




Research Article

Therapeutic and Evolutionary Profiles of Children Aged 0-59 Months: A Case Study of Severe Acute Malnourished Treated at Hôpital Notre Dame Des Apôtres, N'Djamena

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Abstract

According to the World Health Organization, malnutrition is a pathological condition resulting from the relative or absolute insufficiency or excess of one or more essential nutrients, whether manifested clinically or detected only by biological, anthropometric or physiological analyses. It remains a major public health problem. The aim of this study was therefore to determine the therapeutic and evolutionary profiles of Severe Acute Malnutrition patients at Notre Dame des Apôtres Hospital in N'Djaména (Chad). This was a prospective, descriptive study carried out on 7 months, from January 1 to July 31, 2023. This included all severely acutely malnourished children with medical complications admitted to the hospital's therapeutic nutrition unit. The variables studied were therapeutic and evolutionary. Data were entered and analyzed using Excel 2016 spreadsheet and SSPS 18.0 software. Among the 1454 children admitted to the unit during our study, 41.82% were stabilized, 6.75% cured and 0.79% abandoned, with an average length of stay of 8.67 days. The mortality rate was 1.76%. Children on F75 accounted for 46%, 37% on plumpy nut and 10% on F100. Antibiotics and multivitamins are routinely used in the management of malnourished children. The results of this study show that parent education could be an asset in the management of severe acute malnutrition.

Keywords

Children Aged 0-59 Months, Severe Acute Malnutrition, Therapeutic, Evolutionary, N'Djaména

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1. Introduction

Severe acute malnutrition is caused by a very low weight/height ratio (below -3 z score compared to the WHO median reference value), by visible and severe emaciation or by the presence of nutritional edema. In children aged between 6 and 59 months, an arm circumference of less than 110 mm is also an indication [1]. According to the WHO, it can be a direct cause of mortality in children, or have indirect effects by considerably increasing the case-fatality rate of children suffering from common illnesses such as diarrhea or pneumonia. It is estimated that nearly 20 million children in the World suffer from severe acute malnutrition, most of them in South Asia and sub-Saharan Africa [2]. About one million children die each year as a result of severe acute malnutrition [3]. According to WHO estimates, 19 million pre-school children suffer from severe wasting [4, 5], a large proportion of them living in the African Region (26%), (70%) in the South-East Asian Region and 4% in Latin America and the Caribbean [6].

The SMART 2022 survey revealed that in Chad, the prevalence of Global Acute Malnutrition in 2022 was 8.6% below the high threshold of 10% set by the WHO, placing the country in a situation of average precariousness in terms of public health [7]. Chad had the 10th highest infant mortality rate in the world in 2005 [8]. Almost one Chadian child in eight (8) dies before reaching the age of five (5), and over 322,000 suffer from severe acute malnutrition every year [9]. The frequency of severe acute malnutrition, which is still close to the WHO's high threshold, suggests that the programs implemented to eradicate it, such as the mosquito net distribution program, the national deworming program and the vaccination campaigns, have failed by 2021, the SMART nutrition survey showed that the main causes of this mortality are related to infectious diseases such as malaria (20.4%), pneumonia (15.7%) and diarrhea (13.5%), parasitized children (67.1%) etc., with malnutrition a major contributing factor [7]. The nutritional status of children under the age of 5 remains a public health problem in Chad. This is the context of our study, the general aim of which is to determine the therapeutic and evolutionary profiles of Severe Acute Malnutrition patients at Notre Dame des Apôtres Hospital in N'Djamena.

2. Material and Methods

2.1. Study Framework

The Therapeutic Nutritional Unit (TNU) of the Notre Dame des Apostles Hospital (HNDA) served as our study site. This hospital is located in the southwest of the city of N'Djamena in 15°04'50"East of Longitude and 12°05'38" North of Latitude, at approximately 280 meters above sea level [10].

2.2. Type and Period of Study

This was a prospective descriptive study carried out during a period of 07 months from January 1 to July 31, 2023.

2.3. Study Population

The study concerned all cases of SAM children aged 0 to 59 months with one or more medical complications admitted to the HNDA TNU.

2.4. Data Collection

The collection of our data consisted of systematic recruitment of all patients seen during the period of our study. Data collection was done by interviewing patient guards. The clinical examination, the additional assessment and collected information were recorded in a previously prepared data collection sheet. The dependent variable of this study is the occurrence of severe acute malnutrition in children under 59 months. As part of our study, the WHO 2006 standards were used for classification [11]. The independent variables concerned the characteristics of the child and the parents.

2.5. Data Analysis

Word processing and tables were carried out using Microsoft Word software version 2016. Graphs were created using Excel 2016. Data entry and analysis were done using the software SPSS 18.0.

3. Results

3.1. Characteristics of Surveyed Children

During the study period, 1454 children were admitted to the Therapeutic Nutritional Unit at Notre Dame des Apôtres Hospital, N'Djamena. Males represented 54% of cases and females 46%. Emaciation accounted for 74.27% of cases, edematous children for 6.18%.

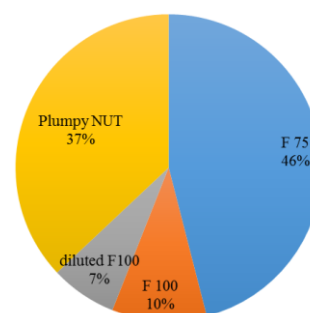


Figure 1. Distribution of cases by food type.

3.2. Therapeutic Data

3.2.1. Feeding

With regard to therapeutic foods, F75, F100, diluted F100 and Plumpy NUT were the main diets used in the nutritional man-

agement of our patients, with frequencies of 46%, 10%, 7% and 37% respectively.

3.2.2. Drug Treatments

Antibiotics and multivitamins were administered to 100% of our patients following the protocol, 80.81% were on antifungals and 70.63% of children were malarial. 72.07% of children were dewormed.

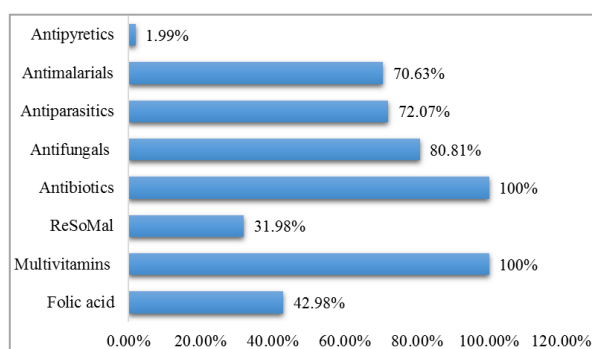


Figure 2. Summary of drug treatments (%).

3.3. Evolutionary Data

3.3.1. Progression

41.82% of patients were stabilized during the study period. Cured patients accounted for 6.75% of cases, while 0.79% of dropouts were recorded. 1.76% of malnourished children died, and 0.30% of patients were referred.

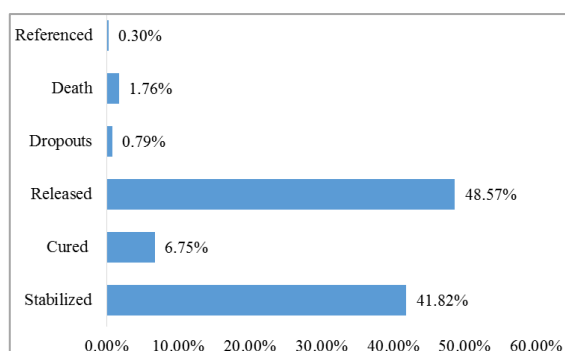


Figure 3. Variation in evolutionary data according to sample type ($p < 0.05$).

Figure 4 shows the variation in evolutionary data according to sample type. With $p < 0.05$, there is a significant difference, as the rates of stabilized, discharged and cured children are much higher than those of dropouts, referrals and deaths.

3.3.2. Length of Hospital Stay

The average length of hospitalization for a SAM child at

TNU was 8.67 days. 53% of children stayed between 0 and 7 days, while 5% stayed more than 21 days.

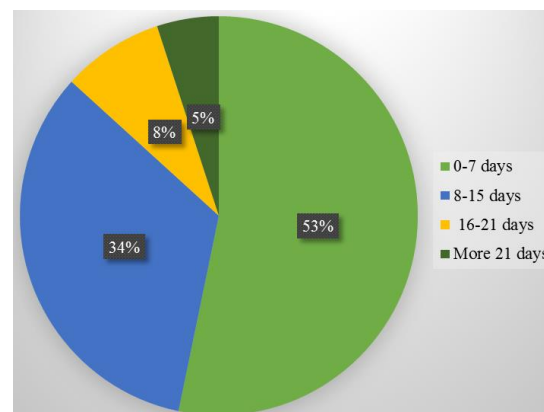


Figure 4. Distribution of cases by length of hospital stay.

4. Discussion

In terms of therapeutic foods, F75 and Plumpy nut were the main diets used in the nutritional management of our patients. This could be justified by the fact that therapeutic milk-based formulas such as F75 and Plumpy nut enable effective nutritional recovery probably due to their high protein and nutrient content. Antibiotics and multivitamins are used systematically in the management of malnourished patients, in accordance with the national management protocol. Children aged 6 months and over are systematically dewormed when released from hospital. The cases of abandonment observed in this study are due to the non-cooperation of parents in the care of their children. The case of deceased children is due to the delay in referral, to the serious state of the patients at reception and to the occurrence of progressive complications. Our results are lower than those observed at the Makélékélé base hospital in Brazzaville (Congo), where the average hospital stay was 12 days and the mortality rate was 11.4% [12]. In Côte d'Ivoire and Mali [13, 14] respectively, 36.7% and 16.2% of cases were fatal. In the therapeutic nutrition unit at Bouaké University Hospital (Côte d'Ivoire), the average length of stay was 8.5 days, comparable to our results, with a higher cure rate (78.67%) and a higher drop-out rate (12%) [15]. The differences observed could be explained by the severity of the complications presented by our malnourished patients, resulting in a low mortality rate, and a shorter hospital stay responsible for the low drop-out rate observed [16].

5. Conclusion

Malnutrition is still a public health problem, particularly in developing countries such as Chad. Our study made it possible to control the therapeutic and progressive aspects of severe acute malnutrition under five years of age. However, for these malnourished children who took F75 milk to restore the disorders or

who had long stayed at TNU or not will have repercussions on their growth and their lifestyle. The basic diet of a child under the age of five is still essentially breast milk. The best children caring way is the education of their parents and additional studies are necessary to find adequate means that will facilitate treatment and reduce prevalence of malnutrition.

Abbreviations

WHO: World Health Organization
 HNDA: Notre Dame des Apôtres Hospital
 SMART: Specific Measurable Attainable Relevant Time
 NUT: Therapeutic Nutritional Unit
 SAM: Sever Acute Malnutrition
 ReSoMal: Rehydration Solution for Malnutrition

Conflicts of Interest

The authors declare no conflicts of interest.

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