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Evaluation of the management of Severe Acute Malnutrition with medical complications at Budjala General Referral Hospital

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Abstract: A study on the evaluation of the management of severe acute malnutrition with medical complications was conducted at the RGH of Budjala. The analysis of 50 files of SAM children was done, 52% of which were female and 48% male. The most represented age group was >59 months with 28%.
The parameters observed were: admission criteria, admission and follow-up modalities, nutritional treatment and number of meals, systematic treatment, type of discharge, length of stay. The results of the admission criteria show that 70% had a BP < 115 mm, 62% with a P/T ratio <-3ET, 48% with oedema, 48% had diarrhoea. In terms of admission and follow-up, 100% were admitted by referral and all were hospitalised. 100% of the SAM children had received corn-soy blend (CSB) as nutritional treatment with a frequency of one meal every. In relation to routine treatment, 92% had received amoxicillin, 90% had received mebendazole and 96% had received Vit A. 48% were discharged cured and 32% were discharged successfully treated with a length of stay of 5-10 days predominating with 70%.

Keywords-severe acute malnutrition, medical complication, malnutrition

I. INTRODUCTION

Malnutrition is one of the major health and welfare problems affecting young children. It is as much a result of inadequate nutrition as it is of disease. Inadequate feeding is the result of insufficient food availability at the household level and inappropriate feeding practices. Inadequate feeding practices refer not only to the quality and quantity of food offered to young children, but also to the stages of its introduction. Poor sanitary conditions increase young children's risk of contracting diseases, particularly diarrhoeal diseases, which in turn affect the child's nutritional status. Inadequate nutrition and a poor sanitary environment are a reflection of socio-economic conditions [1].
Malnutrition has serious health and economic implications. The most important is the increased risk of mortality. Other equally important consequences of malnutrition are an increased risk of disease and a reduced ability to acquire knowledge and therefore access education. In adulthood, the accumulated long-term effects of malnutrition can also result in reduced productivity and increased absenteeism, both of which can affect economic potential at both individual and national levels. In addition, malnutrition can have adverse effects on pregnancy outcomes [1].

Malnutrition is a problem that affects billions of people around the world. It is also known as undernutrition, which is a lack of energy caused by protein or micronutrient deficiencies. Malnutrition is the source of 11% of the world's diseases. Every year, it kills 3.5 million children under the age of five and affects the mental development of hundreds of thousands [2].

Malnutrition kills as much as cancer. Nearly half of all deaths of children under five are due to malnutrition. It is estimated to be responsible for 45% of child deaths worldwide.

However, with a child dying every 6 seconds from malnutrition-related problems, hunger remains the world's greatest tragedy and scandal [3]. Malnutrition is the greatest threat to child survival, but there are solutions. Malnutrition is predictable, preventable and treatable [4].

Malnutrition remains a forgotten issue for many policy makers, the reality is that there is a lack of funding and human resources to effectively address preventable and curable diseases such as severe acute malnutrition [5]. Malnutrition in children is a serious global public health problem, affecting developing countries and having significant consequences in terms of delayed physical and cognitive development and increased risk of infection and mortality. It affects all age groups, but is most common among the poor and those with inadequate access to clean water and good sanitation and lacking health education. More than 70% of children suffering from protein-energy malnutrition live in Asia, 26% in Africa and 4% in Latin America and the Caribbean [6]. UNICEF, WHO and the World Bank in 2015 estimated that 50 million children under the age of five suffer from malnutrition worldwide, about two-thirds of them in Asia.

Despite positive economic growth and strong improvements in health and nutrition indicators in recent years, it is estimated that nearly six million children in East Asia and the Pacific suffer from severe malnutrition. Moreover, only 2% of the number of malnourished children have access to treatment. If left untreated, severe acute malnutrition (SAM) in early childhood can increase the risk of contracting infectious diseases by 11.6 times. In addition, malnourished children are more likely to experience stunting and develop chronic diseases later in life. There is general agreement that SAM is a disease but is not treated as such [7].

Faced with this worrying nutritional situation, the Ministry of Health, through its specialised "PRONANUT" programme and with the support of its partners, has been setting up updated guidelines and standards since 2011, which will enable all actors to deal effectively with this scourge. This fight is based on the integration of activities for the management of cases of acute malnutrition in all health structures and at all levels of the country's health pyramid. This is the integrated management of acute malnutrition [8].

In view of the above, the RGH in Budjala has been involved for some time in the management of severe acute malnutrition with the support of Memisa in an attempt to reduce the risk of mortality to some extent. We therefore asked ourselves the following questions:

Does the management of acute malnutrition at the RGH in Budjala meet the standards of the national management protocol in force?

What is the epidemiological profile of severe acute malnutrition at the RGH in Budjala?

The answers to these questions constitute our hypotheses:

The management of acute malnutrition would not be in the norms and guidelines of the national protocol of management of the DRC in force;

Malnutrition is said to be common among weaning children.

The overall objective of this study is to assess the quality of management of severe acute malnutrition with complications

The specific objectives are as follows:

Analyse the management tools (register and patient records);

To determine the epidemiological aspects of severe acute malnutrition;

Determine the outcome of malnourished children in care

II. RESEARCH METHODOLOGY

2.1. Population and Sample

In accordance with the objectives of our study, we considered as study population, malnourished children who were hospitalised at the UNTI/HGR of Budjala meeting the following criteria

- Be severely acutely malnourished with medical complications;
- Have an individual monitoring sheet;

2.2. Data and Sources of Data

We used exhaustive sampling in our study because of the small number of children hospitalised during the period of our study. The sample size was 50 malnourished children.

We developed a data collection questionnaire that included the socio-demographic characteristics of the children, their ages, as well as a few questions based on our hypotheses. Interviews, observation and a literature review enabled us to collect the data.

The results of our study have been summarised in the frequency tables. In order to better express the results and to know the importance of each element, we proceeded by calculating the percentage.

Interpretation was made according to the modal frequencies of each modality.

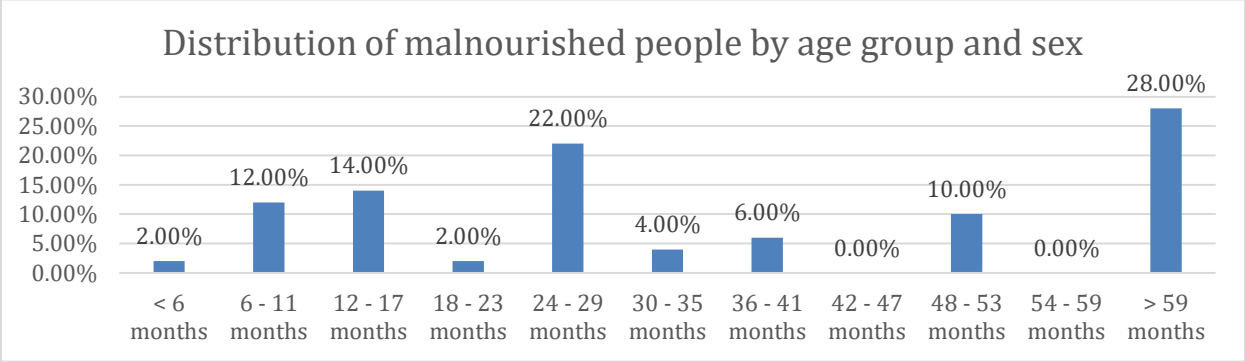
III. RESULTS AND DISCUSSION

3.1 Results of Descriptive Statics of Study Variables

Table 1 Distribution of malnourished people by age group and sex

Age group	Gender		Total	Percentage
	M	F		
< 6 months	1	0	1	2
6 - 11 months	2	4	6	12
12 - 17 months	2	5	7	14
18 - 23 months	1	0	1	2
24 - 29 months	6	5	11	22

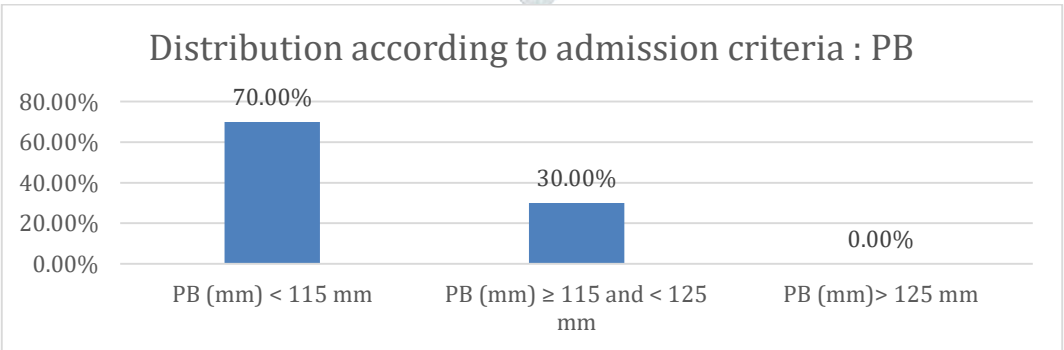
30 - 35 months	2	0	2	4
36 - 41 months	1	2	3	6
42 - 47 months	0	0	0	0
48 - 53 months	4	1	5	10
54 - 59 months	0	0	0	0
> 59 months	5	9	14	28
Total	24	26	50	100
Percentage	48	52	100	

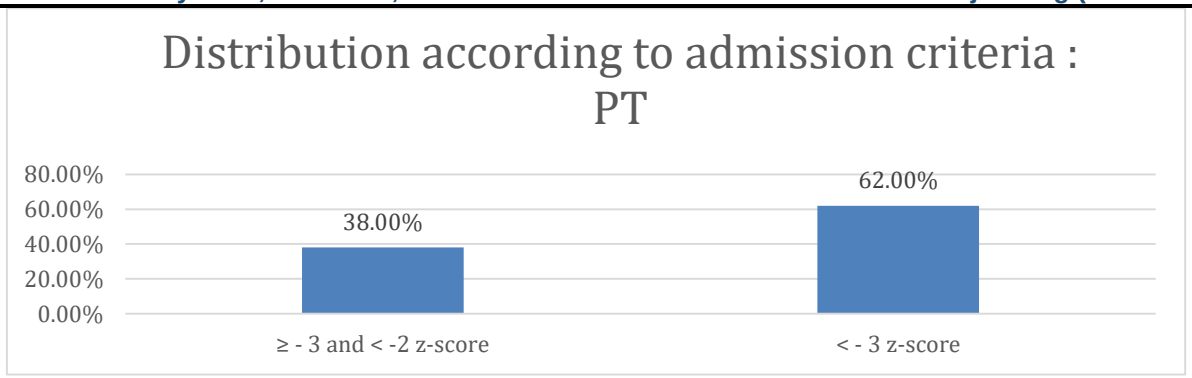


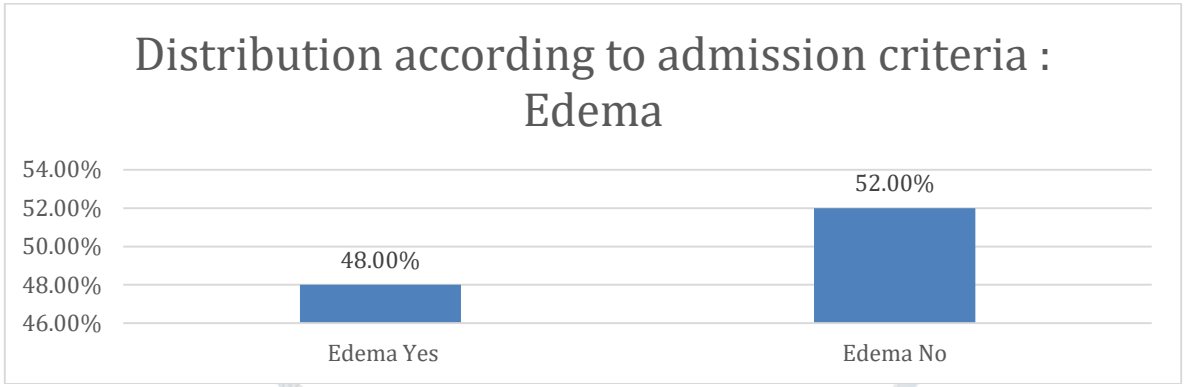
The table above shows that the most represented age group is > 59 months with a frequency of 14 or 28%, followed by the 24-29 month age group which represents a frequency of 11 or 22%. Some age groups are not represented, notably 42-47 months and 54-59 months. In terms of sex, women predominate with a frequency of 26, or 52%, as against 24, or 48%, men.

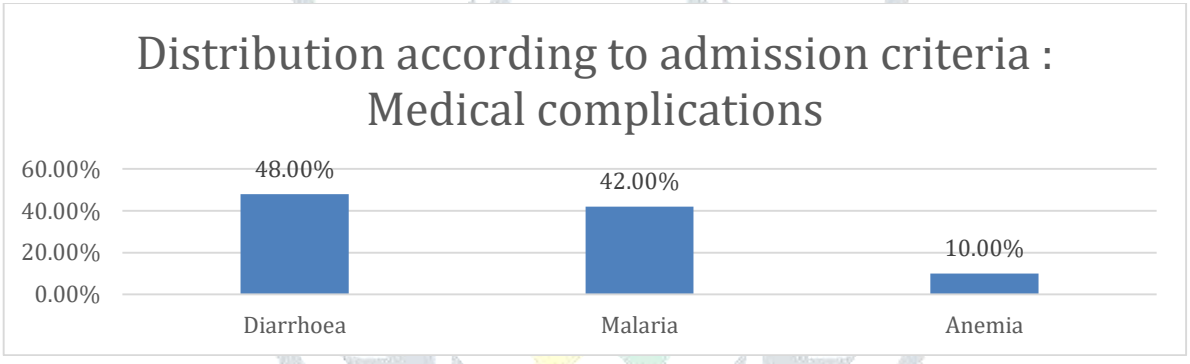
Table 2 Distribution according to admission criteria

Variables	Frequency n=50	Percentage
PB (mm)		
< 115 mm	35	70
≥ 115 and < 125 mm	15	30
> 125 mm	0	0
P/T		
≥ - 3 and < -2 z-score	19	38
< - 3 z-score	31	62
Edema		
Yes	24	48
No	26	52
Medical complications		
Diarrhoea	24	48
Malaria	21	42
Anemia	5	10





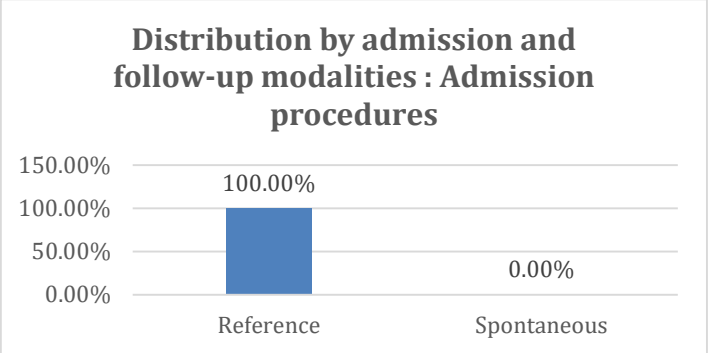


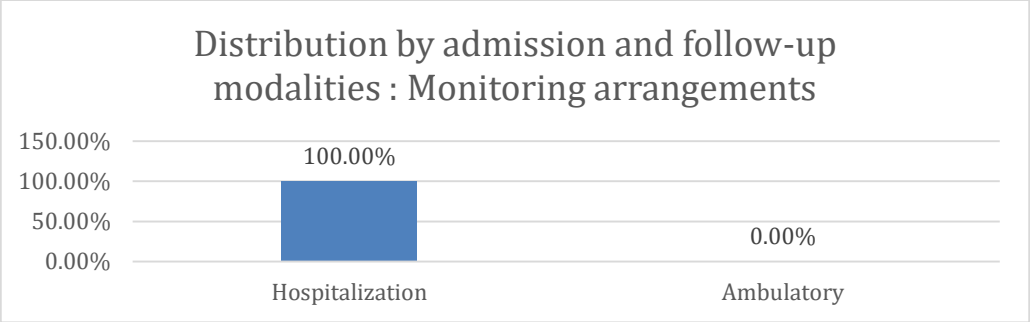


From this table we see that the most represented PB is < 115 mm with a frequency of 35 or 70% followed by ≥ 115 and < 125 mm with 15 or 30%. Those with PB > 125 mm are not represented. Regarding the P/T ratio, those with a P/T < -3 z-score predominate with a frequency of 31, i.e. 62%, against 19, i.e. 38% ≥ -3 and < -2 z-score. In relation to oedema 26 or 52% did not present oedema against 24 or 48% who presented oedema. In relation to medical complications, the most noted complication was diarrhoea with a frequency of 24 or 48% followed by malaria 21 or 42%. Those with anaemia were less represented with 5 or 10%.

Table 3 Distribution by admission and follow-up modalities

Variables	Frequency n=50	Percentage
Admission procedures		
Reference	50	100
Spontaneous	0	0
Monitoring arrangements		
Hospitalization	50	100
Ambulatory	0	0

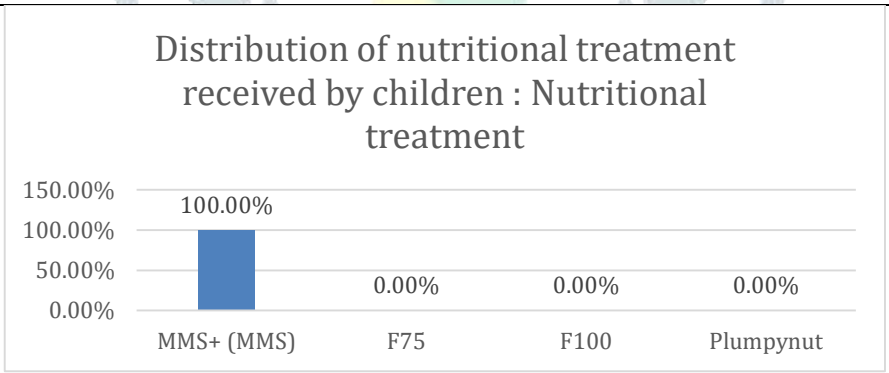


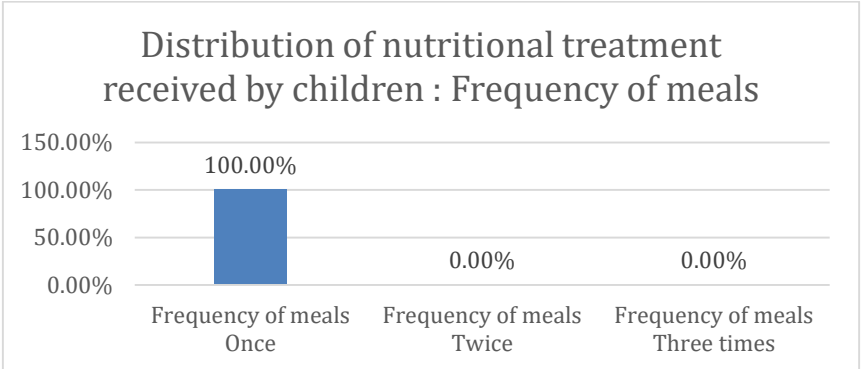


This table shows us that 100% of the children are admitted by referral and all of them have been hospitalised

Table 4 Distribution of nutritional treatment received by children

Variables	Frequency n=50	Percentage
Nutritional treatment		
MMS+ (MMS)	50	100
F75	0	0
F100	0	0
Plumpynut	0	0
Frequency of meals		
Once	50	100
Twice	0	0
Three times	0	0

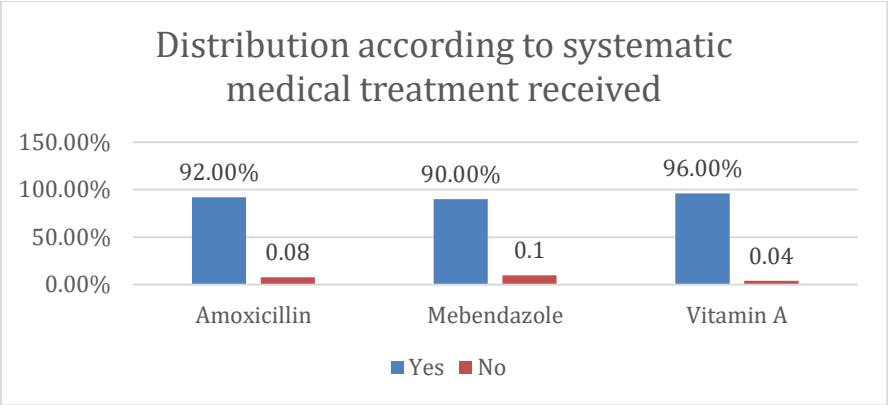




The table above shows that 100% of the children received MMS as a nutritional treatment and all received it once a day, i.e. 100%.

Table 5 Distribution according to systematic medical treatment received

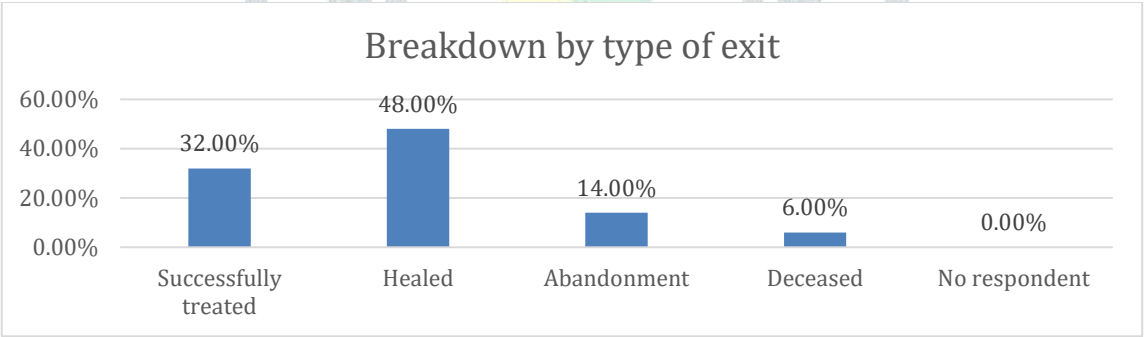
Variables	Frequency n=50	Percentage
Amoxicillin		
Yes	46	92
No	4	8
Mebendazole		
Yes	45	90
No	5	10
Vitamin A		
Yes	48	96
No	2	4



This table shows that 46 or 92% of children received amoxicillin against only 4 or 8% who did not. With regard to mebendazole 45 or 90% received against 5 or 10% who did not receive. In relation to vitamin A 48 or 96% received against only 2 or 4% who did not receive.

Table 6 Breakdown by type of exit

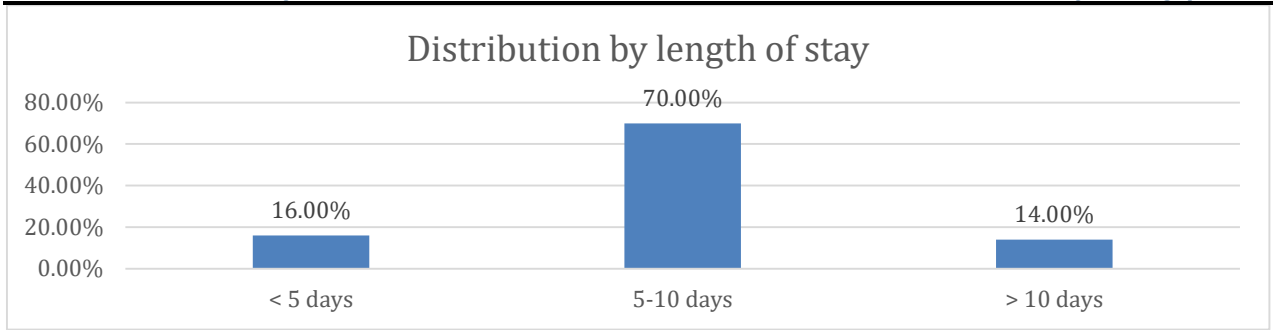
Output type	Frequency	Percentage
Successfully treated	16	32
Healed	24	48
Abandonment	7	14
Deceased	3	6
No respondent	0	0
Total	50	100



The table shows that the majority of malnourished children are declared cured, 24 or 48%, followed by those successfully treated, 16 or 32%. The dropouts represent 7 or 14% and the deceased 3 or 6%.

Table 7 Distribution by length of stay

Length of stay	Frequency	Percentage
< 5 days	8	16
5-10 days	35	70
> 10 days	7	14
Total	50	100



The table shows that the majority of children stayed in hospital for between 5 and 10 days, 35 or 70%. Those with a stay of less than 5 days and more than 10 days are respectively 8 or 16% and 7 or 14%.

3.2. Discussion of the results

3.2.1. Socio-demographic characteristics

In our study, the most represented age group is > 59 months with 28% and the predominant sex is female with 52% against 48% male. Our age group differs from Julien DEMBELE's study on the evaluation of the management of acute malnutrition at the CREN, who found that the 12-23 month age group was the majority with 52%. In relation to gender, our two results are similar, i.e. the female gender predominates in both studies [9]. The difference between our age groups depends mainly on the interval considered between the two.

3.2.2. Admission criteria

70% of our respondents had PB < 115 mm in their cards, 62% had P/T ratio < -3 Z-Score, 48% had oedema and with regard to medical complications, diarrhoea represented 48%, malaria 42% and anaemia 10%.

The anthropometric criteria are in line with the IMCI protocol criteria, but they must be associated with medical complications, either lack of appetite or generalised oedema, which unfortunately malaria as a complication is not mentioned in the IMCI protocol. It is fever that is listed as a medical complication, but not all fever is malaria. In case of fever in a malnourished child, check for malaria and look for any form of infection [10].

3.2.2. Nutritional treatment and frequency

In our study, 100% of the children had received MMS+ at the UNTI with a frequency of one meal per day. Our results deviate from the current IMAI standards, which require that acutely malnourished children should be given exclusive F75 therapeutic milk at frequencies of 8 meals, 6 meals or 5 meals depending on the condition of the malnourished children. Diluted F100 milk for infants under 6 months of age and whole F100 milk is given in the transition phase at the UNTI. In the absence of ready-to-use formulas, local recipes can be used with milk (skimmed milk, whole milk powder, fresh cow's milk, fresh goat's milk, fresh buffalo milk, unsweetened condensed milk) to which sugar, oil, toasted cereal flour, multi-vitamin complex and water are added to each type of milk. The recipe can be made with egg yolk or whole egg instead of milk [11].

3.2.3. Systematic medical treatment

92% of children received amoxicillin, 90% received mebendazole and 96% received vitamin A. Our results are close to the norms for amoxicillin, but for vitamin A and mebendazole, these results deviate. Vitamin A and mebendazole are given in the 4th week of care, by which time the child would already be at UNTA. Vitamin A can be given in high doses to malnourished children with signs of deficiency. It can be given in the following circumstances:

- When the child has any sign of vitamin A deficiency: this includes any eye infection, such as conjunctivitis;
- Children over 9 months of age, in cases of measles outbreaks if the child has not been vaccinated against measles [10].

3.2.4. Types of discharge and length of stay

48% are declared cured, 32% are successfully treated, dropouts represent 14% and deceased 6%. 70% of patients stay between 5-10 days, 16% < 5 days and 14% > 10 days.

Cured children represent a large percentage instead of successfully treated children because these children have to continue their rehabilitation at the UNTA. So successfully treated must represent a high percentage at the UNTI. Cured at the NICU are children who stay at the NICU for their rehabilitation, most often children < 6 months. The length of stay is relevant in our study to assess the effectiveness of care in our study setting. The results we found for this indicator do not reflect the reality of discharge patterns.

IV. CONCLUSION

Our study focused on the evaluation of the management of severe acute malnutrition with medical complications at the RGH in Budjala. In conducting this study we set ourselves the following specific objectives

- Analyse the management tools (register and patient records).
- To determine the epidemiological aspects of severe acute malnutrition;
- Determine the outcome of malnourished children in care

The following hypotheses have been formulated to try to address our concerns:

The following hypotheses are put forward to address our concerns:

- The management of acute malnutrition would not be in the norms and guidelines of the national protocol of management of the DRC;
- Malnutrition is said to be common among weaning children.

We proceeded with a literature review to achieve our objectives and verify our hypotheses and, given that the number of patients managed during the study period was small, we opted for exhaustive sampling, i.e. we considered all the files as part of our research. Our results can be summarised as follows:

- The most represented age group is > 59 months with 28%;
- Girls outnumber boys 52%;
- 70% of malnourished patients are admitted with a BP < 115 mm, 62% with a P/T < - 3 SD, 52% without oedema;
- The most recorded medical complication is diarrhoea with 48%;
- 100% of malnourished children are admitted by referral and all have been hospitalised;
- 100 children received MMS as a nutritional treatment and received it only once a day during the entire treatment period;
- 92% of children received amoxicillin, 90% received mebendazole and 96% received vitamin A;
- 48% of the children were cured;
- 70% of children took 5-10 days in hospital.

Our hypotheses were confirmed by the results in Tables 2, 4, 5 and 6.

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