

Management of Acute Malnutrition in Children Aged 0 to 24 Months Boulbinet Health Center

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Abstract

Introduction: Malnutrition is a pathological state resulting from the relative deficiency or excess of one or more essential nutrients, whether manifested clinically or detected only by biochemical, anthropometric or physiological analyses. The overall objective was to assess the quality of management of acute malnutrition in children aged 0 - 24 months at the Boulbinet health center. **Methodology:** This was a prospective descriptive study lasting six (06) months from May 5 to October 5, 2018. The study included all children aged 0 to 24 months. **Results:** Acute malnutrition in children aged 0 - 24 months accounted for 2.11% of cases. The sex ratio was 1.41 in favor of males. The mean age of our patients was 5 months 7 days, with extremes of 1 month and 6 months. The majority came from Ra toma (40.24%). Exclusive breastfeeding was most common (54.02%). The main clinical signs were: pallor 49.42%, diarrhea 46.67, oral lesions 37.96%. SAM represented 89.66% and MAM 10.34%. Most associated pathologies: anemia 49.42% and oral candidiasis 37.93%. In terms of outcome, we recorded 56.32% cures, 20.69% deaths, 18.39% dropouts and 4.60% cures. **Conclusion:** Improving the quality of care for malnourished children aged 0 - 24 months requires raising awareness among mothers and the general public of the consequences of malnutrition.

Keywords

Management, Acute Malnutrition, Center, Boulbinet

1. Introduction

Malnutrition is a pathological state resulting from the relative deficiency or

excess of one or more essential nutrients, whether manifested clinically or detectable only by biochemical, anthropometric or physiological analyses [1].

According to the WHO, malnutrition in all its forms affects one in three people worldwide. Children are the most vulnerable group. An estimated 149 million children (31%) under the age of five are underweight. Nearly 206 million, or 38%, are stunted, and nearly one child in ten suffers from wasting [2].

Malnutrition remains a worrying public health problem, with a considerable impact on the health and socio-economic development of populations. It is estimated that six million children die every year from causes directly or indirectly linked to malnutrition. Deficiency malnutrition contributes to an increase in the morbidity of certain diseases, such as diarrhoea, respiratory infections, perinatal affections, measles, malaria and many others [3].

Severe acute malnutrition can take several forms: marasmus (severe emaciation), kwashiorkor (oedematous malnutrition) or the mixed form [4].

Severe acute malnutrition is the most dangerous form of the disease. Almost 20 million children worldwide suffer from it. Until 1999, all sufferers were hospitalized. Today, however, on the recommendation of the World Health Organization, children suffering from uncomplicated acute malnutrition are increasingly cared for at home and treated with ready-to-use therapeutic foods. This treatment is supplemented by systematic antibiotic therapy [5].

Today, 143 million children under the age of 5 worldwide suffer from malnutrition, including 20 million from severe acute malnutrition. Every minute, around 10 malnourished children die, *i.e.* almost 5 million every year. Mortality accounts for at least 30% of infant mortality [6].

In Guinea: according to the 2012 Multiple Indicator Demographic and Health Survey, the prevalence rate of acute malnutrition in children under 6 months is estimated at 18.8% [7].

The latest 2013 statistical reports from the Re Nutrition Unit show that out of 1024 children admitted for SAM with complications, 1006 children were discharged, 230 abandoned treatment with a rate of 23%, 92% were in a state of severe emaciation, 8% in a state of SAM with oedema and almost 21% death [8].

The lack of previous studies of acute malnutrition in this 0 - 24 months age group, and the complications it causes, led to the choice of this topic. The overall objective was to assess the quality of management of acute malnutrition in children aged 0 - 24 months at the Boulbinet health center.

2. Methodology

This was a prospective descriptive cross-sectional study lasting six (6) months from May 5 to October 5, 2018. It involved all children aged 0 - 24 months received in consultation for nutritional monitoring in the department. The choice of age 0 - 24 months is linked to the weaning period in our context, and to the vulnerability of children at this age.

The Boulbinet health center is located on the Kaloum peninsula. The health

center's boundaries are: to the north, the Ecole des sourds muets; to the south, the Cité des Nations; to the east, the Haut Commandement de la Gendarmerie; to the west, the Ministry of Finance. It is a referral health center for the treatment of uncomplicated acute malnutrition, and its attendance is fairly regular and high. Lack of financial resources prevented the study from being extended over a longer period.

The questionnaire was designed by the research team and validated by the Chaire de pédiatrie's ethics committee, which made it possible to proceed with data collection. We included all children aged 0 to 24 months seen in consultation for nutritional follow-up. Forms that were incompletely completed were not included.

For each child, the following data were collected using a pre-established survey form (age, gender, weight, height, BMI, origin, level of education, profession and age of parents; clinical (reasons for consultation, course, history, physical signs); paraclinical (hemoglobin level, SRV, Tdr).

Clinically, we observed:

Phanera and conjunctivae are evaluated according to their coloration, *i.e.* normo-colored, hypo-colored and hyper-colored.

Tragus examination: looking for acute otitis media.

Mouth examination: for oral candidiasis, tongue lock.

Stiff neck: stiff neck, clinical sign of meningeal irritation.

On palpation, we assessed the condition of the abdomen, looking for a soft, defensive or tender abdomen, as well as a palpable mass.

On auscultation, we assessed the condition of the lungs.

In biology we did:

Hemoglobin level (THb): due to acute or chronic bleeding or destruction of red blood cells (hemolytic anemia, a variety of iso- or normochromic anemia, in which the hemoglobin level and the number of red blood cells are reduced in the same proportions).

Rapid diagnostic test (RDT): used to establish the diagnosis of a disease rapidly (within a few minutes), generally using chemical reactions by immunoprecipitation on membranes or immunochromatography on strips.

Data entry, statistical analysis, processing and presentation were carried out using Word, Epi-info version 7, Excel and Power point software, presented in the form of tables and figures. In the statistical analyses, we calculated frequencies, means and standard deviations. Variables were clearly defined

3. Results

In the course of our study, out of the 1200 children received at the center, we recorded 150 cases of acute malnutrition in children aged 0 - 24 months, representing a frequency of 17.4% (**Figure 1**).

The mean age of our patients was 5 months and 7 days, with extremes of 1 month and 6 months. The age group most affected was 0 to 5 months, with a frequency of 54.02% (**Table 1**).

During our study period we noted a male predominance (58.62%) with a sex ratio M/F = 1.66 (Figure 2).

During our study period, we recorded 63 direct referrals versus 24 referred patients, with frequencies of 72.41% and 27.59% respectively (Figure 3).

During our study, malnourished children aged 0 - 5 months with a P/T - 4 Z score were the most represented, with a frequency of 72.42% (Table 2).

In our study, malnourished children aged 0 - 5 months who were exclusively breastfed were the most represented, with a frequency of 54.02% (Table 3).

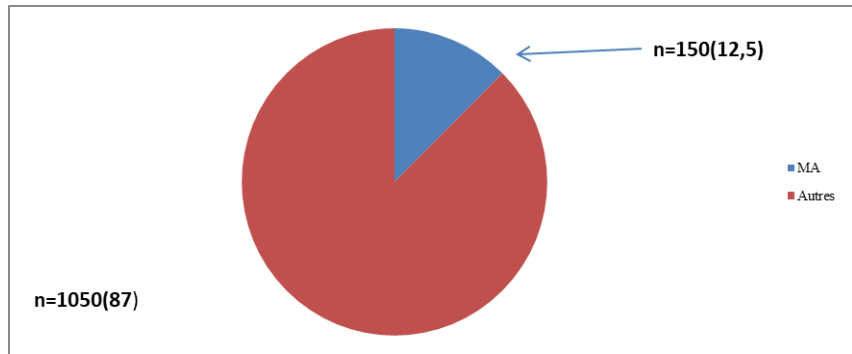


Figure 1. Frequency of cases of acute malnutrition.

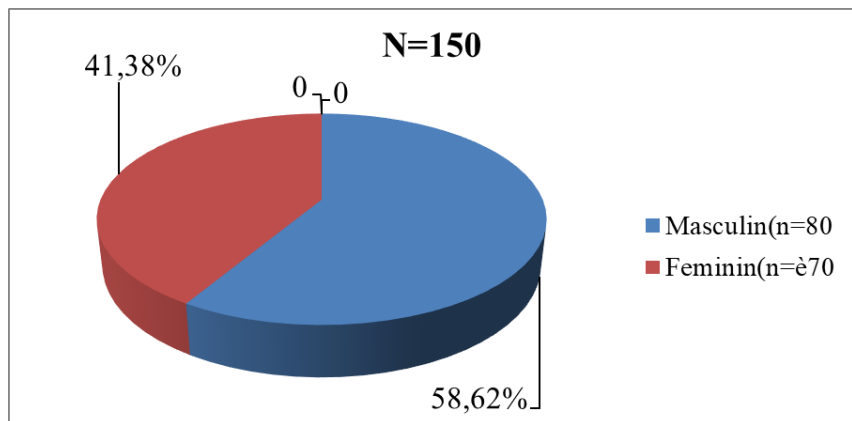


Figure 2. Distribution of acute malnutrition cases by gender.

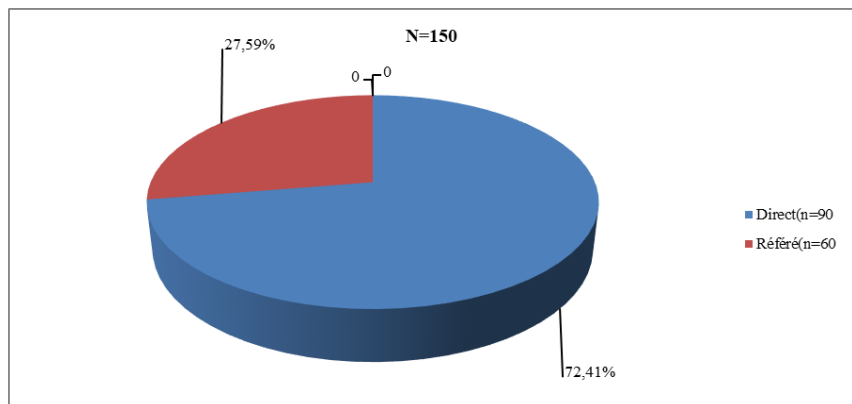


Figure 3. Distribution of acute malnutrition cases by mode of admission.

Table 1. Distribution of acute malnutrition cases by age group.

Age groups (months)	Number of cases	Percentage
0 - 5	80	20.69
6 - 11	50	25.29
12 - 24	20	54.02
Total	150	100

Average age = 5 months 7 days Extreme ages = 1 month and 6 months.

Table 2. Distribution of acute malnutrition cases according to P/T ratio on admission (Z score).

Inlet P/T ratio	Number of cases	Percentage
■ 2 Z-score	30	20
■ 3 Z-score	40	26.66
■ 4 Z-score	80	53.33
Total	150	100

Table 3. Breakdown of acute malnutrition cases by type of diet.

Power supply type	Number of cases	Percentage
Exclusive breastfeeding	80	53.33
Formula feeding	50	27.59
Mixed	20	18.39
Total	150	100

Insufficient breast milk was the most common cause of non-exclusive breastfeeding, with a frequency of 31.03%, followed by maternal illness 8.04% (**Table 4**).

During our study, pallor and diarrhoea were the main clinical signs encountered during acute malnutrition in children aged 0 - 24 months, with frequencies of 49.42% and 46.67% respectively (**Table 5**).

In our study, severe acute malnutrition accounted for 89.66% versus 10.34% of moderate acute malnutrition (**Figure 4**).

Anemia and oral candidiasis were the pathologies most associated with acute malnutrition in children aged 0 - 24 months, with frequencies of 49.42% and 37.93% respectively (**Table 6**).

During acute malnutrition in children aged 0 - 24 months, the combination of ampicillin and ceftriaxone was the most widely used, at 57.47%, followed by nystatin at 37.93% (**Table 7**).

One hundred malnourished children aged 0 - 24 months were given breastfeeding plus diluted F100, *i.e.* 91.95 and 63.21% were given breastfeeding plus F75 (**Table 8**).

In terms of progress, we recorded 56.32% of children stabilized, 20.69% of

deaths, 18.39% abandoned and 4.60% transferred (**Table 9**).

The average hospital stay for our patients was 6.5 days, with extremes of 1 day and 27 days (**Table 10**).

Table 4. Breakdown of acute malnutrition cases by cause of non-exclusive breastfeeding.

Cause non-exclusive breastfeeding	Number of cases	Percentage
Insufficient breast milk	80	53.33
Maternal illnesses	40	8.04
Maternal deaths	30	3.44
Twin sisters	150	3.44

Table 5. Distribution of acute malnutrition cases according to functional signs.

Functional signs	Number of cases	Percentage
Pallor	43	49.42
Diarrhea	38	46.67
Oral lesions	33	37.93
Vomiting	28	31.18
Fever	27	31.03
Skin lesions	22	25.28
Edema	19	21.83
Coma	8	9.19
Weight loss	2	2.29

Table 6. Distribution of acute malnutrition cases according to associated pathologies.

Associated pathologies	Number of cases	Percentage
Anemia	60	49.42
Oral candidiasis	33	37.93
Dermatosis	22	25.28
Broncho-pneumonia	20	22.98
Malaria	15	17.24
Tuberculosis	2	2.29
HIV	2	2.29

Table 7. Distribution of malnutrition cases according to drug treatment.

Drug treatments	Number of cases	Percentage
Ampicillin + ceftriaxone	50	57.47
Nystatin	33	37.93
Ceftriaxone	16	18.89
Ampicillin + cloxacillin	10	11.49
Ampicillin	2	2.29
Cloxacillin	2	2.29

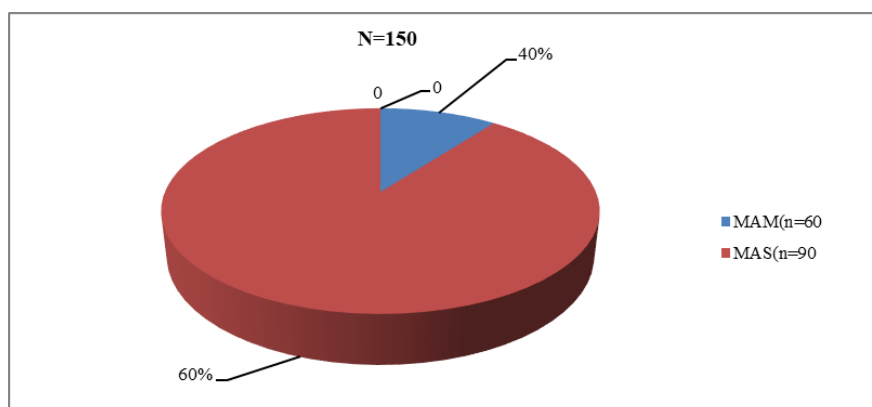


Figure 4. Distribution of malnutrition cases by degree of malnutrition.

Table 8. Distribution of malnutrition cases according to milk treatment.

Milk treatment	Number of cases	Percentage
Diluted breast milk + F100	100	91.95
Breast milk + F75	50	63.21

Table 9. Distribution of malnutrition cases according to evolution.

Evolution	Number of cases	Percentage
Stabilized	67	56.32
Deceased	18	20.69
Abandon	50	18.39
Transferred	30	4.60
Total	150	100

Table 10. Distribution of malnutrition cases by length of hospital stay.

Length of hospital stay (days)	Number of cases	Percentage
<5	12	13.79
5 - 9	65	42.53
10 - 14	24	27.59
≥15	14	16.09
Total	150	100

4. Discussion

Our frequency is comparable to that of Jean C.K [9] in Burundi in 2014 and 2015 reported an acute malnutrition rate in children of 5.8% and 5.4% respectively.

Our age range is comparable to that of Doumbia F. [10] in 2014 in Mali reported that the age range below 6 months represented 2.20%. Diversification generally takes place from 6 months in the norms, but the high rate of malnutrition calls into question the quality and quantity of food given to children in the

ablactation period.

Our result is similar to that of Kabirou F. O [11] in 2002 in Niger, who also reported a 60% male predominance.

The predominance of males could be explained by the fact that during our study we obtained more males than females.

Our result is similar to that of Barry B. O. S [12] in 2009 in Mali, who reported 67.3% of non-referred patients versus 32.7%.

This result can be explained by the difficulties encountered in managing acute malnutrition in infants aged 0 - 6 months in peripheral health facilities. Malnourished infants aged 0 - 5 months with a P/T - 4 Z score were the most represented in our study.

Depending on the type of feeding, our results are in line with those of Sissoko F [13] in 2010 in Mali, where 85% of malnourished children were exclusively breastfed on admission.

This rate could be explained by the increase in institutional deliveries, where women receive a great deal of advice on the advantages and benefits of exclusive breastfeeding.

Concerning the cause of non-exclusive breastfeeding, our result is contrary to Doumbia F. [10] in 2014 in Mali who reported that maternal illnesses were the main causes of non-exclusive breastfeeding, *i.e.* 44.14%.

The functional signs found are comparable to those reported by Barry B. O. S [12] in 2009 in Mali. Anorexia (16.3%), diarrhea (20.4), vomiting (12.66%), coughing (13.6%) and paleness (13.6%) were the most common signs found in malnourished children in their study. These signs reflect the impact of malnutrition on the child's general condition.

The predominance of severe acute malnutrition (89.66%) can be explained by the fact that in our center, children with moderate acute malnutrition are only hospitalized in the event of complications.

According to the pathologies most associated with acute malnutrition, our results differ from those of Banapurmath C R *et al.* [14] in India, who found 31.8% cases of acute respiratory infection among the malnourished.

This high incidence of anemia could be due not only to nutritional causes, but also to malaria, given the endemic malaria in our country. The association of oral candidiasis with acute malnutrition could be explained by reduced immunity.

Our milk-based treatment is inspired by UNICEF recommendations that milk-based formulas such as F100 or F75 enable effective nutritional recovery thanks to their high protein and nutrient content [15].

More than half of our children were stable. However, we did record some deaths and abandonments.

Savadogo L *et al.* [16] in Burkina Faso in 2007 reported a 16% dropout rate.

The improvement in our results could be explained by the setting up of a nutrition unit with increased equipment and inputs.

These deaths could be caused by an altered immune system resulting from malnutrition, which makes the patient highly vulnerable to infection, and late referral of malnourished patients, which usually occurs after the onset of complications such as dehydration, septic shock, severe anemia, hyperthermia and hypothermia.

The average length of stay for our patients was 6.5 days, with extremes of 1 day and 27 days. This long length of stay reflects the difficulties encountered in caring for malnourished children aged 0 - 6 months at the Boulbinet health center.

5. Conclusion

Acute malnutrition is still a public health problem, particularly affecting children aged 0 - 5 months. Early admission and reinforcement of the immune system through exclusive breastfeeding would considerably reduce the morbidity and mortality rate. In order to fill the gaps identified in our study, we are going to make mothers aware of the need to respect exclusive breastfeeding up to 6 months and to continue it for 2 years; we are also going to explain to them the importance of consulting a doctor as soon as the first signs appear.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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