five in Gbado-Lite city. It was crucial to request the informed consent of participants and inform them about the guarantee of confidentiality of the answers provided.

In order to facilitate the participation, the interviews were held in appropriate facilities and the consent was read to the respondent prior to the interview.

## III. Discussion

### 3.1. Socio-demographic characteristics

The table 1 gives the socio-demographic characteristics of the children.

**Table 1.** Socio-demographic characteristics of malnourished children

Variables	Frequency	Percentage (%)
Sex		
○ Male	70	53
○ Female	63	47
Age (months)		
○ 3-8	25	19
○ 13-24	27	20
○ 25-36	36	27
○ 37-48	27	20
○ 49-60	18	14
Place of residence		
○ Kaya	24	18
○ Mbanza	30	23
○ Fondation	5	4
○ Taba	10	8
○ Camp Mbinza	4	3
○ Buse	4	3
○ En dehors	33	25
○ Camp INKE	9	6
○ Pangoma	14	10
Parents' profession		
○ Farmer/Household	82	62

○ Saleswoman	28	21
○ Employee	14	11
○ Military	3	2
○ Refugee	6	5

This table shows that the age group of malnourished children between 25-36 months is the most affected followed by the 13-24 month age group. The bottom of the scale is occupied by children ranging in age from 49-60 months. These findings are different from Tano *et al.* [5] who reported that malnutrition preferentially affected children aged between 12 and 23 months [6] meanwhile Nguefack *et al.* [7] reported that the most affected age group was 12-23 months [7].

In this study, the average age of malnourished children was 27 months and this average is higher than that observed in several reports [6-10, 11]. As to the gender of respondents, it was observed a predominance of male malnourished children (53%), and these findings corroborate with Louis [12].

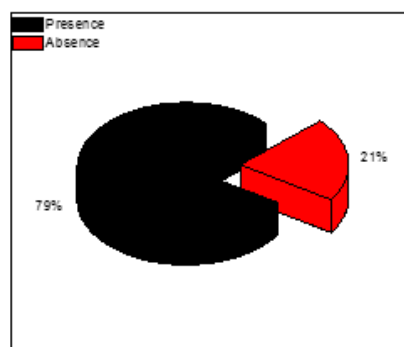
A survey conducted by the 2013-2014 ESD reported similar cases of male predominance compared to the female [4] while Nguefack *et al.* [7] reported the same findings. A study in Uganda also highlighted the dominance of male children (63%) [11]. However, Musimwa [12] reported a predominance of malnourished female children (55.87%) compared to male children (44.13%). Regarding the place of residence, the largest number of malnourished children came from the area called "En dehors" (25%) of the total workforce. These environments outside the city of Gbado-lite act as rural areas in which habitats would not benefit from better sanitary and nutritional conditions, and would therefore be more exposed. Similar results are confirmed in several studies [12, 13]. Concerning the profession of parents, it is observed that the majority of the parents surveyed (62%), are farmers.

The predominance of agriculture leads farmers into a vulnerability that leads to the paradox that "the more farmers a country has, the hungrier it is" [14]. These results are similar to the reality of the province of Grand Equateur, where the poverty rate is among the highest in the country [15]. A number of studies have shown that child malnutrition is deeply rooted by poverty [16-18]. However, the relationship between poverty and child malnutrition is quite complex. The literature has shown that malnutrition affects not only poor households, but also non-poor households [19-21]. High household incomes cannot guarantee a satisfactory nutritional outcome for children if households lack hygienic care, food quality and access to healthcare [22, 23].

### 3.2. Clinical diagnosis

#### ○ *Appreciation on Edema*

The figure 1 shows the frequency of edema in malnourished children surveyed in Gbado-Lite city.

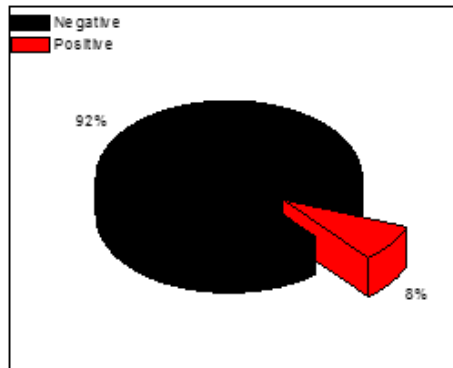


**Figure 1.** Appreciation on edema

It is observed that in the majority of cases, children had edema in their bodies. Musimwa (2017) reported that 19.0% had presented edema [13]. Other studies have confirmed the presence of edema, most often bilateral, in malnourished children [11, 24, 25].

○ **Assessment on the appetite test**

An update on the appetite test is displayed in the figure 2 below.

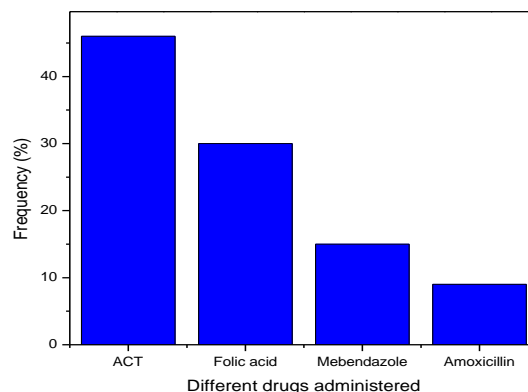


**Figure 2.** Assessment on the appetite test

From the above figure, it is observed that 122 children (92%) did not pass the appetite test, while 11 children (8%) were able to pass the appetite test. These results confirm a study published by WHO (2000), which found that the majority of malnourished children regularly suffer from a lack of appetite [26]. These results corroborate those found by Mukalay et al. (2010), which detected a high loss of appetite in malnourished children under the age of 5 [27].

○ **Assessment on the treatment administered**

The figure 3 shows how children were treated outside of the additional treatment with ATPE (ready-to-use therapeutic foods).



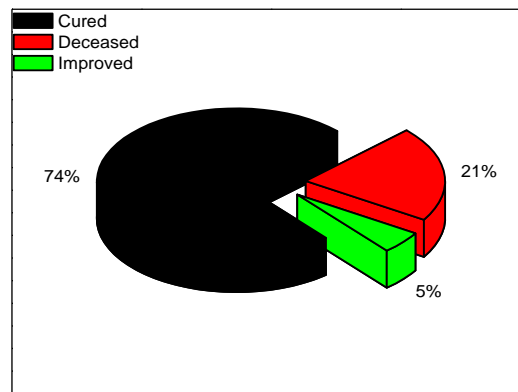
**Figure 3.** Frequency on the treatment administered

This table shows us that 46% of children were under the cover of ACT (Artemisinin Combined Therapy) followed by 40 cases or 30% who benefit from folic acid and 20 cases or 15% who received mebendazole. Hospitalized children with severe acute malnutrition (SAM) are traditionally treated with empirical antibiotics as part of their routine management [28]. Several studies have confirmed this concern for serious bacterial infections in malnourished hospitalized

children [25-27]. A study published in 2010 showed the efficacy of amoxicillin in antibacterial treatment in malnourished children [28].

#### ○ *Releasing method*

The figure 4 traces the different releasing methods after they are taken care of.



**Figure 4.** How the malnourished are released

The figure shows that 98 cases, (74%) were cured before discharge, while 28 cases (21%) had died compared to 7 cases (5%) who had come out improved. We find that the cure rate for malnourished children is satisfactory in Nord Ubangi province, but it is still lower than that found by Kambale *et al.* [29]. The latter noticed a cure rate of 90.8% out of a total of 574 malnourished children. In 2007, a study in Malawi of 2131 severely malnourished children reported 89% of children cured and 85% of a total of 806 with moderate malnutrition [31]. On the other hand, the mortality rate reported in this study is much higher than that found by Bitwe *et al.* [30] in Nord Kivu province, 414 malnourished children were hospitalized at Goma Provincial Hospital. They reported a mortality rate of 15% for all of these children. Kambale *et al.* reported a much lower case fatality rate of 7.5% of a population of 574 malnourished children in Sud Kivu province [29].

#### **IV. Conclusion**

The nutritional situation of children in the province of Nord-Ubangi in Democratic Republic of the Congo is precarious, despite the local wealth in terms of the availability of food. This shows that the fight against malnutrition is not based solely on the availability of food, education and medical treatment would improve the lives of such category of population.

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