

MANAGING ACUTE MALNUTRITION IN INFANTS AGED LESS THAN SIX MONTHS: A QUALITATIVE ASSESSMENT IN NIGER PUBLIC HOSPITALS

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ABSTRACT

Quality management of severe acute malnutrition (SAM) in infants < 6 months of age is a key strategy within the “1000 days window of opportunity”. It prevents early child death, secures optimal growth and forms a foundation for full adulthood potentials. Most studies to date on management of SAM in infants relied on informants from Non-Governmental Organizations staff or government public health officials but little is known from hospital practitioners. From June to August 2013, a qualitative appraisal of hospital practitioners’ views on the current quality of care for malnourished infants was conducted in the eight main hospitals of Niger. These eight hospitals included two National Referral Hospitals (Lamordé and Zinder) and six Regional Referral Hospitals (Poudrière, Dosso, Tahoua, Maradi, Diffa and Agadez). Authorization for the review was given by the Ministry of Health of Niger. Health workers (HW) present during surveyors’ visits were included in the study. Two (2) specific objectives were considered: 1) Determine HW perceptions and current use of the Supplemental Suckling Technique (SST) and 2) Collect HW propositions on feasibility to organize outpatient treatment of SAM in infants less than six months. Self-designed interview guide was used. Data were analysed manually and saturation in the occurrence of responses were the criteria used to retain items. The Supplemental Suckling Technique (SST), though firmly recommended by national guidelines to ensure continuation of breastfeeding and adequate nutrients intake from supplemental milks especially in a small infant, was rarely used. Main reasons advanced by staff were work overload, inadequate training, and lack of compliance from mothers. Before being discharged from hospital, mothers were counseled on continuation of treatment, follow up visits at peripheral health center (PHC) and feeding options at home. However, hospital staff had no indication whether mothers were seen at the referred PHC, nor if counseling was practiced at home. The proposed outpatient treatment model for selected cases without medical complications should relieve hospital caseloads, strengthen referral and improve breastfeeding support to mothers after discharge from hospital.

Key words: Malnutrition, infant feeding, inpatient treatment, qualitative assessment, Niger



INTRODUCTION

Malnutrition in children under five years of age is a major public health problem in sub-Saharan African countries. Undernutrition contributes approximately 60% of deaths of these children [1]. The prevalence of acute malnutrition in children aged under 6 months is estimated by Kerac *et al.* at 13.6% (2-34%), using the World Health Organization (WHO) Child Growth 2006 Standards [2].

In emergencies, children less than 6 months of age constitute a significant proportion of children admitted in therapeutic feeding centers. The project on Managing Acute Malnutrition in Infants (MAMI) conducted a study in 33 therapeutic feeding centres (TFC) of 21 countries that showed 16% of children admitted in these centres were less than 6 months of age ranging from 1.2% in Uganda to 23.1% in Tajikistan [3].

In Niger, data on the prevalence of acute malnutrition in children less than 6 months were rare since the start of Standardized Monitoring & Assessment of Relief & Transitions (SMART) surveys in 2006-2007 that focus anthropometric data-gathering on children 6-59 months. In 2006, Niger National Demographic and Health Survey (DHS III) found about 10% of global acute malnutrition (GAM) in children who were aged 2-5 months and in 2012 DHS IV, prevalence of GAM was 19.5% and 7% of severe acute malnutrition (SAM, defined as presence of bilateral pitting oedema, or weight for length z-score < -3), 16% of chronic malnutrition or stunting (defined as height for age z-score < -2) and 16.3% of the children with growth faltering (defined as weight/age z-score < -2) [4].

Unlike older children aged 6-59 months, any form of acute malnutrition (moderate or severe) in children less than six months of age was exclusively treated in an inpatient facility. The feeding technique recommended was the Supplemental Suckling Technique (SST) which consists of giving breast milk and therapeutic milk to the child as shown in Figure 1. A Nasogastric (NG) tube was placed close to mother's breast nipple. While sucking, the child uptakes both his/her mother's milk and therapeutic milk at the same time through the NG. The SST was considered a gold standard method recommended in most guidelines to feed a malnourished child during the intensive phase of rehabilitation [5].



Figure 1: Supplemental Suckling Technique. From Niger Malnutrition Management Protocol, 2011

While other studies have reported successful use of SST in various settings including Niger during emergency interventions, characterized by unprecedented mobilization of resources in terms of number of staff in therapeutic feeding centres, its use in non-emergency, public hospital settings has proven to be more challenging.

Several studies have been conducted on the quality of care in malnourished children but few were focused on health workers' (HW) self-appraisal of hospital-delivered care to malnourished children. Also hospital staff were rarely involved in designing operational research down to the care continuum at primary health centres or community levels [6, 7].

The main objective of this study was to assess the quality of care provided to malnourished infants < 6 months of age through self-appraisal of HW and caretakers in public hospital based therapeutic feeding units in Niger.

Specific objectives of the study are to: 1) Determine TFC staff perceptions on current practice of the Supplemental Suckling Technique (SST) in hospitals and 2) Prospect with hospital staff and the feasibility of outpatient treatment in PHC.

SUBJECTS AND METHODS

Study Setting

In 2005, Niger was spotlighted in international media due to unprecedented food and nutritional crisis while Government health facilities were unable to adequately treat thousands of malnourished children. International non-governmental organizations (NGOs) intervened but operated mostly outside government health facilities [8].

Since then, actions have been undertaken to strengthen the public health system capacity in the management of acute malnutrition in under- 5 year olds. These actions include the integration process of NGO rehabilitation centres into public health facilities; recruitment and training of additional staff; procurement and pipeline chain management of ready- to- use therapeutic foods (RUTF); increased coverage of SAM treatment by extending treatment services to health posts (HP) and establishing a countrywide data management system. As a result, Niger has now one of the highest numbers of rehabilitation centres in west Africa, spread all over the country. At the time of this survey, Niger had 44 inpatient treatment facilities (IPF), 913 outpatient treatment programs (OTP) and 1113 supplementary feeding programs (SFPs) [9, 10].

This study was carried out in eight national and regional hospitals in Niger. Amongst them were two National Referral Hospitals (Lamordé and Zinder), and six Regional Referral Hospitals (Poudrière, Dosso, Tahoua, Maradi, Diffa and Agadez). These hospitals have inpatient facilities (IPF) for the treatment of complicated SAM cases according to the national guidelines of Community Management of Acute Malnutrition (CMAM).

From June to August 2013, a team of two enumerators and the principal investigator visited these eight hospitals. In each IPF, HWs and mothers of malnourished children < 6 months of age present during the surveyors' visit were included. Ethics Board authorization was not required but permission to conduct hospital visits was provided by the Ministry of Health of Niger (MOH). Once on site, survey objectives and interview methods were explained to HWs and mothers and oral consent obtained. The principal researcher administered the "staff" and the "mother" interview guides while the two investigators entered data from patient files into Epi Info view designed for the purpose.

Study Design

The study used a qualitative approach to collect data on the perception of the HWs. Individual interviews were conducted with health workers present at the time of the surveyor visits. Were excluded from the sample, hospital personnel have been either recently assigned to paediatric ward (less than a month) or Trainees present only for few days practice. Eight hospitals were visited and 34 staff was interviewed. Data were analysed manually and saturation in the occurrence of responses was the criterion used to retain items. In this study, saturation is reached when a given response is found in 60% of respondents (20/34).



RESULTS

Quality of inpatient treatment of infant malnutrition in Niger

Available space and trained staff for the management of severely malnourished children

Availability of infrastructure and well-trained staff in public hospitals dedicated to the treatment of malnourished children is a key indicator of a country's capacity to adequately manage its SAM case load. While number of hospital wards and trained personnel dedicated to treatment of SAM were expected to depend on service demand and funding, in Niger, however, they mostly depend on presence of foreign non-governmental organizations (NGOs) that support the hospitals. As shown in Table 1, 58 % (n = 270) of trained staff were concentrated in two hospitals; Zinder and Maradi with an average of six doctors and 50 paramedical staff (nurses, nutritionists, nutritional assistants). Zinder and Maradi are supported by Médecins Sans Frontiers (MSF) since 2005. Health worker and hospitalization beds were lowest in two hospitals: Agadez and Diffa (8% of beds, 4% of total beds and rooms). However, where NGOs have recruited and placed additional staff, there were concerns on whether these personnel would be sustained. Local alternatives used by hospitals included self-funding of short-term contractors (Zinder and Maradi) or "volunteership" (Tahoua and Agadez) for newly graduated nurses.

In the local context of Niger characterized by insufficient number of specialized senior medical staff, it was important to determine the profile of staff treating malnourished infants in public hospitals. From the sample of 34 health personnel, as shown in Table 2, 24% were paediatricians, 24% were general physicians, 26% were nurses, 12% were nutritionists, and 2% were nutrition assistants. Depending on staff category, perception of quality of care standard differed. The majority of doctors and paediatricians actively participated at national level in the process of revisions of CMAM guidelines, and were knowledgeable of current research questions in SAM management but non-medical staff contributions concern mostly practical challenges in day-to-day hospital care. Moreover, few doctors and paediatricians had worked in various contexts such as NGO-run TFCs before enrolment in public practice. Staff experience and training is essential to maintain continuous quality of care.

Table 3 shows that among the 34 interviewed HWs, 25 training dates on CMAM were known. About half (49%) were trained in CMAM between 2005 and 2009. Detecting SAM in under- six months infants is based mostly on non-anthropometric criteria such as: the child is too weak to suckle efficiently or the child is sick and cannot breastfeed. The main reasons a child <6 months is admitted in TFCs are lack of mother's breast milk or refusal to suckle, child weighing less than 3 kg, child with weight-for-length z-score < -3, child with specific pathology (Tuberculosis, Sickle cell disease, HIV), orphan child or mother's sickness.



Current use of supplemental feeding technique

The Supplemental Suckling Technique (SST) is the gold standard feeding technique recommended in Niger SAM protocol since 2005. It is also one advanced reason for keeping infant rehabilitation in hospital setting. In this study, the majority of healthcare providers working in public hospitals did not report any recent use of SST for malnourished infants < 6 months. The main reason for non-use of SST by practitioners was inadequate training of staff to perform SST: *“Not every nurse knows how to practice SST”* a nurse said and another nutritionist in the same hospital pointed out that *“Since I took up duties in this hospital 6 months ago, I have never seen a child feed using SST”*.

Other reasons included staff shortage, lack of compliance of mothers, preference of some nurses to use nasogastric tube despite contraindications, the fear of milk contamination, some children are reluctant when the tube is visible and the cup of milk not being hidden.

Pre-discharge counseling and follow up visits in PHC

No indication was found that health workers took action to ensure adequate follow up of infants after discharge from TFCs. They only provided pre-discharge counseling to mothers on infant feeding. In some hospitals, a follow up visit was proposed to mothers two days after the child was discharged. Staff often presumes that the child will be referred to peripheral health centers to continue treatment. In one hospital, a “take-home ration” was given to mothers at discharge. “Take-home rations” to discharged mothers from TFCs has been implemented in Niger since 2005 and officially suspended shortly after it was observed that the ration was shared among all family siblings or sold and did not, therefore, “protect” the child ration. In the case of orphans, hospital staff proposed to the child’s family to ensure they have a goat at home to supply milk for the child. The caregiver is taught how to prepare goat milk for feeding the child. In Maradi, several hospitalized children were sometimes from the same neighborhood and follow up information on discharged infants could be obtained from family members visiting those in the centers.

According to practitioners, the main challenges in the management of SAM in infants < 6 months were: the non-compliance to SST procedure by infants’ mothers, the prolonged length of stay in hospitals exposing to higher risk of defaulting, higher risk of death of the children, low income of most mothers, remote places of residence, the use of traditional decoctions on infants, mother allegedly not having enough breast milk and finally, inadequate staff training. Solutions proposed by the health workers to improve SAM management of infants in a hospital setting included: giving to mothers therapeutic milk was reported to rapidly increase breast milk production; provide “take home” dry ration at discharge and increased mother support to adopt appropriate infant and young child feeding practices at home to prevent relapse. Curiously and against protocol recommendations, some nurses suggested prescription to some mothers of drugs that induce breast milk production.

Prospection of OTP treatment for infant SAM

More than two thirds of interviewed staff, mostly the pediatricians, did not believe in the feasibility of outpatient management of a malnourished infant. *“They are too small and have frequent medical complications”*, they said. However, after in-depth discussion, they came up with a proposition of eligibility criteria for outpatient treatment in infants: z-score < -3 with absence of medical complications and milk rise; no bilateral pitting edema; history of low birth weight, orphan without medical complications, healthy child but with sick mother; infants from poor families; infant born from primiparous mothers; child weighing more than 2.8 kg and aged more than 28 days. The appropriate site for the outpatient management according to informants is the integrated health center whereas some proposed the health post level. The proposed medical systematic treatment includes amoxicillin, folic acid, vitamin A and anti-malarial drugs.

Most practitioners proposed that breastfed infants be given supplemental feeds according to the child’s age. If the child is less than 3 months, the mother must be supplemented. However, children > 3 months should directly receive complementary foods as appropriate.

Continuation of breastfeeding after discharge

Some experienced pediatricians argued that most infants discharged from hospital generally used additional commercial breast milk substitutes at home and exclusive breastfeeding was rarely re-established at home even for children less than 1-2 months.

“Mothers always buy commercial milk for their discharged children at home. From their experience with therapeutic milks in hospital, they seemed to be definitely convinced that artificial milk was the most suitable option to rapidly improve their children’s growth.” (Pediatrician, Hospital M).

Since the inception of CMAM protocols, there have been concerns expressed on whether hospital stay of malnourished infants < 6 months of age have a negative effect on continuation of exclusive breastfeeding (EBF) at home. To the author’s knowledge, no controlled studies to date that clearly document risks on interruption of exclusive breastfeeding after discharge from inpatient facility have been published.

DISCUSSION

In non-emergency periods, the major challenge in the quality of management of SAM in infants aged less than six months of age in Niger hospitals lies in the inadequacy of available resources (available trained staff, equipment, wards, supplies) compared to high requirements of clinical standards to manage these infants.

Foreign NGOs’ massive support to some hospitals has improved quality and quantity of staffing, equipment and quality of care. However, this support deters local efforts for sustainable solutions. Outpatient treatment for infants could be an option to reduce workloads. However, national protocol to date does not have explicit guidance for outpatient treatment for infants with SAM. Until recently, one of the weaknesses of



CMAM protocol even at international level, for management of under 6 months infants concerned admission criteria. However, an opportunity is given in the recent 2013 updates of WHO for distinction between complicated and non-complicated SAM in infants [7].

In the Managing Acute Malnutrition in Infant (MAMI) project report, Kerac *et al.* came to the conclusion that more operational research was needed to document effective outpatient based care for infants [3]. In a prioritization attempt of research topics in MAMI, Angood *et al.* showed that outpatient management came third following key questions as: how should SAM be defined in infants and what are the key opportunities/timings where infant SAM management can be incorporated with other healthcare programmes [11].

Inadequate breastfeeding is the number one trigger of child malnutrition for this age group.

A study by Abba *et al.* supports the fact that there is insufficient counselling by overwhelmed health staff during prenatal consultation “On average, the prenatal consultation lasted 15 minutes and did not include a question period. Some women did not understand the language and there were no translation services. And EBF was rarely mentioned during these health education sessions’ gold individual consultations.” [12].

In emergency setting, Supplemental Suckling Technique (SST), when correctly used, has been reported to be an effective feeding method for young infants with SAM in several settings [13-15]. However, this study showed that SST, though recommended by most of existing CMAM protocols to feed < 6 months malnourished infants, is not currently being used in a majority of inpatient centres in Niger. Since it should be medically monitored, SST represents one of the major arguments why malnourished infants < 6 months are treated in the hospital setting under close supervision.

An evaluation of the “Re-lactation by the Supplemental Suckling Technique” in Afghanistan by Oberlin and Wilkinson also observed that “Where SST is correctly applied; there are good results up until discharge. However, the SST was not well implemented overall, with many infants being discharged on mixed feeding. In the TFUs, these infants were still considered ‘cured’ and even where infants are discharged on breast milk alone; it appears that mothers often reverted to mixed feeding at home.” [13].

These results differ from Vygen *et al.* [6]. A 2012 review of treatment of SAM in infants in Zinder found high recuperation rates in infants and SST described as the main feeding method in these centers. Quality of services to malnourished children declined from stand-alone TFC to public hospital inpatient facility [6].

Nevertheless, Vygen *et al.* [6] study used data collected before the current study period, at a time where most NGO TFCs were not integrated to public hospitals.

CONCLUSION

This study used a participative approach with hospital health practitioners to self-assess clinical aspects of the quality of care in the inpatient treatment of SAM in infants < 6 months in eight National Hospitals in Niger.

Results have shown that gold standard SST is rarely used and there are concerns about continuation of exclusive breastfeeding for infants aged less than six months after hospital discharge. The quality of in-patient care could be improved if few severely ill patients were kept in hospitals. Health workers proposed selection criteria, treatment package and follow up measures in PHC for moderately malnourished infant at PHC or Health post.

The study was an opportunity for raising awareness among hospital practitioners on the urgent need to move forward in testing an outpatient model for the management of malnutrition for infants less than six months in Niger.



Table 1: Distribution of health staff, rooms and beds in the surveyed Hospitals

Items	Lamordé	Poudri ère	Dosso	Mara di	Zinder	Diffa	Agadez	Tahaoua
% Beds (n =313)	6%	8%	5%	22%	38%	4%	4%	12%
%Rooms (n =24)	13%	8%	8%	21%	25%	8%	8%	8%
% staff (n=270)	5%	11%	2%	20%*	38%*	4%	8%	11%

* 58% of total health staff are in 2 hospitals (1 national hospital in Zinder and 1 regional hospital in Maradi)

Table 2: Hospital staff repartition by professional categories/ grades

Category of Staff	Number	%
Pediatrician	8	24%
General Doctor	8	24%
Nutritionist	4	12%
Nurse (State Diploma)	9	26%
Nurse (Certified)	4	12%
Nutrition Assistant	1	2%
Total	34	100%

Table 3: Hospital staff repartition by training periods on CMAM protocol

Dates of training	Number	%
2005-2009	13	52
2010-2013	12	48
Total	25	100



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