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Obstacles to the Integrated Care of Children Aged 6 to 59 Months Suffering from Acute and Severe Malnutrition at the Chu-Me and HATC of N'Djamena/Chad

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Abstract

Introduction: the problem of Severe Acute Malnutrition (SAM) and its consequences concern and challenge all social actors worldwide. The objective of the study was to identify the real obstacles that actors face in the integrated management of children aged 6 - 59 months suffering from SAM at the University Hospital of Mother and Child (CHUME) and the Chad-China Friendship Hospital (HATC) of N'Djamena. **Methodology:** this is a cross-sectional descriptive and interpretative study conducted from January to October 2023 at the CHUME and HATC of N'Djamena. It is based on questionnaires and direct observation of two hundred and thirty-six (236) parents or guardians of malnourished children admitted to these health facilities. All 236 agreed to participate freely in this study. **Results:** it appears from this study that the obstacles to the integrated management of malnourished children were: poor care-care relationship (26.7%) permanent product breaks (22.9%), the direct costs of services ranged from 30,000 to 60,000 FCFA (41.53%), drugs used for the treatment of patients came from the street (66.10%), malaria and anemia occupy an important place (27.5%), 57.2% respondents had monthly income below 60,000 CFAF. **Conclusion:** the present study carried out has identified the real bottlenecks to the integrated management of children suffering from SAM in the therapeutic nutritional units of the city of N'Djamena.

Keywords

Integrated Management, Child 6 - 59 Months, SAM

1. Introduction

Malnutrition is a condition resulting from the relative or absolute deficiency or excess of one or more essential nutrients. Globally, about 45.4 million children suffer from wasting. Of these, 13.6 million are severely emaciated, suffering from severe acute malnutrition [1]. There are 340 million children with deficiencies in essential vitamins and nutrients, such as vitamin A and iron, and 40 million children are overweight or obese [2]. Every minute, about 10 malnourished children die, nearly 5 million each year [3]. Malnutrition generally affects three population groups: children and pregnant or lactating women [4]. It is a real public health problem and, by extension, a community health problem because of the impact it has on the whole.

According to the report of the study jointly conducted by UNICEF and WFP, 15.4 million cases of severe acute malnutrition among children under five years of age are located in West and Central Africa [5]. This would be explained by the combined effect of food insecurity which is compounded by environmental conditions, intercommunal conflicts and the COVID-19 pandemic [6]. In the Sahelian zone of Africa (Burkina Faso, Niger, Mali, Mauritania and Chad), the prevalence rate of severe acute malnutrition remains high [7].

In Chad, Severe Acute Malnutrition (SAM) remains a recurring public health problem. It affects millions of people, including children under the age of five, severely affecting their health and development. It is one of the main causes of child mortality in Chad.[1]

The results of the surveys reveal a prevalence of Global Acute Malnutrition (GAM) of 10.9% including 2.0% of the severe form. At the provincial level, a large disparity is noted with very high or critical prevalence (≥15%) according to the WHO classification [8].

To limit this alarming situation, various sectoral food and nutrition programmes and projects have been implemented for decades both at the level of socio-health structures and at the community level [9]. Several strategies are being developed simultaneously by the Chadian government and its technical and financial partners in a coordinated way to address this thorny problem of malnutrition but the reality on the ground suggests that the problem remains topical in Chad.

Despite the existence of a nutrition policy and the strategic documents integrating the implementation of an Integrated Management of Acute Malnutrition (PCIMA) program, the management of malnourished children still faces several constraints. According to the annual activity report produced by CHUME, the treatment abandonment rate and the death rate are respectively 4% and 3% at the therapeutic nutrition unit [10].

With this in mind, the present study has been launched to identify the obstacles faced by actors in the integrated management of children aged 06 to 59 months suffering from SAM at CHUME and HATC and to propose possible solutions to improve the quality of care in these health facilities.

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2. Equipment and Method

2.1. Site and Study Period

The study was conducted in two health units (the University Hospital of Mother and Child (CHUME) and the Chad-China Friendship Hospital (HATC) of N'Djamena). The CHUME is located in the 2nd Arrondissement and the HATC is located in the 8th Arrondissement of the capital N'Djamena. Data collection took place from January to October 2023. In each therapeutic nutrition unit, the questionnaire and an observation grid were used. This study has obtained authorization from the Ministry of Higher Education and the Ministry of Public Health.

2.2. Sampling and Inclusion

The sample size was calculated using the Lorentz formula while based on the prevalence of children aged 6 to 59 months with severe acute malnutrition who were admitted to the N'Djamena therapeutic nutrition units in 2021 [8].

$$N = \frac{t^2 * P(1-P)}{m^2}$$

n: Minimum sample size for meaningful results;

t: Confidence level (typical 95% confidence level value was 1.96);

p: Estimated proportion of children aged 6 to 59 months suffering from acute malnutrition weaning in the city of N'Djamena according to the Z-score < −3 and/or edema which is 1.9% according to the SMART 2021 survey.

m: 5% margin of error (typical value of 0.05)

$$\textbf{AN:} \quad N = \frac{1.96^2 \times 0.19(1-0.19)}{0.05^2}$$

N = 236

The criteria for inclusion in the study were: to be a parent or guardian of the child from 6 to 59 months; to reside permanently at the bedside of the child during hospitalization.

Participants were selected using a non-probability sampling technique for convenience.

The variables studied were the caregiver-care relationship, cost of treatment, drug supply, free care, comorbidity and monthly income of the respondents. To test the accuracy and validity of our data collection tool, it has been subjected to internal and external assessments. Internally, the validation was done by a team of teachers and under the coordination of our research director. At the end of this exercise, some guidelines and adjustments were made to the questionnaire, before it was submitted to the pre-test. Regarding the external aspect, we conducted a pre-test at CHUME with 5 people. At the end of this exercise, the collection instrument was reviewed and corrected before its effective administration. As a limitation of this study, we can say that participants were concerned on the one hand about the critical state of children and on the other hand about their future, especially parents whose children were tested positive for HIV/AIDS. This situation affected the duration of the study.

2.3. Data Collection

The data were collected using a pre-established questionnaire (See Appendix) with mostly open-ended but oriented questions with proposed answers and respondents chose one or two of them. We divided the questionnaire into three main parts: the first dealt with the sociodemographic characteristics of the participants, the second concerned the institutional obstacles to taking SAM and the third on the socio-economic dimension.

2.4. Data Processing and Analysis

Collection sheets were captured and analyzed using SPSS 25, Word and Excel 2016. The descriptive analysis was made to determine the major, medium and minor bottlenecks to the management of malnourished children.

Frequency of respondents:

$$F = (n/N)*100$$

F: frequency of respondents;
n: number of people who responded positively;
N: total number of respondents per 100.

3. Results and Discussion

According to the results of the direct observation, it appears that there is a communication deficit between care actors. The data show the poor quality of reception in health facilities. The national protocol for the management of malnutrition is not properly applied from the setting of parameters to the administration of care. There is a cruel lack of work equipment (saturometer, glucometer, etc.) at CHUME UNT.

Figure 1 shows the proportion of respondents who expressed difficulties encountered in therapeutic nutritional units. Figure 1 shows the proportion of respondents who expressed difficulties encountered in therapeutic nutritional units. It was found that the poor relationship between care providers was (26.7%), product breakdown (22.9%). Our result does not corroborate the study conducted at CRENI in Zinder/Niger which showed that the caregiver/caregiver ratio is a determining factor in the quest for healing in that the reception of patients influences the degree of trust between these two actors and expresses effectiveness [11]. In the same vein, the study carried out in Yaoundé, Cameroon
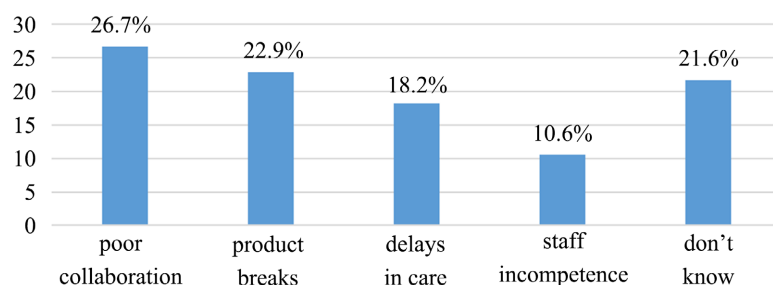

Figure 1. Percentage of respondents dissatisfied with care.

suggested that the caregiver's word has a soothing and therapeutic role [12]. The relational support of the caregiver can compensate for a failing family support, especially in the special conditions of a hospitalization that causes anxiety and distress. In care services, we witness distressing scenes or staff insult caregivers or sometimes it is the confidence received during consultations that serve as topics of gossip or insults. In the field of "knowing how to be", interpersonal relationships with each member help create and nurture the relationship of distrust and the main loser is the patient and his caregivers. Apart from the defective caregiver/patient relationship, the actors face medication shortages (22.9%). In the same sense, Ntambi and collaborators [13] found in their studies in Somalia that the situation of shortage of inputs and medicines appears to be one of the obstacles to the care of malnourished people. A study conducted in the Democratic Republic of Congo showed that therapeutic nutritional products/inputs are rarely available for the malnourished patient [14].

In this figure, 18.2% said that health workers are lagging behind in care. This unorthodox behaviour does not corroborate the aid relationship advocated by Florence Nightingale [15]. Instead, there is a deliberate lack of attention paid to patients and their caregivers. Teamwork requires clear communication at all levels of care, including patients and those around them, to establish and maintain a culture of patient safety.

It appears from this **Table 1** that (41.53%) of the respondents pay 30,000 to 60,000 FCFA. Other parents pay more than 60,000 FCFA (16.1%). This cost of care was observed at CHU-ME in almost all respondents. Expenditure items were medical checkups and medications. In this health training, Ready-to-Use Therapeutic Foods (RUTF) such as F75, F100, Plumpy nut (PPN) and consultation are free. In the WHO report [16], the cost of treating malnutrition and food-borne diseases is about US$3.5 trillion per year. According to the result of a study conducted by Shekar [17], at least 2% of public spending is dedicated to nutritional health services. The cost of medication appears to be an important barrier for people living in poverty. In most cases, the patient himself is responsible for the provision of the prescribed diet, which must aggravate the already significant cost of care.

It follows from the above results that 66.10% of parents buy street drugs at the CHU-ME. The generic drugs that would normally come out of the hospital pharmacy come from questionable sources and at an exorbitant cost. Our result is similar to that of Girard and collaborators [18] who reported that drug substances of questionable origin were estimated at 80% in sub-Saharan Africa. This result differs substantially from that of Allahi [19] who reports during a study in Niamey (Niger). He found that the proportion of consumption of street drugs was 92.54%. Drugs sold on the street being exposed to full sun, dust and other adverse conditions for their good preservation. The risk that the active ingredient has lost its effectiveness cannot be ignored. In the Chadian context, the issue of good product in the right place and at a good cost appears as a bottleneck to the quality service so desired by the government and its partners (Figure 2).
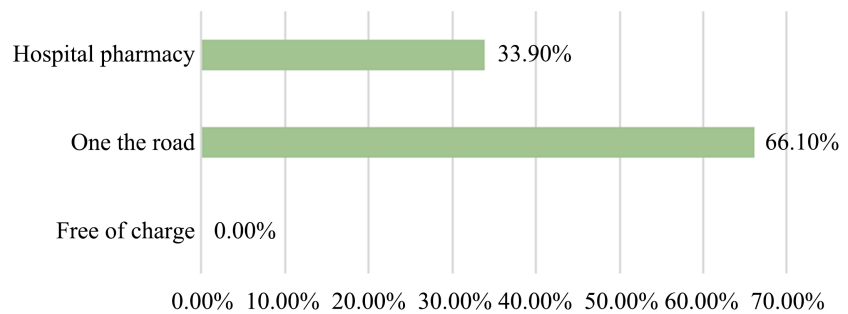
Figure 2. Percentage of respondents in relation to the source of supply of products/inputs at CHU-ME.

Table 1. Percentage of respondents in relation to CHU-ME service costs.

Care cost	Frequency (%)
Less than 10,000 F	1.69
10,000 - 30,000 F	40.68
30,000 - 60,000 F	41.53
Over 60,000 F	16.10
Free care	0
Total	100

Figure 3 shows that care for children with SAM is free of charge (92.12%). Zombré [20] proved in his study carried out in Burkina Faso that free healthcare was very effective in the management of malnutrition and increased the use of health services. This gratuity could be explained by the support of the NGO ALIMA and Alerte Santé in this therapeutic nutritional unit. This free health training is corroborated by the WHO [16] declaration that universal health coverage would allow all people to benefit from quality health services without facing financial difficulties.

This table shows that all children admitted to UNT have comorbidities. Among the associated diseases, malaria and anemia occupy an important place (27.5%). This result could be explained by the endemic nature of malaria in the province of N'Djamena and is the leading cause of hospitalization in health facilities. This result is lower than that of Dembele [21] at the pediatric unit of the reference health center of Sikasso/Mali which found 89.13% of cases with 85.36% in slump against 14.63% in kwashiorkors. The association of malnutrition and malaria has been described in the studies [22] [23] [24].

Diarrhoea was associated in (14.8%) of cases, leading to dehydration. Our result is lower than that of Diop Mody [25] in Markala/Mali who obtained 36.9%. The high frequency of diarrhea observed in malnourished people could be explained by the fact that during malnutrition, there is a significant disturbance of the intestinal flora associated with atrophy of the villi lining the gastroduodenal intestinal mucosa and a high frequency of intestinal parasitosis.
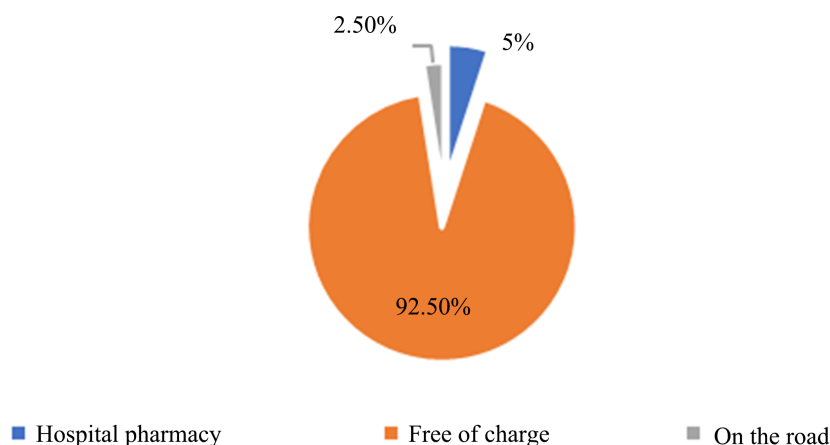
Figure 3. Distribution of respondents by source of product/input supply to the HATC (%).

The malnutrition-tuberculosis comorbidity was (13.4%) in our study. This result is lower than that of Allahi [19] in Niamey who obtained 73.62% tuberculosis. This low result is explained by the fact that TB screening is not systematic in all children with SAM. This piecemeal assessment is carried out when actors note a treatment failure after a long stay.

Apart from parasitic and bacterial diseases, the removal of the uvula was found at (12.7%) in our study. This traditional therapeutic practice carries risks ranging from hemorrhage, tetanus and malnutrition because a child victim of this trauma cannot eat normally and subsequently slip into the vicious cycle of malnutrition. According to WHO [16], a child with severe acute malnutrition is nine times more likely than a well-nourished child to die from common infections such as malaria, pneumonia or some diarrhoeal diseases.

Co-infection malnutrition HIV/AIDS remains a major public health problem in Chad. The result of our study showed that (8.9%) of malnourished children were infected with HIV/AIDS. This result is lower than that of Fatoumata [26] who found 17.65% at the Gabriel Touré University Hospital in Mali. In contrast, Hota and collaborators [27] found in their study an HIV/AIDS prevalence of 14.8% among children born to mothers living with HIV in N'Djamena, Chad (Figure 4).

In view of these results, it appears that the impact of associated diseases would constitute an obstacle to the integrated management of malnutrition.

Figure 5 shows that many parents (57.2%) had a monthly income below 60,000 CFAF, which does not meet the Guaranteed Minimum Interprofessional Wage (SMIG). This result confirms the data of the Chad Health Statistics Yearbook [28] which revealed that the Chadian population is 46% young and almost all do not have a stable job. This result is confirmed by PNDS [29] which revealed that the rate of direct spending by households for health is 64.4% compared to current spending. This is partly due to the fact that universal health coverage is not effective in Chad.
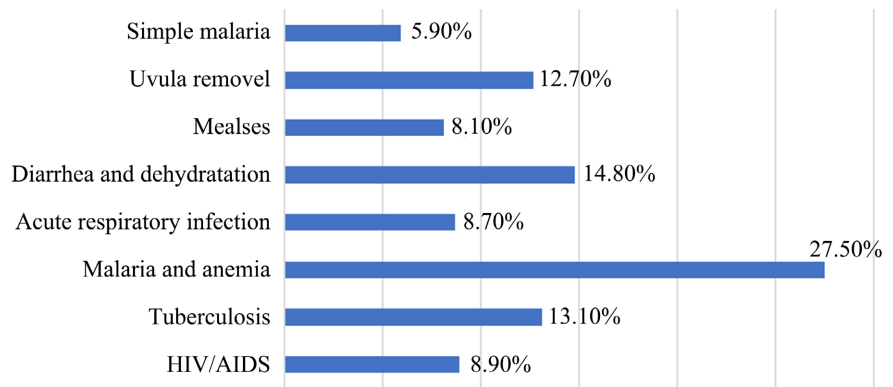
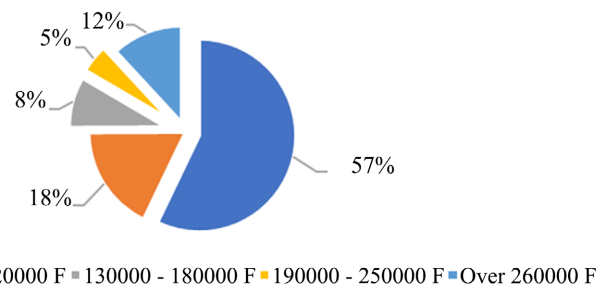Figure 4. Percentage of children admitted to UNTs with comorbidities.

■ Least 60000 F ■ 60000 - 120000 F ■ 130000 - 180000 F ■ 190000 - 250000 F ■ Over 260000 F

Figure 5. Percentage of respondents by monthly income.

4. Conclusion

The main objective of the reflection carried out throughout this article was to identify the obstacles to the overall care of children suffering from SAM in the UNTs (CHUME and HATC). This adventure made it possible to identify several associated factors. But the list of these obstacles is not intended to be exhaustive because we can hardly claim to have identified all the reasons for the management of this medically complex pathology. This concerns the poor relationship between care providers (26.7%), the frequent shortage of essentials (22.9%) forcing parents to obtain supplies in the streets (66.10%). The study showed that the costs of medicines are not affordable for a Chadian who lives in absolute precariousness. At the end of this work, we suggest that the Chadian State and its partners redefine health policy in favor of holistic management of SAM and consequently motivate the person who works. It is up to healthcare providers to comply with the Hippocratic and Florence Nightingale oaths to respond to patient requests.

Conflicts of Interest

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

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Appendix

DATE ___/____/____ N° ......

QUESTIONNAIRE FOR THE MOTHERS/GUARDIANS OF MALNOURISHED CHILDREN

Hello Mr/Mrs! I am MADJIADOUMBEYE Romain, PhD student in Biology and Human Health of the University of Ndjamena. I thank you for agreeing to take part in this interview which is part of the realization of my doctoral thesis.

Be assured of the confidentiality of this interview. It will be anonymous, that is to say that I will not ask you for your name, but I will ask you for some information on "Obstacles to the integrated management of children aged 6 to 59 months suffering from acute-severe malnutrition at the Mother and Child University Hospital and the Chad-China Friendship Hospital in N'Djamena/Chad". I would like to apologize in advance for some questions that will seem either inappropriate or frustrating or that might somehow offend you.

This is involuntary and I will ask you once again not to hold it against you. Can we start with this interview?

1. Survey characteristics parents of SAM children

1) Sex: /____/ 1: M; 2: F

2) Age: /____/ 1: Under 18; 2: 18 - 25; 3: 25 - 35; 4: 36+

3) Place of residence: /____/ 1: Urban; 2: Rural

4) Education level: /____/1: No level; 2: Primary; 3: Secondary; 4: Higher

5) Father's occupation: /____/ 1: Official; /____/ 2: Merchant; /____/ 3: Resourceful; /____/ 4: Farmer; /_____/ 5: Military; /____/ 6: Others to be specified

6) Marital status /____/ 1: Married; 2: Single; 3: Divorced; 4: Widowed

7) Pathologies associated with malnutrition in your UNT

1: HIV/AIDS /____/; 2: Tuberculosis /____/; 3: malaria-anemia /____/; 4: acute respiratory infections; /____/; 5: Diarrhea/Dehydration; 6: Measles /____/; 7: Luettectomy /__/; 8: /___/ simple malaria

2. Institutional Barriers to Integrated Management of Malnourished Children

8) Are you satisfied with the support? /____/ 1: Yes; 2: No

9) If not, what is the cause of dissatisfaction? /____/ 1: Poor collaboration; 2: Insufficient staff; 3: Lack of confidence in treatment; 4: Breakdown of inputs (NPP, medication)

10) Is the environment favourable? /____/ 1: Yes; 2: No

11) If no, what is wrong? /____/ 1: Small room; 2: Unsanitary room; 3: No room in category

3. Socio-economic barriers to integrated management of malnourished children

12) Is transportation from home to hospital free? /____/ 1: Yes; 2: No

13) If not how much you pay? /____/ 1: 0 - 2000 f; 2: 2000 f - 4000 f; 3: 4000 f and above

14) Is there no charge for malnourished? /____/ 1: Yes, 2: No

15) If not, what services do you pay for? /_____/ 1: intrant/medication; /_____/ 2: Consultation; /_____/ 3: Examinations; /_____/: Hospitalization

16) How much do you pay? /_____/ 1: 0 - 10,000; 2: 10,000 - 30,000; 3: 30,000 - 60,000; more than 60,000 FCFA

17) Where do you buy the medication? /_____/ 1: from the hospital pharmacy; 2: on the road; 3: Neighbourhood pharmacies

18) What is your menstrual income? /_____/ 1: Less than 60,000; 2: 60,000 - 120,000; 3: 130,000 - 180,000; 190,000 - 250,000; 260,000 and more.

Thank you for your participation!