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Review Article

Community-based management of acute malnutrition: Implementation quality, and staff and user satisfaction with services

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Abstract

Background: Malnutrition is a problem that affects many children and therefore is the focus of multiple interventions worldwide. One intervention is community-based management of acute malnutrition (CMAM).

Objective: This study assessed CMAM implementation quality in the Builsa North District of Ghana, and the satisfaction among both users and CMAM staff.

Design: The study used a convergent mixed-method design involving in-depth interviews with CMAM staff and users, document reviews, and observations of the CMAM implementation. The data were collected across eight health care facilities in eight sub-districts. The data were qualitatively and thematically analysed in Nvivo software.

Results: Several factors were found to adversely affect the quality of CMAM implementation. Significant factors included inadequate training of CMAM workers; religious belief systems; and a lack of implementation materials, such as ready-to-use therapeutic food (RUTF), CMAM registration forms/cards, and computers. These factors adversely affected programme quality, thus resulting in dissatisfaction among CMAM users and staff.

Conclusion: This study established that the CMAM programme in the Builsa North District of Ghana is hindered by a lack of primary resources and logistics necessary for successful programme implementation.

الملخص

أهداف البحث: سوء التغذية مشكلة عالمية تؤثر على العديد من الأطفال. نتيجة لذلك، تم اعتماد العديد من التدخلات في جميع أنحاء العالم لمعالجة المشكلة. أحد التدخلات هو الإدارة المجتمعية لسوء التغذية الحاد. تقيم هذه الدراسة الإدارة المجتمعية لجودة تنفيذ سوء التغذية الحاد في منطقة شمال بويلسا في غانا ورضا المستخدمين والإدارة المجتمعية لموظفي سوء التغذية الحاد.

طريقة البحث: تستخدم الدراسة تصميما بحثيا متقاربا متعدد الأساليب يتضمن مقابلات متعمقة مع الإدارة المجتمعية لموظفي ومستخدمي سوء التغذية الحاد، ومراجعات الوثائق، وملاحظات الإدارة المجتمعية لتنفيذ سوء التغذية الحاد. تم جمع البيانات عبر ثمانية مرافق رعاية صحية في ثماني مناطق فرعية. تم تحليل البيانات نوعيا وموضوعيا باستخدام برنامج "إن فيفو".

النتائج: وجدنا العديد من العوامل التي تؤثر سلبًا على جودة الإدارة المجتمعية لتنفيذ سوء التغذية الحاد. تشمل العوامل المهمة عدم كفاية التدريب على الإدارة المجتمعية للعاملين في مجال سوء التغذية الحاد ، ونظم المعتقدات الدينية ، ونقص الأغذية العلاجية الجاهزة للاستخدام، والإدارة المجتمعية لنماذج/بطاقات تسجيل سوء التغذية الحاد، وأجهزة الكمبيوتر (أي ، مواد التنفيذ). تؤثر هذه العوامل سلبا على جودة البرنامج، مما يؤدي إلى عدم رضى الإدارة المجتمعية لمستخدمي سوء التغذية الحاد والموظفين.

الاستنتاجات: أثبتت هذه الدراسة أن الإدارة المجتمعية لسوء التغذية الحاد في منطقة شمال بويلسا في غانا يعوقها نقص الموارد الأولية واللوجستيات اللازمة لتنفيذ البرنامج بنجاح. تفتقر معظم المرافق الصحية في المنطقة إلى الموارد اللازمة لتنفيذ البرنامج ولا تحقق النتائج المرجوة.

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Most health facilities in the district lack such resources and are not delivering the intended results.

Introduction

Malnutrition is a global public health problem. According to the 2016 Global Nutrition Report, approximately 2 billion and 800 million people have micronutrient and caloric deficiencies, respectively.[1] The report further indicates that 159 million children under the age of 5 years are too short for their age (stunted growth), 50 million are underweight for their height (wasted), and 41 million are overweight.[1] Malnutrition generally refers to deficiencies, excesses, or imbalances in a person's energy and nutrient intake.[2] Malnutrition and its complications account for approximately half of all child deaths worldwide.[3] The seriousness of malnutrition has led to several global efforts and interventions to address this health problem.[4]

One intervention is the community-based management of acute malnutrition (CMAM) programme recommended by the World Health Organization (WHO) to manage acute malnutrition globally.[5–7] The CMAM was developed by Valid International, an organisation established in 1999 to promote evidence-based reform of humanitarian practice. The concept has been used by WHO and UNICEF as an effective intervention model to replace the management of severe acute malnutrition through rehabilitation centres.[8] The CMAM is a decentralised approach in which the management of acutely malnourished children is largely shifted from facility-based to community-level treatment provided by primary health care centres and mobile teams.[9] This framework has been used by many governments and non-governmental organisations (NGOs) as a long-term programme for managing severe acute malnutrition.[7] The CMAM programme has been implemented in Ghana since 2010.[10] However, cases of malnourishment are rising in Ghana, particularly in northern Ghana, where this study was conducted. For instance, a recent study in Ghana by Martin et al. (2019) has indicated that, whereas the national stunting rate in children under 5 years of age was 19%, that in Northern Ghana was 33%. Another study in Ghana has indicated that approximately 40% of deaths among children under 5 years of age are associated with malnutrition.[11] In addition, little research has assessed implementation quality, which directly affects the outcomes and recovery of the managed cases.

Consequently, this study was aimed at assessing CMAM implementation through document reviews, observations, and interviews with users and CMAM staff. To this end, the study explored two research questions: (1) What is the CMAM programme's implementation quality? (2) How satisfied are CMAM users and CMAM staff with the programme implementation and quality? In considering the effects of malnutrition in children under 5 years of age globally,[11] assessing intervention implementation quality and satisfaction is useful to identify measures for improving programme service delivery to achieve better recovery. Through this study, the Ministry of Health, Ghana Health Service, policymakers, and NGOs can compare the quality of the CMAM in the district against nationally and internationally acceptable standards. In addition, assessment of satisfaction among users and CMAM staff can suggest ways to improve the CMAM programme.

The next part of the article discusses the CMAM programme and its history, as well as health intervention quality and satisfaction. The theoretical or conceptual framework underpinning the study are subsequently discussed. The methods used to conduct the study are then described, including the research design, setting, sampling, data collection, and sample characteristics. Subsequently, the results of the study, including implementation quality and satisfaction among both users and health professionals, are reported. The final part discusses key results of the study.

Community-based management of acute malnutrition

WHO and UNICEF used the CMAM developed by Valid International as an alternative intervention model for the management of severe acute malnutrition via rehabilitation centres.[8] CMAM was first introduced as an emergency intervention through in-patient care treatment and feeding centres. Because of its success and effectiveness, this framework has been used by many governments and NGOs as a long-term measure for managing severe acute malnutrition.[7] The CMAM programme funded by WHO, NGOs, and governments[12,13] encourages the holistic participation of community health volunteers, opinion leaders, and CMAM staff. It emphasises the management of malnutrition cases at the community level instead of in hospital settings. CMAM is grouped into four components: in-patient management of children with severe acute malnutrition and medical complications; outpatient management of children with severe acute malnutrition without medical complications; services addressing moderate acute malnutrition to prevent undernutrition; and community outreach.[14]

The in-patient care for acutely malnourished children with medical complications provides intensive in-patient medical and nutritional care to children with medical complications, such as a loss of appetite, high temperature, or severe oedema.[15] This component connects with the outpatient therapeutic programme to allow for early discharge and continued treatment in communities.[8] Outpatient management for severe acute malnutrition without complications delivers home-based treatment and rehabilitation by using ready-to-use therapeutic food (RUTF) for children with severe acute malnutrition without medical complications.[7] The recovery progress in malnourished children is monitored through regular outpatient clinics. This component is critical because many children with severe acute malnourishment do not show medical complications.[8] Supplementary feeding for moderate acute malnutrition ensures that primary treatment and take-home food supplies are provided to families and

children with moderate acute malnutrition without medical complications. Under this component, services are extended to other people with special nutritional requirements, including pregnant women and lactating mothers.[7]

The community outreach work ensures strong relationships and active community participation through traditional and opinion leaders. Community volunteers for CMAM are recruited and trained in measuring the mid-upper arm circumference (MUAC) of all children under 5 years of age to identify those with acute malnutrition.[8,16] Community volunteers screen children with a MUAC tape measure, and those whose MUAC is less than 11.5 cm are administered RUTF treatments.[5] Children with medical complications, such as bilateral pitting oedema, generalised body oedema, anaemia, or hypothermia, are managed as in-patients in health facilities and are later transferred to community level care for continuing treatment when their condition becomes stable. Children without medical complications are scheduled to visit to collect the RUTF at specific time intervals. While community CMAM volunteers serve as a link between CMAM staff and community members, opinion leaders encourage the participation and utilisation of CMAM by community members.

Quality and satisfaction with health interventions

The quality of health interventions and the satisfaction of users and CMAM staff are important because they substantially influence future utilisation and uptake of services.[17] According to the Institute of Medicine, health service quality refers to healthcare services for individuals that increase the likelihood of desired health outcomes and are consistent with current professional knowledge.[18] Oyugi et al.[19] have argued that the quality of health services is based on how healthcare workers conduct themselves in delivering health services. Health intervention or service quality is inherently associated with the satisfaction of users and CMAM staff and is often difficult to differentiate.[20,21] Indeed, health service quality is a force driving user satisfaction, and vice versa.[22] For instance, satisfied users usually adhere to treatment directions and follow-up that help achieve desirable outcomes and influence or improve the quality of healthcare programmes.[23–25]

Satisfaction often contains three common elements: emotional or cognitive response to satisfaction; focus (expectation); and response time.[26] We argue that satisfaction is happy feelings demonstrated when individual expectations are met during healthcare service seeking. According to prior studies, a major driving force of user satisfaction in health services is providers' attitudes, particularly their respect and empathy towards users.[22,27] Many users consider this aspect to be more important than even the technical competence of providers. In addition, users are often dissatisfied with other aspects, such as time-wasting in health facilities—an aspect that consistently ranks high in importance in user satisfaction with health services.[22] Some clients also base their satisfaction on risk reduction and the value received for the price.[17]

Like that of users, healthcare providers' satisfaction is key to the delivery of quality healthcare services. Although variations exist in reporting of job satisfaction across several studies, most determinants of satisfaction have been similar. Satisfaction among healthcare providers is determined by the availability of training for staff, supervision, promotion, job definition, and supplies and logistics[28,29]; other factors are the working conditions and the organisational environment, job stress, role conflicts and ambiguity, role perception and content, and organisational and professional commitment.[30] These findings suggest that good working conditions, as well as environments devoid of stress, role conflict, and ambiguity, are important for healthcare service providers' satisfaction. Beyond policies, rules, logistics, and supplies, job training is an aspect that increases providers' satisfaction, thus ensuring the quality of services and user satisfaction.[31]

Theoretical/conceptual framework for the study

Various theoretical or conceptual frameworks exist for measuring the quality of health interventions. One example is the SERQUAL model, which uses the SERVQUAL questionnaire measuring five dimensions in service delivery: tangibles, reliability, responsiveness, assurance and empathy. Kashf et al.[32] have used this model to evaluate the quality of health services provided to 384 people referred to the health centres of Ahvaz city.[33] Another example is theory-based and consumer-based evaluations, which Gross (2004) has used to identify quality indicators of ambulatory health services, such as accessibility, availability, patient satisfaction, the performance of preventive medicine, and the use of private medical services. In addition, in the conceptual framework of quality of hospital services,[34,35] conceptual models have been based on patients' perspectives, as proposed by Sofaer and Firminger[36]; clinicians' perspectives[37]; and the Donabedian[38] model.

In this study, the Donabedian model was used to assess the quality of the CMAM programme. This model is widely used for measuring the quality of health interventions in Ghana and other parts of the world.[39–41] According to the model, health programmes' quality depends on input, process, output, outcome, and impact (Figure 1). Input focuses on resources or supplies, and the logistics needed for programme implementation, including RUTF and medicines. Process refers to the technical expertise of staff or provider–client interactions during health-seeking.[38] According to the model, output relates to the number of communities and/or children covered and treated, and outcome refers to the results achieved after treatment, which focuses on the recovery, mortality and defaulting rates after the treatment (noncomplience to treatment), and user satisfaction regarding CMAM.[38] Finally, impact refers to long-term contributions of recovered clients to the country's or organisation's growth.[38] This study measured the quality of the CMAM intervention by focusing on the first four components of the Donabedian model.

Materials and Methods

Data were collected in the Builsa North District of the Upper East Region of Ghana. We used a convergent mixed-method design involving a cross-section of CMAM users and health officials implementing the programme. Eight

healthcare facilities across six sub-districts were included in this study. Six smaller facilities were randomly selected from each sub-district, whereas two larger facilities were purposively selected to ensure that data-rich facilities were included. In addition, ten users and eight CMAM staff were included according to their availability and willingness to participate in the study.

We developed an interview guide based on the National CMAM Implementation Checklist to collect the data. Interviews with CMAM staff were conducted in English, whereas user interviews were conducted in Buli, the native language of the Builsa people. Interviews in English and Buli allowed respondents to express themselves comfortably and adequately. The interviews also allowed participants to provide detailed explanations of the programme's implementation by discussing what was or was not working, and to offer suggestions for improvement. In addition, secondary data in the form of CMAM treatment records from 2018 and the first quarter of 2019 were obtained from the health facilities. The variables examined in this study were the four constructs under the Donabedian model: input (qualified staff, drugs, medical equipment and consumables, and protocol/guidelines), process (supervision, documentation, and participation and follow-up), output (coverage of the programme, number of cases treated, and satisfaction), and outcome (recovery, mortality, and defaulting rates). These methods were appropriate because the quality of health services has been measured with cross-sectional surveys, observations, interviews, and literature reviews.[22,42,43]

Nvivo 12 data management software and Microsoft Excel were used for qualitative and quantitative data analysis. Because the quantitative data were scant, they are presented in tables. Five steps of thematic analysis were used to analyse the data through a modified version of the Donabedian model. First, the audio-recorded interviews were transcribed, and those in Buli were translated to English. Second, the transcripts were examined to ensure that no information was missing before import into Nvivo 12 data management and analysis software for coding. Third, each interview was read, and word frequencies and text queries were used to identify and create codes according to the study objectives. Finally, the codes were reflected upon and clustered to develop overarching themes, such as user satisfaction, quality of implementation, and CMAM staff satisfaction, and provide suggestions for improvement[44,45] for similar processes).

Results

This study's results are presented according to two themes that emerged: implementation quality, and satisfaction among users and CMAM staff.

Implementation quality

According to the Ghana Health Service (2010) and Donabedian,[38] inputs such as trained staff, protocol/guidelines for implementation, routine drugs, and supplies are the main resources and logistics needed to implement CMAM successfully. However, most health facilities were found to lack the required inputs. Table 1 presents the availability of various variables in the eight health facilities

covered by the study: 0 denotes the absence of an input in a facility, and ≥ 1 denotes the presence of an input. All included facilities had one or two staff members. As shown in Table 1, although the eight facilities had 12 staff members, only 25% of them had received specialised training in the CMAM programme. In addition, only six facilities had a severe acute malnutrition (SAM) action protocol and access to CMAM guidelines for reference (Table 1). Two facilities each had and displayed job aids, the SAM classification algorithm, and MUAC classification tables. Only three facilities had RUTF lookup tables and key messages, and none had RUTF—the primary food for malnutrition treatment (Table 1). In addition, only five, seven, three, and two facilities had malaria test kits, albendazole, amoxicillin, and cotrimoxazole, respectively. Still under input, the CMAM officials unanimously indicated that the CMAM programme was good and was working well when it was first introduced, owing to the availability of the required resources, logistics, and supplies. Supporting this claim, a health professional from facility 2 stated: *"The CMAM implementation was good, and the programme came to help the district."*

This quotation indicated that the CMAM is a good programme that was initially implemented well. However, the CMAM staff agreed that the lack of essential resources had more recently affected the programme's implementation. For instance, one CMAM official at facility 5 stated: *"The main problem with the implementation now is the non-availability of the RUTFs, F-100, F-75, and ReSoMal to manage malnutrition cases."* This quotation, which reflects several concerns raised by other CMAM officials, shows that the CMAM programme's current implementation is substantially affected by the non-availability of resources and logistics.

Regarding the process in the Donabedian model, this study indicated an acute lack of supervision of the CMAM programme. For instance, only three (37.5%) of the eight facilities reported monthly supervision of the programme (Table 1). In addition, most facilities had problems with documentation and follow-up, which are part of the process category in the Donabedian model. For instance, an official at facility 1 explained: *"Lack of means of transport like motorbikes to go for follow-ups and sensitisation is a big challenge and is not allowing us to do our work well."* Regarding documentation, an official at facility 6 said: *"The cards for admission of children … to the CMAM programme are not available for close to 1 year now."* Another official at the same facility stated: *"Some of the challenges are documentation challenges: thus, no tools for us to document our actions."*

The study also found challenges in measuring the programme's output (coverage and cases treated) and outcomes because of inconsistent data. The combined number of malnutrition cases obtained from the covered health facilities was higher than the total number of malnutrition cases captured by the district health directorate (Table 2). This finding was unexpected, given that the district figures were an aggregation of cases from all 22 health facilities in the district. Double counting can sometimes occur when data are collected from different health facilities within a sub-district that may report to one another instead of the district health directorate. However, double counting did not occur in this
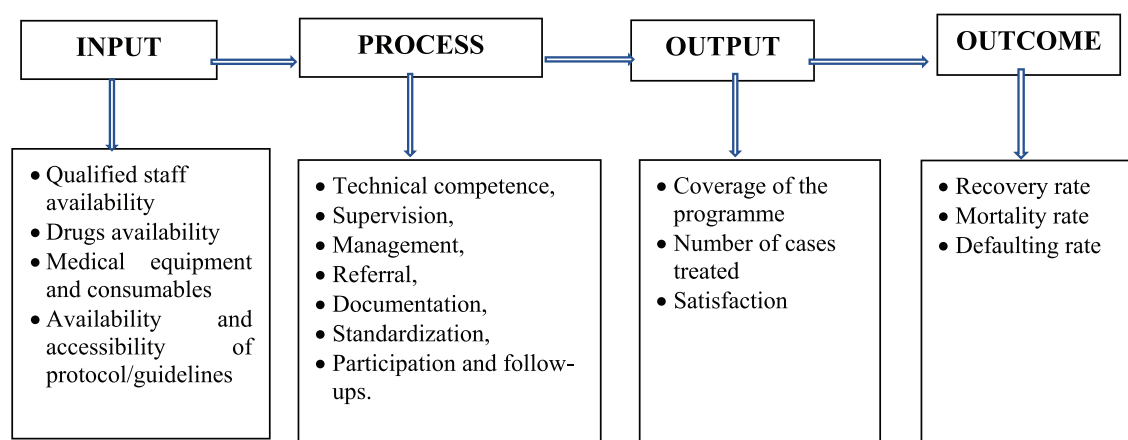
Figure 1: Adapted Donabedian Model.

Table 1: Availability of Items/Activities for CMAM Implementation in the Studied Facilities.

Activities/Items	Health Facilities (1−8)								Total
	1	2	3	4	5	6	7	8	
Human Resources									
Staff working on CMAM	1	2	2	1	2	1	2	1	12
Staff trained in CMAM	1	0	1	0	0	0	1	0	3
Availability of Protocols/Guidelines									
Guidelines accessible for reference	1	0	1	1	0	1	1	1	6
Job aids displayed and used	0	0	1	0	0	0	0	1	2
SAM action protocol	0	1	1	1	1	0	1	1	6
RUTF lookup table and key messages	0	0	1	1	0	0	0	1	3
SAM classification algorithm	0	0	1	0	0	1	0	0	2
MUAC classification table	1	0	0	1	0	0	0	0	2
Availability of Supplies: Section Two									
Ready-to-use therapeutic food	0	0	0	0	0	0	0	0	0
Number of MUAC tape measures	1	1	1	1	1	1	1	1	8
Number of weighing scales	1	1	1	1	1	1	1	1	8
Availability of Routine Medications									
Amoxicillin	0	0	1	1	0	0	0	1	3
Cotrimoxazole	0	0	1	0	0	0	0	1	2
Albendazole	1	1	0	1	1	1	1	1	7
Malaria rapid test kits (para-check)	1	1	0	1	0	1	0	1	5
Supervision									
Monthly supervision of staff	1	0	0	1	0	0	1	0	3

study, because the data were collected from facilities reporting directly to the district health directorate. Moreover, some health facilities did not have records for some outcomes. For example, no data were recorded for children who did not recover in 2018 and the first quarter of 2019, or for children who died within the first quarter of 2019 (Table 2).

Likewise, the 2018 Builsa North District Health Information Management System *report contained* 32 CMAM

Table 2: CMAM Cases in the Selected Health Facilities and Districts for 2018 and 2019.

Items	Number of Cases			
Period	2018		First Quarter of 2019	
Facilities	Facilities Studied	District	Facilities Studied	District
Total malnourished cases	43	32	10	20
Cured cases	30	4	7	7
Fatal cases	1	—	—	—
Defaulted cases	3	—	2	—
Non-recovered cases	—	—	—	1
Discharged cases	30	4	7	8

cases, four (12.5%) of which were treated successfully, but no further information was available. Similarly, the 2019 first-quarter report included 20 cases admitted into the CMAM programme, seven of which were treated successfully. However, no further information on the number of deaths or defaulters was available (Table 2). When the CMAM officials at the facilities were asked about the inconsistent data, they indicated that the non-availability of documentation and registration materials is a major problem that makes keeping accurate programme records at facilities challenging.

Satisfaction among stakeholders

Stakeholders' satisfaction with a health intervention is an important element of the output construct of the Donabedian model. We therefore measured the satisfaction of CMAM users and CMAM staff as the implementers of the programme.

Community-based management of acute malnutrition staff

The health officials were not satisfied with the CMAM programme for several reasons. The lack of specialised CMAM training (input) was a major reason for officials' dissatisfaction. The findings indicated that most CMAM officials had received no specialised training before being assigned CMAM tasks or even during their careers with the CMAM programme. For example, a health official at facility 7 said: "*Since 2013, they have not trained any nurse again.*" In addition, most of the staff trained in 2013 had left the service through retirement or moving on to further studies, thus leaving new and inexperienced staff without the required training and skills to manage the programme. The non-availability of logistics and supplies (input) was another reason for CMAM staff dissatisfaction with the CMAM programme. For instance, one official at health facility 3 explained the reasons for his dissatisfaction as follows: "*There are new cases, but due to the absence of RUTFs, we have not been able to enrol them into the programme.*" CMAM staff also noted that clients do not come to the health facilities to seek their services, because of a lack of RUTFs. These aspects together affected officials' work and satisfaction with the programme.

Community-based management of users

Although users were dissatisfied with the CMAM programme because of a lack of necessary logistics and resources, they were satisfied with the treatment by CMAM staff. Most users were pleased with how nurses and CMAM officials were nice and welcoming during their visits. "*They always respect me for whom I am,*" "*I was happy because the nurses were very nice to me,*" and "*I would say that the health workers have done very well, and I am pleased with their services*" are some examples of sentiments among users. These findings suggest that users focus on respect from CMAM staff during visits to health facilities rather than on their children getting the needed treatments. This result is consistent with those from studies indicating that people value respect and fair treatment more than outcomes of interactions.[46–48]

Intriguingly, some users who were pleased with the warm reception of CMAM officials still expressed discontent with the absence of necessary logistics and resources. Notably, the shortage of RUTFs was a cause of substantial dissatisfaction among users, because their children did not receive the needed treatment for better recovery. For instance, a user from health facility 1 stated: "*The shortage of the food* (i.e., RUTF) *negatively affected my child's health, because it is not easy to come by money to purchase it in the open market.*" In addition, other users complained about the lack of follow-up by CMAM staff, particularly when users missed their reviews. For instance, a user from health facility 4 angrily noted: "*I stopped going to the health centre with my child, but no nurse followed up to ask me why I do not bring my child to the health centre again. Why is it like that?*" These results and quotations clearly show that CMAM users were not pleased with the programme's overall implementation.

Discussion

Inputs (protocol/guidelines for implementation, routine drugs supplies, and logistics supplies), process (technical competence, supervision, documentation, participation, and follow-up), and output (coverage of the programme, number of cases treated, satisfaction) are important determinants of health interventions' implementation quality.[38,49–52] However, essential logistics and supplies, such as routine drugs, RUTFs, equipment, guidelines, and materials needed to implement the CMAM programme successfully, were insufficient and in some cases non-existent. These insufficient resources suggest that the CMAM programme in the Builsa North District did not meet the [Donabedian38] quality standard. In addition, owing to inconsistent and incomplete data, the number of cases treated, recovered, defaulted and resulting in death, which are crucial determinants of programme quality, were impossible to measure.[53]

The results imply that malnourished children may not be getting the needed treatment to enable them to recover faster, and those who are treated may not be treated well, because of the staff's inadequate skills. Similarly, early identification of malnourished cases via screening at community outreach programmes, home visits, and follow-up may not occur because of a lack of logistics and means of transport. Most CMAM officials requested provision of job-specific training to improve their technical competence and working knowledge to manage malnutrition cases properly. Training on the CMAM programme could provide clear criteria for admission and discharging of malnutrition cases, and improve the overall performance of the programme.[54,55]

In agreement with findings from previous studies,[56,57] we found inconsistency between the data from the studied facilities and the district health directorate. However, complete and consistent data are essential for assessing programme success and determining areas of improvement. The inconsistent information, as found in this study, could arguably pose a major challenge to the CMAM programme by making its success and/or determination of areas needing improvement either difficult or impossible to assess. Given the importance of data in programme assessments, governments must provide adequate registration, documentation materials, and computers to

health facilities and district health directorates to help address challenges associated with inconsistent data. This aspect is very important, because research has shown that poor record-keeping; under-reporting; lack of time to complete documentation; and shortages in registration forms, computers, recording materials, tools, and equipment are substantial contributors to inconsistent records.[56,57]

Both CMAM users and officials were dissatisfied with the programme's implementation quality. Users based their satisfaction levels on the availability of supplies and the client−provider relationship. Users were generally unhappy with the programme's implementation, because of a lack of resources and logistics, particularly regarding the RUTF and basic medications for treating malnourished children. The user satisfaction level with health interventions is a major determinant of patients' future adherence to treatment and uptake of services.[17,23−25] Arguably, most clients of the CMAM programme in the district are likely to stop attending treatment centres or to not seek healthcare for their children. In addition, some parents may resort to local means of treating their children, which could negatively affect their recovery and overall growth and development. The lack of professional healthcare can lead to malnourished children becoming severely ill or even dying. Therefore, the government and donor agencies must provide logistics and resources to health facilities, particularly RUTFs, to treat malnutrition cases effectively and improve user satisfaction.

Similarly to user dissatisfaction, CMAM staff dissatisfaction was influenced by the lack of essential resources, such as RUTFs and medication, to treat malnourished children. In addition, the lack of appropriate and adequate staff training emerged as an important determinant of satisfaction. The determinants of CMAM staff satisfaction levels found in this study are consistent with those from prior studies, such as Walker,[29] Bilal et al.,[28] and Lu et al.[30] Job satisfaction is an important determinant of quality service delivery.[58] Therefore, an important measure to restore CMAM service providers' satisfaction is adequate provision of logistics and supplies, and CMAM job training for staff as an ingredient to increase providers' satisfaction,[31] and also ensure the quality of services, and the satisfaction of both service providers and users.

Another notable result was that some users who were dissatisfied with the programme's implementation quality were satisfied with the client−provider relationship. Thus, users were pleased with the good relationship and respect received from CMAM staff during hospital visits. This finding suggests that the CMAM providers relate well with their clients. This aspect is essential, because the client−provider relationship is a major determinant of user satisfaction that can lead to future uptake of health services or visits to health facilities.[22,27] Therefore, health facilities should focus on improving their client−provider relationships to enhance user satisfaction and attract more patients for treatment.

Conclusion

This study has several limitations. A key limitation is that not all health facilities in the district were included, because the study was conducted during the rainy season, when some facilities were not accessible. However, a key strength of the study is the combination of data collection methods, which allowed for data triangulation. This study assessed the CMAM programme in an African context, focusing on implementation quality and stakeholders' satisfaction. The results revealed that the CMAM programme appears not to be delivering the intended results, because of a lack of supplies and logistics for managing malnutrition cases. Both CMAM staff and users are dissatisfied with the programme implementation, owing to inadequate logistics and supplies. Staff dissatisfaction with the CMAM's performance was also due to the lack of staff training and professional development. Providing adequate logistics, resources, staff numbers, and staff training is essential for improving the programme's quality. Likewise, health facilities can improve uptake and adherence to treatment by enhancing the quality of client−provider relationships and user satisfaction.

Conflict of interest

There are no conflicts of interest to declare.

Ethical approval

This study was conducted according to the guidelines of the Declaration of Helsinki. The Navrongo Health Research Centre Institutional Review Board (NHRCIRB) granted ethics approval for this study on 19th July 2019 (approval ID NHRCIRB250). Verbal informed consent was obtained from all participants/patients, and was witnessed and formally recorded.

Author contributions

JAA (corresponding author) performed study design and data collection. He fully participated in writing the methods, results, and discussion sections. MAA participated in designing the research, software, and editing, and conducted some of the analysis of the data. He also wrote some of the results and discussion. All authors have critically reviewed and approved the final draft, and are responsible for the content and similarity index of the manuscript.

which the research was conducted and for supporting the travel to Ghana to collect the data for the study.

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