EDELWEISS PUBLICATIONS
OPEN ACCESS

https://doi.org/10.33805/2576.8484.127
Volume 2 Issue 1 | PDF 127 | Pages 7

Edelweiss Applied Science and Technology

Research Article ISSN: 2576-8484

The Effectiveness of Community Outreach in Increasing the Coverage of Community Based Management of Acute Malnutrition (CMAM) Program, in Rural Kassala Locality

Somiya Gutbi Salim Mohammed[1*] and Zemzem Yebio Adam Mosmar[2]

Affiliation

[1]College of Public & Environmental Health, Department of Epidemiology, University of Bahri, Sudan
[2]School of Health Sciences, Ahfad University for Women, Sudan

***Corresponding author:** Somiya Gutbi Salim Mohammed, College of Public &Environmental Health, Department of Epidemiology, University of Bahri, Sudan, E mail: somiyagutbi@gmail.com

Citation: Somiya GSM and Adam MZY. The Effectiveness of Community Outreach in Increasing the Coverage of Community Based Management of Acute Malnutrition (Cmam) Program, in Rural Kassala Locality (2018) Edelweiss Appli Sci Tech 2: 124-130

Received: Jan 01, 2018
Accepted: Feb 02, 2018
Published: Feb 12, 2018

Abstract

Community based Management of Acute Malnutrition (CMAM) is an innovative approach for managing acute malnutrition within the community. This study is a community based cross sectional study among communities covered by CMAM program in Rural Kassala locality, Kassala state, Sudan. The main objective was to evaluate the effectiveness of community outreach workers / volunteers in improving and increasing the coverage of the CMAM program. ENA SMART software was used to calculate the sample size of children under five, a total of (309) was subjected for MUAC and bilateral edema measurements to assess their nutritional status, and their households (200) were interviewed to obtain relevant data. All the community outreach workers / volunteers (62) were targeted by the study.

The study revealed that, the prevalence of acute malnutrition (wasting) was 17.1%, and no significant difference in the prevalence of acute malnutrition between boys and girls (p=0.477). A point coverage calculation was used to estimate services coverage, the coverage of the program estimated by 64.2%. Also the result showed that 67.7% of the cases attending the feeding program were referred by the community outreach workers / volunteers. The study concluded that the community outreach workers / volunteers doing an effective job, but needs more to strengthen their roles of identification and early detection cases.

Keywords: Community, CMAM, Acute Malnutrition, Severe Malnutrition.

Background

Nutrition is the intake of food considered in relation to the body's dietary needs. Good nutrition: an adequate, well balanced diet combined with regular physical activity, is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity (WHO, 2015). Globally, under nutrition which refers to both: protein energy malnutrition and micronutrient deficiency, is the cause of around 3.1 million child deaths annually in low and middle-income countries [1].

When nutritional reserves are depleted or nutrient intake is inadequate to meet the body's daily metabolic needs a state of under nutrition develops. Nutrient deficiency may stem from inadequate ingestion, impaired digestion or absorption, dysfunctional metabolic processing, or increased excretion of essential nutrients. Infants, children, pregnant females, individuals with low incomes, hospitalized persons, and older adults are at the greatest risk of becoming undernourished. Undernourishment may result in impaired growth and development, lowered resistance to infection, poor wound healing, and poor clinical outcome from disease or trauma with increased morbidity and mortality [2]. The long-term energy and nutrient depletion of eating disorders and the resulting malnutrition can have lasting effects on growth (More, 2013). Malnourished children, particularly those with severe acute malnutrition, have higher risk of death from common childhood illness such as diarrhoea, pneumonia, and malaria. Nutrition-related factors contribute to about 45% of deaths in children under 5 years of age (WHO, 2016). Since the 1950s the case-fatality rates in hospitals treating sever acute malnutrition (SAM) remained unchanged in developing countries (onaverage 20–30%). In 1992, this failure to translate scientific knowledge of what is needed to treat malnutrition in to effective large-scale interventions [3]. Important achievements have been observed in the management of acute malnutrition over the last decade, particularly in the development of ready-to-use therapeutic foods (RUTF). The use of RUTF has facilitated decentralized ambulatory management of acute malnutrition and has promoted a

community approach called community-based management of acute malnutrition (CMAM) [4].

Community based Management of Acute Malnutrition (CMAM) is an innovative approach for managing acute malnutrition in children within the community. CMAM results in early detection of cases of acute malnutrition, expanded access to treatment in decentralized sites, greater community involvement and support, and extended coverage. A comprehensive CMAM approach consists of community outreach, Outpatient Care management of severe acute malnutrition (SAM) without medical complications, Inpatient Care management of SAM with medical complications, and management of moderate acute malnutrition (MAM) [5].

The community-based management of severe acute malnutrition is an attempt to achieve sustainable impacts at a population level by taking the socioeconomic realities into account, balancing the potentially conflicting demands and ethics of clinical and public health [4].

The approach of community-based involves timely detection of active case finding in the community, Community health workers or volunteers can easily identify the children affected by acute malnutrition using simple colored plastic strips that are designed to measure mid-upper arm circumference (MUAC) and another sign can be recognized through nutritional oedema of the feet. Once children are identified as suffering from acute malnutrition, they need to be seen by a health worker who has the skills to fully assess them following the Integrated Management of Childhood Illness (IMCI) approach. The health worker should then determine whether they can be treated in the community through the provision of treatment for those without medical complications with ready-to-use therapeutic foods (RUTF) or other nutrient-dense foods at home, or whether referral to inpatient care is required. RUTF have a similar nutrient composition to F100, which is the therapeutic diet used in hospital settings. But unlike F100, RUTF are not water-based, meaning that bacteria cannot grow in them. Therefore, these foods can be used safely at home without refrigeration and even in areas where hygiene conditions are not optimal.Early detection, coupled with decentralized treatment, reduced and prevent of hundreds of thousands of deaths. Evidence shows that about 80 percent of children with severe acute malnutrition who have been identified through active case finding, or through sensitizing and mobilizing communities to access, decentralized services themselves, can be treated at home (WHO, WFP, UNSSC and UNICEF, 2007).

Justification

Rural Kassala locality is the second area in the Eastern Sudan states, implemented CMAM, after the pilot conducted in North Delta locality. Two coverage surveys were conducted, to investigate the number of children with severe acute malnutrition who were being reached by the program. The data which used are routine program data (such as admissions over time, MUAC on admission, proportion of discharges of defaulters, non-response and cures, length of stay and location of admissions) and qualitative data collected from beneficiary careers, program delivery staff and various community members (including traditional healers, TBA's, Imams and school-teachers) from which to make an estimate of program coverage (UNICEF, 2011). The role of community outreach workers / volunteers were not assessed, therefore this drew the researcher attention to assess the volunteer's

General objective

To evaluate the effectiveness of community outreach workers / volunteers in improving and increasing the coverage of the CMAM program, in Rural Kassala locality, Kassala state.

Specific objectives

- To assess the community outreach workers / volunteers' performance, on the identification of cases, Health /Nutrition education, follow up home visit, and trace defaulters.
- To identify the linkage between the community outreach workers/volunteers and the center running the therapeutic feeding.

Methodology

Study design

This study is a community based - cross sectional study targeting the communities covered by CMAM program in Rural Kassala locality, Kassala state.

Study area

The study carried out in the rural Kassala locality, villages covered by CMAM program. The rural Kassala locality was established and set its boundary on the year 2007. It is approximately 3,650 square kilometers with a population figure of 156 thousand. The locality has consisted of 56 villages/communities, from which 21 communities were covered by CMAM program.

Study population

The populations of the study are of two types: community outreach workers / volunteers who are part of the CMAM program and households who inhabit in Rural Kassala locality and have children under five, in the period October 2016 – February 2017.

Sample size

Sample size was calculated using SMART software, (ENA SMART software (July 2015) version). A total children (6-59months) of 24,246was used for the sampling frame with an expected 18.7% prevalence of malnutrition (MUAC, S3M 2013, for Rural Kassala),a precision of 4.5% was used, with a design effect of 1.5. The average household size was six people [6]. The proportion of under five year olds was taken as 17%, the MoH guideline. A 1% contingency was included in case of non-response or invalid data. This gave a sample size of 288 children (6 -59 months). (See Appendix 2)

Selection of households

Upon reaching the selected village, went to the center of the village. At the center of the village a pen was spun and walked to the edge of the village in the direction shown by the pen, counting the houses along this line. The first house was selected randomly by drawing a number, from 1 to the total houses counted, blindly; the number picked became the first household and thereafter of 5 household intervals used. If a household with no children 6 -59 months, household with the nearest door was selected until all the samples completed.

The study included 200 households with 309 children 6 - 59 months. There was slight increase on the number of children 6 -59 months from the original sample this was due to the number of children 6 -59 months at last house found to be more than needed, so included all.

For the community outreach workers / volunteers, all volunteers were included (n=62).

Data collection

Primary data collection: The data have been collected using a structured questionnaire that developed by the researcher containing closed and open ended questions to the household with children 6 -59 months and community outreach worker / volunteers (See appendix 1). The questionnaires of the household consisted of information about household demographic characterizes, knowledge of the CMAM program and the role of the community volunteer. Beside that other information's collected related to the nutritional status of their children and whether he/she registered in the nutrition program or not. MUAC and bilateral edema used as anthropometric assessment. The questions of the community outreach worker / volunteer, inquire about the role of the volunteer, coverage areas, a way of taking the MUAC measurement and its linkage with the program and the nutrition worker and the problem facing to do their jobs. Pilot was conducted in areas not to be included in the study, sample of 10 households and 5 community volunteers in Kassala town centers, no major problem found then used as a final questionnaire to collect the information's.

Results

Data for Household interviewed

A total of 200 households were included for the study, the results show that (96.5%) of the household are headed by males and (3.5%) were female headed. Almost half of the mothers, 45% in the present study were at age group of 24-28 years, and one quarter of age group of 31-36 years. Regarding family size, 55% of the households had a family size around 3-5 persons, and 42% had 6-8 persons and only 3% were more than 8 persons. As for the presence of children under 5 per household, 60% of the households had only 1 child age under 5 years and one quarter had 2 children under five years. The Educational level of the mothers /caregiver was reported as 40% were illiterate, 30 % had with primary level of education and only 1% had a secondary level of education. **Table 2** reveals that 94.5% were well knowledgeable of the Nutrition Therapeutic feeding programme at the centres and only5.5% were not knowledgeable about this program. The majority of the household (99%) well oriented by the presence of community outreach worker / volunteers in the community. The result also demonstrates 97% of the community outreach worker / volunteers were from the community. Last visits and activities undertaken by community outreach workers / volunteers were shown in **Table 3**. Less than half of the study households 43.9% were visited by the community outreach workers / volunteers within last week from the date of the interview, and a quarter of the sample 24.7% and 23.7% were visited on the same week and before one month from the date of interview respectively, and only 1% from the total interviewed household mentioned that never visited by the community outreach workers / volunteers. The activity of MUAC measurement was undertaken by the community outreach workers / volunteers as mentioned by 73% of household, 13.7% of households were visited by community outreach workers / volunteer to follow up children on nutrition programme and the rest 13.3% raised their awareness by either health and nutrition or IYCF information.

Head of house hold, according to sex		
Parameters	**Frequency**	**%**
Male	193	96.5
Female	7	3.5
Total	200	100
Age of mother/care giver per year		
Parameters	**Frequency**	**%**
18-23 years	29	14.5
24-28 years	90	45
29-31 years	34	17
31-36 years	42	21
37-41 years	5	2.5
Total	200	100
Family size		
Parameters	**Frequency**	**%**
5-Mar	110	55
8-Jun	84	42
11-Sep	6	3
Total	200	100
Children Under 5 years per household		
Parameters	**Frequency**	**%**
1 child	121	60.5
2 children	49	24.5
3 children	30	15
Total	200	100
Education level of mother/care giver		
Parameters	**Frequency**	**%**
Illiterate	80	40
Khalwa	65	32.5
Adult education	12	6
Primary	41	20.5
Secondary	2	1
Total	200	100

Table 1: Demographic data of household.

Knowledge about nutrition program in the village		
Parameters	**Frequency**	**%**
Yes	189	94.5
No	11	5.5
Total	200	100
Knowledge about volunteer /community outreach in the community		
Parameters	**Frequency**	**%**
Yes	198	99
No	2	1
Total	200	100
The source of volunteers		
Parameters	**Frequency**	**%**
From the community	192	97
Outside the community	6	3
Total	198	100

Table 2: Knowledge of Nutrition program and volunteers.

Last time you visited by the volunteer		
Parameters	**Frequency**	**%**
Within this week	49	24.7
Within last week	87	43.9
Within one month	13	6.6
More than 1 month	47	23.7
Never	2	1
Total	198	100
Activity and information given to the household		
Parameters	**Frequency**	**%**
MUAC measurement	143	73
Health & Nutrition information	19	9.7
IYCF information	7	3.6
Follow up Child on program	27	13.7
Total	196	100

Table 3: Last time visits and activities undertaken by volunteers.

Under five children Data

Regarding socio-demographic data, gender distribution among the selected children, table (4) shows that 53.4% of the children were males, while 46.6% were females. Their age group was classified as follows 25.9% of the children were in the age group (6-17 months) , 23% in the age group (18 - 29 months), 26.9% in the age group (30-41 months), 19.7% in the age group (42 - 53 months) and 4.5 % at age group (54 - 59 months).

Children age group		
Parameters	**Frequency**	**%**
6-17 months	80	25.9
18-29 months	71	23
30-41 months	83	26.9
42-53 months	61	19.7
54-59 months	14	4.5
Total	309	100
Sex of children		
Parameters	**Frequency**	**%**
Boys	165	53.4
Girls	144	46.6
Total	309	100

Table 4: Age and sex of children under 5 years.

A total of 309 children of age from 6 – 59 months have their MUAC checked and bilateral oedema to find out their nutritional status table (5). Based on MUAC cutoff 1.6% was found to be severely wasted and 15.5% was moderately wasted, with no case report with oedema.

MUAC for children 6-59 month		
Parameters	**Frequency**	**%**
Severely malnourished	5	1.6
MUAC < 115 mm		
Moderately malnourished MUAC >= 115 mm and < 125 mm	48	15.5
Well nourished	256	82.8
MUAC > = 125 mm		
Total	309	100
Bilateral oedema for children 6-59 month		
Parameters	**Frequency**	**%**
Yes	0	0
No	309	100
Total	309	100

Table 5: Prevalence of acute malnutrition based on MUAC cut off and/or oedema.

Table 6 the distribution of the sample by sex shows no significant differences was found in the number of boys and girls, P = 0.603 showing that boys and girls were equally represented. Also, there were no significant differences in the prevalence of acute malnutrition between boys and girls (p=0.477).

Distribution of age and sex				
Parameters	**Boys**		**Girls**	
	Frequency	**%**	**Frequency**	**%**
6-17 months	41	51.3	39	48.8
18-29 months	44	62	27	38
30-41 months	42	50.6	41	49.4
42-53 months	31	50.8	30	49.2
54-59 months	7	50	7	50
6-17 months	165	53.4	144	46.6
Distribution of sex and prevalence of acute malnutrition				
Parameters	**Boys**		**Girls**	
	Frequency	**%**	**Frequency**	**%**
MUAC < 115 mm	4	2.4	1	0.7
MUAC >= 115 mm and < 125 mm	26	15.8	22	15.3
MUAC > = 125 mm	135	81.8	121	84
Total	165	53.4	144	46.6

Table 6: Distribution of age with sex and prevalence of acute malnutrition.

Table 7 regarding to those identified as malnourished children, 64.2% of them were registered in a feeding program, and 35.8 % was not registered in a feeding program. From those registered on a feeding program, 67.6% were referred by community outreach workers / volunteers, 20.6% self-referral and 11.8% refereed after information got from anther mothers that their children registered in a feeding program. For the reason behind not registered in the program for those found to be malnourished, 68.4% were thought their children were not malnourished or no one identified as malnourished, 21.1 % said center was far from their houses and 10.5% said stay long time in the program.

Coverage of Feeding program		
Parameters	**Frequency**	**%**
Children registered in feeding program	34	64.2
Children not registered in feeding program	19	35.8
Total	53	100
Identification of referees		
Parameters	**Frequency**	**%**
Volunteer	23	67.6
Self	7	20.6
Another mother	4	11.8
Total	34	100
Reason behind not registered in the program		
Parameters	**Frequency**	**%**
Child not sick (not malnourished)	13	68.4
The Center is far	4	21.1
Stay long time in program	2	10.5
Total	19	100

Table 7: Inclusion of the children in feeding program, identification of referees and Reason behind not registered in the program.

Data for community outreach workers / volunteers interviewed **Table 8** results shows that (72.6%) of the community outreach workers / volunteers were female and 27.4 were male. One third of the

community outreach workers / volunteers, 35.5% in the present study were at age group of 34-41years, 27.4% at age group of 26 – 33 years, and a reasonable % 12.9% were at the age over 50 years. Regarding family size, 62.9% of the community outreach workers / volunteers had a family size around 6-8 persons, and 29% had 3-5 persons and only 8.1% were more than 9 persons. As for the presence of children under 5, 58.1% of volunteers did not have children under 5 years and only 3.2% of them had 2 children under five years. The education level of the volunteers community outreach workers / volunteers was reported as 37.1% were illiterate, 30.6% had a primary level of education, 22.6% had educated through Khalwa and only 6.5% and 3.2% had a secondary level of education and university respectively.

Sex of volunteer		
Parameters	**Frequency**	**%**
Male	17	27.4
Female	45	72.6
Total	62	100
Age of volunteer per year		
18-25 years	**10**	**16.1**
26-33 years	17	27.4
34-41 years	22	35.5
42-49 years	5	8.1
50-58 years	8	12.9
Total	62	100
Family size of volunteer		
Parameters	**Frequency**	**%**
5-Mar	18	29
8-Jun	39	62.9
11-Sep	5	8.1
Total	62	100
Children Under 5 years for the volunteer		
Parameters	**Frequency**	**%**
No	36	58.1
1 child	24	38.7
2 children	2	3.2
Total	62	100
Education level of volunteer		
Parameters	**Frequency**	**%**
Illiterate	23	37.1
Khalwa	14	22.6
Primary	19	30.6
Secondary	4	6.5
University and post graduate	2	3.2
Total	62	100

Table 8: Demographic data for community outreach worker/ volunteers.

Table 9 reveals that 53.2% worked as community outreach workers / volunteer between 3-5 years and 21% worked as community outreach workers / volunteer more than 5 years. Regarding working days per week, 53.2% were working 2 days per week and 30.6% of the community outreach workers / volunteer worked 3 days per week. For the community outreach workers / volunteer worked in the same community,100% of them knew each other .The result demonstrates that 90.3% of the community outreach workers / volunteer had a specific area to be covered. **Table 10** showed that the community outreach workers / volunteers 87.1% was trained on basic CMAM training and almost all 98.4% were receiving Food for Work as an incentive.

Working years as volunteer		
Parameters	**Frequency**	**%**
Less than 1 year	4	6.5
1-2 years	12	19.4
3-5 years	33	53.2
Over 5 years	13	21
Total	62	100
Volunteer working days per week		
Parameters	**Frequency**	**%**
Once per week	10	16.1
2 days per week	33	53.2
3 days per week	19	30.6
Total	62	100
Volunteer knowing each other		
Parameters	**Frequency**	**%**
Yes	62	100
No	0	0
Total	62	100
Specific area covered by volunteers		
Parameters	**Frequency**	**%**
Yes	56	90.3
No	6	9.7
Total	62	100

Table 9: Volunteer working years and days per week, Know each other and Specific area covered.

Training of volunteer		
Parameters	**Frequency**	**%**
Trained on CMAM community outreach	54	87.1
Not trained on CMAM community outreach	8	12.9
Total	62	100
Type of incentive given to the volunteer		
Parameters	**Frequency**	**%**
Nothing	1	1.6
In-kind (Food for Work)	61	98.4
Total	62	100

Table 10: Training and type of incentive.

Table 11 reveals that, 90.3% of the community outreach workers / volunteers knew well their role inside the community and only 9.7% did not know their role, 100% of community outreach workers / volunteers had used MUAC measurement to identify malnourished children and 12.9% beside the MUAC also had used bilateral edema for checking malnutrition. From the total interviewed community outreach workers / volunteers 90.3% had demonstrated the correct way of measuring MUAC.

Role of volunteer inside the community		
Knowledge of the volunteer about their role in the community	**Frequency**	**%**
Yes	56	90.3
No	6	9.7
Total	62	100
Measurement used to identify malnourished children		
Parameters	**Frequency**	**%**
Only MUAC	54	87.1
MUAC + Edema	8	12.9
Edemda only	0	0
Total	62	100
Anthropometric measurement (MUAC)		
Parameters	**Frequency**	**%**
Correct	56	90.3
Wrong	6	9.7
Total	62	100

Table 11: Role of volunteer and Anthropometric measurement (MUAC).

In **Table 12** the issue of mothers refusal was reflected, 88.7% of the mothers were referred to the centers / nutrition program without any objection, where some (11.3%) cases refused to refer, from them refused cases, 14.3% were not convinced and 85.7% of them convinced by the medicals assistance and key person from family.

Number of mothers refused to be referred to the center		
Parameters	**Frequency**	**%**
Refused to refer	7	11.3
Agreed to refer	55	88.7
Total	62	100
Method convince the mother		
Parameters	**Frequency**	**%**
Involve key person from family (husband , father , mother – in low)	5	71.4
Through the medical assistance	1	14.3
Not convinced	1	14.3
Total	7	100

Table 12: Number of mothers refused to be referred to the center and the Method used to convince them.

Table 13 shows that, only 79% of the community outreach worker / volunteers did their work based on their role at the CMAM guideline, 91.9% of the community outreach worker / volunteers had good linkage with the feeding program and 85.5% of the community outreach worker / volunteers reported the cases identified as malnourished to the staff at the center. Of the community outreach worker / volunteers 79% discussed their monthly achieved activities with the nutrition program staff and 21% demonstrated that they did not discuss their monthly achievement and report.

Othermain activities carried out beside identification of malnourished children		
Parameters	**Frequency**	**%**
All (Nutrition / health education, home visit and trace defaulters)	49	79
Health and Nutrition education	7	11.3
Follow up home visit	2	3.2
Trace defaulter	3	4.8
Others (saving money)	1	1.6
Total	62	100
Link between the feeding program and the volunteers		
Parameters	**Frequency**	**%**
Yes	57	91.9
No	5	8.1
Total	62	100
Reporting of number of cases and monitoring visits		
Parameters	**Frequency**	**%**
Yes	53	85.5
No	9	14.5
Total	62	100

Table 13: Other main activities carried out, linkage and reporting to the feeding centers.

Table 14 regarding to the difficulties that faced the community outreach workers / volunteers and any issue support voluntary work, 53.2% of the community outreach workers / volunteers reported that, did not face difficulties, 24.2% of them reported that the community did not understand the criteria of admission of feeding program, 16.1% mentioned that no cash payment and 4.8% stated that, there was shortage of supply of RUTF/RUSF and super cereal plus in the centers. For the issues support the voluntary work, 56.5% of the community outreach workers / volunteers mentioned that they were happy and 30.6 % had requested to have full time salary or being an employment.

Difficulties that face as a volunteer		
Parameters	**Frequency**	**%**
Nothing	33	53.2
Community not understand the criteria of admission to the program	15	24.2
No cash	10	16.1
Out Stock of supply in center	3	4.8
No IEC Materials	1	1.6
Total	62	100
Issues support voluntary work		
Parameters	**Frequency**	**%**
I am happy to support my community	35	56.5
Full time salary	19	30.6
Needs more training	2	3.2
Continuation of the program and other new intervention	5	8.1
Provision of IEC Materials	1	1.6
Total	62	100

Table 14: Difficulties and issues support voluntary work.

Discussion

This study was conducted to investigate the effectiveness of the community outreach workers/ volunteers on increase in the coverage of community based management of acute malnutrition program in Rural Kassala locality, Kassala state, Sudan. The study covered 21 communities with feeding centers. Data was collected from the community outreach workers/ volunteers total of 62, with an average of 3 volunteers for each center. A total of 200 households were sampled for the community data. The result showed that, a total of 1091 people living in these households, at an average family size of 5.5 persons, this corresponding to the Sudan MICS [6] the average of household size were found to be 5.9 persons. The nutritional status was identified for 309 children less than five years. Regarding head of household (96.5%) of the household headed by males since in Sudan generally and the rural areas specifically men had authority to make all of the decisions of the aspect of life, that include not limited to the health, education and even the voluntary work. Concerning mothers / caregivers education levels, education is one of the most important resources that enable women to provide appropriate care for their children, which is an important determinant of children's growth and development. In the present study majority of the sample was illiterate or participated in informal education, need nutrition and health educator to support them in increase their awareness of child care, improving their nutrition and health of the pregnant women and their outcome, support on identification of their child's nutritional status, beside spread the information about the feeding and health services at the community. The study reveals that, 99% of the entire community knew the availability of the community outreach workers / volunteers with the community. Volunteers are usually local and therefore familiar with the area, its population and customs, and also well known by the community members. The results indicated that 75.2% of the interviewed households were reached by the community outreach

worker / volunteers within last month and 73% of them were screened by MUAC, this is a good indicator for the active case finding and early identification of malnourished cases. This similar to the report conducted by Collins et al [3], who stated that in order to be able to provide the largest possible proportion of the acutely malnourished population with access to care, a program needs to be very effective at identifying people who need care andadmitting them to the program. To reduce the barriers to access, screening must take place in thecommunity using a simple, low cost method that is easy for community-based volunteers to use and isaccepted as fair and transparent by the population.

The coverage of feeding program was calculated using the point coverage estimate and the result showed how well the program was doing at the time of the study. A point coverage calculation used the formula as follows: the cases identify as malnourished and found to be attending SFP or OTP divided by the total cases identified as malnourished times 100, the coverage of the program estimated by 64.2%.This stipulates therapeutic feeding programs coverage standards of 50% for rural populations, 75% of urban populations and 90% of the camp populations as a key indicator of programperformance (SPHERE, 2004). Regarding the effectiveness of the identification of cases and referring them to the nutritional feeding program, the result showed that 67.7% of the cases attending the feeding program were referred by the community outreach worker/volunteers. In line with, Collins et al [3] state that, using techniques of community mobilization to engage the affected population and maximize coverage and compliance. Wherever possible, programs build on local capacity and existing structures and systems, helping to equip communities to deal with future periods of vulnerability.

The majority of the volunteers were females, this is referred to the concept of the Eastern Sudan culture and traditions, for easily enters to the household for case finding, passing the nutrition and health information to the mothers and caregivers. The result showed that 58.1% of the community outreach workers / volunteers did not have children, which allowed them to work with the community. All the volunteers used MUAC for case identification;MUAC is a more sensitive indicator of mortality risk associated withmalnutrition than weight for height. It is therefore a better measure for the identification of children most in need of treatment, 9.7% of the community outreach workers / volunteers had taken MUAC measurement wrongly which needs more training(Unicef,21014)..As state by Maleta. and Amadi [7] traditionally, therapeutic feeding programs use weight-for-height percentage of median (WHM) and/orthe presence of bilateral pitting oedema as admission criteria whilst at the same time screening in thecommunity using Mid Upper Arm Circumference (MUAC). The community outreach workers / volunteers 78%knew their roles in the community. As state in Sudan CMAM manual, community outreach is essential to make sure that undernourished children are detected early and referred for treatment, raises awareness of the aims of services and builds support. Moreover, it strengthens the community's awareness of causes, signs and treatment of SAM, and promotes health and nutrition behavior change.

On the questions of challenge and the issue faced their volunteer's work, 30% asked for a salary and 24% mentioned that the community is confused about the admission criteria for each program. Puett, and Guerrero, (2014).stated there are two major challenges facing volunteer-based case finding systems. These are choosing volunteers who are representative of their communities and secondly motivating volunteers to perform their roles. Concerning the linkage of volunteers with the feeding program, 91.9% of the volunteers had good linkage through reporting and discussing their monthly performance with the nutrition staff at the main feeding center. In general, this indicates the good relationship between the main feeding centers and volunteers, which emphasizes the regular detecting of malnourished cases, besides the updating of the situation of the entire community.

Conclusions

- The community outreach workers / volunteers found to 72.6% were female, from them 35.5% at age group of 34-41years.
- The entire community knew the availability of the community outreach workers / volunteers within the community.
- Active case finding and early identification of malnourished cases 75.2% of the households were reached by the community outreach worker / volunteers within last month and 73% of them were screened by MUAC.
- The coverage of the program estimated to be 64.2%, which is above the Sphere minimum standards of 50% (for rural programs).
- A good relationship between the main feeding centers and volunteers, which emphasizes the regular detecting of malnourished cases, besides the updating of the situation of the entire community.

Recommendation

- This study was done in one locality in Rural Kassala locality, so the findings may not represent other localities implementing same feeding program. Similar study being recommended to be conducted targeting all localities.
- Strengthen the role of community outreach /volunteers at the community level, through training, follow up and motivation.
- On Job training, to ensure the properly taking of the measurement of MUAC.

References

1. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, et al. Maternal and Child Nutrition 1, Maternal and child under nutrition and overweight in low-income and middle-income countries (2013) Lancet 382: 427-451. https://doi.org/10.1016/S0140-6736(13)60937-X
2. Mahan LK and Escott-Stump S. Krause's Food and Nutrition therapy, edition 12th, Publisher Saunders Elsevier, London UK.
3. Collins S, Dent N, Binns P, Bahwere P, Sadler K et al. Management of severe acute malnutrition (2007) Lancet 368: 1992-2000. https://doi.org/10.1016/S0140-6736(06)69443-9
4. Kouam CE. Delisle H, Ebbing HJ, Israel AD, Salpéteur C, et al. Perspectives for integration into the local health system of community-based management of acute malnutrition in children under 5 years: A qualitative study in Bangladesh (2014) Nutr J 13: 22. https://doi.org/10.1186/1475-2891-13-22
5. Food and Nutrition Technical Assistance II Project (FANTA-2) (2011).
6. Federal Ministry of Health of Sudan. Report of a Multi Indicator Cluster d (MICS) (2014) Survey in Sudan, Sudan
7. Maleta K and Amadi B. Community-based management of acute malnutrition (CMAM) in sub-Saharan Africa: Case studies from Ghana, Malawi, and Zambia (2014) Food Nutrition Bulletin 35: 2. https://doi.org/10.1177/15648265140352S105