Naeem et al. *LGU J. Life Sci.* 2019

LGU Journal of
LIFE SCIENCES

LGU Society of Life Sciences

Research Article
Vol 3 Issue 2 Apr-Jun 2019

LGU J. Life. Sci
ISSN 2519-9404
eISSN 2521-0130

Health Facilities Assessment and Implementation of Facility Based Nutrition Services in Punjab

Naureen Naeem[1*], M Amjad Khan[1], Aqeela Ashraf[1], Shabbir Hussain[2], Syeda Mona Hassan[2] and Fakhar Gulzar[3]

1. Department of Biology, Lahore Garrison University, Lahore, Pakistan
2. Department of Chemistry, Lahore Garrison University, Lahore, Pakistan
3. Department of Food Science and Human Nutrition, University of Veterinary & Animal Sciences, Lahore, Pakistan

**Corresponding author's Email: naureen.naeem@lgu.edu.pk*

ABSTRACT: *Government of the Punjab provide nutrition services through primary, secondary and tertiary health care facilities across Punjab. But many gaps persist, that reduce the services delivery and timely management of cases, which results in high rate of nutrition maladies. For its appraisal, a rapid assessment of nutrition services centres was conducted, which gauged either these facilities are equipped with standard operating procedures, from identification, treatment and follow up of the patient to service delivery. A rapid assessment tool was developed to measure functionality of these service centres during October-November 2016. The data analysis for the Outpatient Therapeutic Centres (OTP) showed that out of the total number of health facilities samples 73 percent of the centres are fully functional, 24 percent were found to be semi-functional at the time of data collection, largely due to non-availability of equipment and supplies, while 3 percent of the centres were found to be non-functional. Of the 20 Stabilization Centres (SCs) surveyed, one was found to be only semi-functional due to the newly recruited staff, not having received the relevant training details mentioned in the Punjab Nutrition Plan. The SC also did not have available provisions of therapeutic food required to cure malnourished children. The other 19 SCs were reported as fully functional, but it was found that there was weak coordination between some the SC and the Provincial Program Implementation Unit of the program, as they were not sharing their monthly report using the standard reporting format. In order to make nutrition services more functional and effective, proper planning, timely available of medicine, record keeping and follow up are essential components to maintain the integrity of the program.*

Keywords: *Stabilization Centre, Out-patient Therapeutic Centre, Malnutrition, CMAM*

INTRODUCTION

In developing countries malnutrition remains a major public health issue, that cause more than 50% deaths amounted 10-11 million children under 5 years, which can be prevented (Black *et al.* 2003; Caulfield et al. 2002; Rice *et al.* 2000; Pelletier and Frongillo 2003). Worldwide, stunted children are 165 million and 3.1 million deaths occurred due to under nutrition in children less than 5 years (Bhutta et al. 2013). An estimated by UNICEF (2013) about 20 million children under 5 years age are Severe acute malnutrition (SAM) globally; whereas in Pakistan every 4th children is SAM which is about 1 million children. Due to highly burden of disease, intensity and frequency of economic uncertainties and natural disasters a high increase in numbers of patient occurred. According to the UNICEF (2011), data of Flood Affected Nutrition Survey (Sabih et al., 2010) the prevalence of Severe Acute Malnutrition (SAM) occurred in 3.5 percent of all children under five years old in the flood affected districts in south Punjab and 20% population of the district is affected (WFP, 2010). National Nutrition Survey (NNS, 2011) results confirmed that contrary to Punjab's status despite the primary food producing region in Pakistan and the most prosperous province, malnutrition rates were alarmingly high. Among children under 5, stunting or chronic malnutrition increased from 38% in 2001 NNS to 39% in 2011, wasting or acute malnutrition increased from 13% in 2001 to 14% in 2011; while underweight increased from 29% in 2001 to 30% in 2011.

Collins *et al.* (2004) reported that SAM has been ignored since long in the child survival programs, which requires intensive resource and skilled and motivated staff, in developing countries SAM is common and limited availability of inpatient capacity undermine the treatment and case fatality rates are 20-30 % along with minimum coverage under 10%.

The Community Based Management of Acute Malnutrition (CMAM) approach enables community health workers to identify and initiate treatment for children with acute malnutrition before they become seriously ill (Myatt et al. 2005). Caregivers provide treatment for the majority of children with severe acute malnutrition in the home using Ready-to-Use-Therapeutic Foods (RUTF) and routine medical care. When necessary, severely malnourished children who have medical complications or lack an appetite are referred to in-patient facilities for more intensive treatment by (Bandawe and Kabwazi 2003). CMAM program was designed to reduce the incidence of malnutrition and improve public health and food security in a sustainable manner (Sphere, 2003).

In response toward the eradication of malnutrition the Department of Health (DoH) developed the approved PC-1 for Integrated Reproductive, Maternal, New-born, Child Health and Nutrition Program (IRMNCH & NP) (GoPb, 2013). The emergency response started in October 2010, is continued by adopting a modified CMAM programme approach in the IRMNCH &NP.

Organization of the nutritional services in Punjab

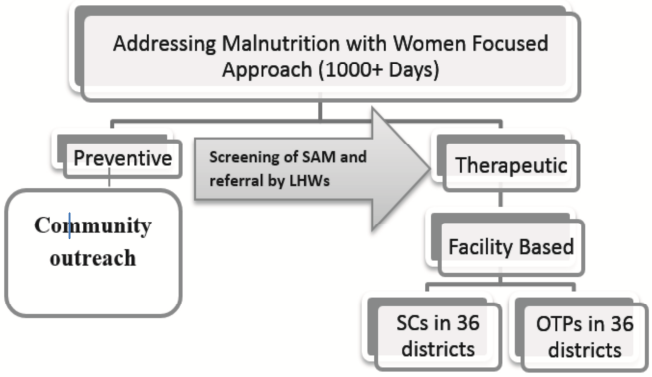

Fig. 1: Depict the areas where the therapeutic services provided by OTPs and SCs fit within the structure for the Punjab Nutrition Program.

To access the coverage, challenges and opportunities for the management of children malnutrition in Punjab, a rapid assessment was conducted to gauge the situation and draw an attention on this grieve health threatening issue.

MATERIALS AND METHODS

The DoH has reported 20 SCs and 217 OTP centers as established and functional in 16 priority districts till Oct. 2014. These districts were chosen to give preference to their reported wasting and stunting rates. The list of functional centers is shown in table 1, indicating numbers of SCs and OTPs in each district. The assessment was done during the period of Oct-Nov 2014, and covered all SCs and15% sample of OTPs sites as mention in Table 1;

Table 1: List of distribution of OTPs and SCs in Punjab

Sr. No	Name of District	No of OTP s	15% of OTP sites	No of SCs	Total No. of Sites to be checked in one district
1	D.G.Khan	18	3	1	4
2	RajanPur	35	5	1	6
3	Layyah	24	4	1	5
4	Muzaffargarh	28	4	3	7
5	Bhakar	17	3	1	4
6	Mianwali	17	3	1	4
7	R.Y.Khan	11	2	1	3
8	Bahawalpur	22	3	1	4
9	Bahawal Nagar	29	4	0	4
10	Narowal	16	2	0	2
11	Lahore	0	0	3	3
12	Multan	0	0	2	2

13	Gujrat	0	0	1	1
14	Gujranwala	0	0	1	1
15	Sargodha	0	0	1	1
16	Faisalabad	0	0	1	1
Total		**217**	**33**	**19**	**52**

Assessment criteria for OTPs was based on 3 parameters while for SCs it was on 4 parameters, which were considered to assess the status of overall functionality, that included staffing, equipment and supplies, data records and reports and in addition to these 3 parameters, forth parameter for SC was space availability (Sphere, 2004), (Myatt et al. 2005), (WHO, 2006).

Table 2: Criteria for staffing parameter

Situation	Facility In charge aware	Staff Notified	Staff Trained	Status of Functionality
A	Yes	Yes	Yes	Functional
B	Yes	No	No	Semi Functional
C	No	Yes	Yes	Semi Functional
D	No	Yes	No	Semi Functional
E	No	No	No	Non Functional

Parameter 1: Staffing - Definition of functionality

Three elements were checked in order to assess whether the OTP& SC were functional with regards to its staffing. (i) The officer in-charge of the health facility was aware of the OTP & SC and its purpose; (ii) a member of staff has been officially notified to work in the OTP& SC; (iii) The prescribed training has been provided to the notified staff.

Parameter 2: Equipment and supplies – Definition of functionality for OTP& SC

The availability and condition of the following list was checked in each OTP & SC visited, (i) MUAC tape; (ii) weighing scales; (iii) thermometer; (iv) treatment Protocols; (v) RUTF supplies; in addition to these 5 parameters for SC (vi) F75 & F100; (vii) Feeding cups; (viii) refrigerator were also examined.

Parameter 3: Data records and reports – Definition of functionality

The spot verification team checked for the availability of correctly updated admission registers and the previous month's nutrition report prepared using the standard format agreed by the Nutrition Program and its partners. If both were available and correctly completed the OTP& SC were considered to be functional with regards to data records and reports. If either of these were not available or available but not completed then a semi-functional status was applied. If neither the admissions register nor the monthly report were available then the site was scored as non-functional with regards to records and reporting.

Parameter 4for SC: Space availability - Definition of functionality

If the separate space or shared area is allocated for SC in the health facility and facilities for water boiling are available then functionality is considered to be in place. If the required space is available but no water boiling facilities in place then the status for this parameter is considered to be semi functional. If no beds are available for the treatment of SC patients then the parameter is considered as non-functional.

Table 3: Consolidated definition of OTP & SC functionality

Sr. No.	Status	Outpatient Therapeutic Centers **(OTP)**	Stabilization Centers **(SC)**
01	**Functional (F)**	At least two of the three parameters are found in place	At least three of the four parameters measured are found to be in placex
02	**Semi-functional (SF)**	At least any of the two parameters are recorded as semi functional or any one parameter is found to be non-functional.	At least one parameter is found to be fully in place and not more than two parameters are found to be non-functional
03	**Non-functional (NF)**	If two or more of the parameters are scored as NF.	If three or more of the parameters are not found to be functional.

Data was collected on the prescribed format, and in each facility data was collected and record was kept safe throughout the study period. After data collection it was analysed and results concluded.

RESULTS

Outpatient Therapeutic Centers

Sufficient space for the OTPs was found at all of the 33 health facilities included in the OTP sample. At 16 (48%) health facilities, the LHV rooms were being used for the purpose while at 15 (45%) of the centers, a separate room had been allocated. The other two (6%) health facilities had established their OTP in a shared place near the MO (Medical Officer) office.

Data analysis for the OTP centers showed that 73 percent of the centers sampled were found to be fully functional with all three recommended parameters in place and fully operational while 24 percent were found to be semi functional largely due to equipment either unavailable or not in a working condition. Only one of the health facilities was not able to meet prescribed criteria and was declared as non-functional. A summary of the analysis featuring the composite criteria is represented in Table 4.

Table 4: Status of OTP Centers

No.	**Districts**	**Health Facility**	**Staffing**	**Equipment and supplies**	**Records**	**Status**
1	D.G Khan	RHC Kala	SF	F	F	F
2	D.G Khan	BHU Aali Wala	SF	SF	F	F
3	D.G Khan	BHU Gadai	F	F	F	F
4	Layyah	BHU Jharkil	F	SF	F	F
5	Layyah	BHU Shahpur	SF	F	F	F
6	Layyah	BHU Sami Pur Baghal	SF	F	F	F
7	Layyah	THQ Karor	NF	NF	F	SF
8	M.Garh	BHU Langar Saraye, Muradabad	F	F	F	F
9	M.Garh	BHU Sheikh Umar	F	F	F	F
10	M.Garh	BHU Mehmood Kot	F	F	F	F
11	M.Garh	BHU Jaggat Pur	F	F	F	F
12	Bhakkar	RHC Behal	SF	NF	SF	SF
13	Bhakkar	BHU Hassan Shah	SF	NF	SF	SF
14	Bhakkar	BHU Sial	SF	SF	SF	SF
15	Mianwali	BHU Dhoke Ayub	SF	NF	NF	NF
16	Mianwali	BHU Thathi	SF	NF	F	SF
17	Mianwali	BHU Maseet Wala	SF	F	NF	SF
18	Narowal	BHU Darman	F	SF	F	F
19	Narowal	BHU Khan Khasa	F	F	F	F
20	Rajanpur	BHU Kotla Dewan	F	SF	F	F
21	Rajanpur	BHU Mehray Wala	SF	F	F	F
22	Rajanpur	BHU Wang	F	SF	F	F
23	Rajanpur	RHC Fazil Pur	F	F	F	F
24	Rajanpur	BHU Fateh Pur	F	SF	NF	SF
25	Bahawalnagar	BHU 227/9-R	F	SF	F	F
26	Bahawalnagar	BHU 10/F.W	F	SF	F	F
27	Bahawalnagar	BHU Lalika	F	SF	F	F
28	Bahawalnagar	BHU 165/7R	F	NF	F	F

29	Bahawalpur	BHU Sayed Imam Shah	F	F	F	F
30	Bahawalpur	BHU Kotla Moosa Khan	F	SF	F	F
31	Bahawalpur	BHU 106/DB	F	F	F	F
32	R.Y Khan	RHC Jamal Din Wali	F	NF	F	SF
33	R.Y Khan	BHU Zamin Shah	F	SF	F	F

It was found that 31 of 33 (94%) health facilities in-charges were aware of the presence of the OTP site while only 2 (6%) were not aware of the OTP services being provided at the facility (THQ Karor, district Layyah & BHU Mehray wali in Rajanpur).

Staff members notified to perform OTP duties by the EDO (H) were confirmed at 22 (67%) of the health facilities. In the other 11 (33%) health facilities staff were working in the OTP under local arrangements but no specific staff member was notified. Of the notified staff, the majority were found to be LHVs (49%), in 3 (9%) of the OTPs midwives were performing the duties, at 2 (6%) OTPs Nutrition Assistants were available and at one facility the health technician was assigned the task.

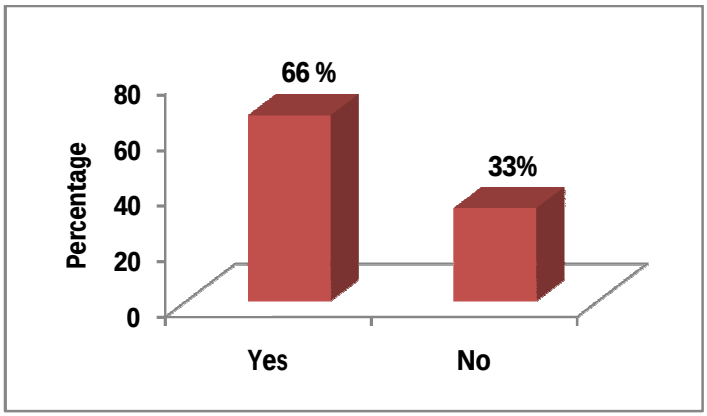

Fig. 1: Percentage of OTP notified staff

The survey found that most of OTP staff, at 26 (79%) of the facilities were fully trained on OTP protocols. However, staff at seven facilities located in Layyah, Bhakkar and Mianwali districts was reported as not yet trained on the treatment protocols of OTP.

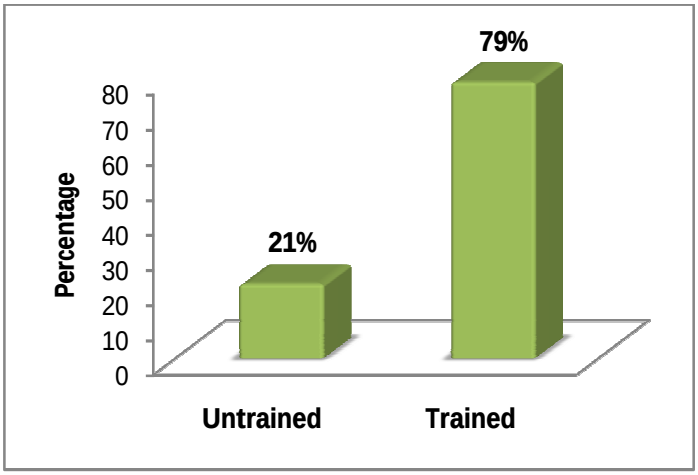

Fig. 2: Percentage of nominated trained staff

MUAC (mid upper arm circumference) tapes were in useable condition at all OTPs except BHU Dhok Ayob in district Mianwali. Thermometers were found to be the most common item of equipment missing at the OTP centers. 10 of the 33 HF were working without thermometers in district Mianwali, D.G.Khan, Bhakkar, Rajan Pur, Layyah and Bahawalnagar. Weighing scales were missing at two facilities in District Layyah, three facilities in district Bhakkar, and in one facility at Bahwalpur. At BHU Fatehpur and Jamaldin Wali of district Rajan Pur and R.Y.Khan the equipment was reported to be not in working condition.

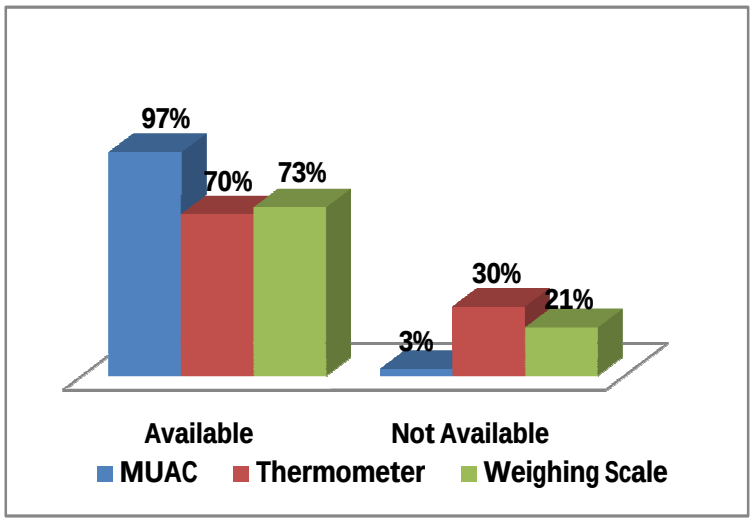

Fig. 3: Equipment availability

Treatment protocols for SAM children were available and displayed in 20 (61%) health facilities, while in the remaining 13 (39%) located in Bhakkar, Mianwali, Narowal, Bahawal Nagar, Bahawalpur and Rahim Yar khan districts the OTP treatment protocols were not available nor displayed. Stocks of RUTF was available in majority of the OTP sites 31(94%), while one facility was found to have been out of stock for the last six months and the other facility had been reported stock out of RUTF for the last year. The facilities without stock were BHU Fateh Pur in District Rajanpur and RHC Jamal Din Wali in District R.Y Khan.

Most sampled facilities, 31(94%), had the enrollment register for OTP and were completing them appropriately. While two of the facilities (Dhok Ayoub and Maseet wali of district Mianwali) had not received the standard recording stationery and were using plain registers for the purpose.

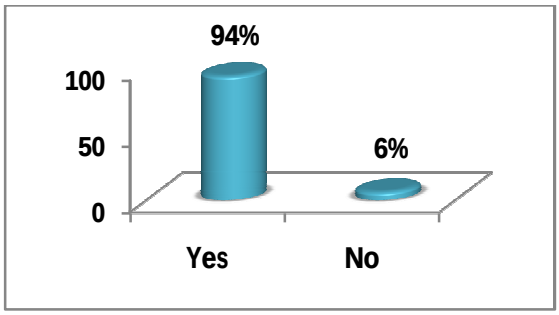

Fig. 4 : Availability of enrollment register for OTP

The standard monthly reporting register of Punjab nutrition program provided by the program was found to be available and was being used at 31 OTPs.

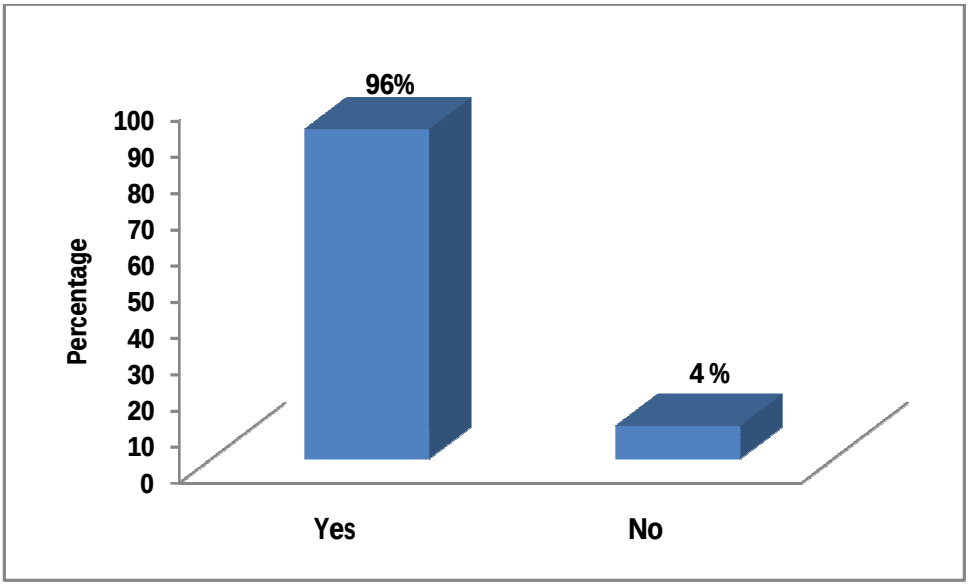

Fig. 5 : Monthly reporting registered Punjab Nutrition Program

Stabilization Centers

Of the twenty SCs the IRMNCH and Nutrition program supports ten while UNICEF and WHO support three SCs each. UNICEF and WHO withdrew their support for human resources in Dec. 2015 and the hospitals were then providing SC services through internal organization of existing staff. Provision of supplies and SC supervision continued to be provided by the two UN agencies and reported to continue to do so until the IRMNCH and Nutrition program would take over.

The assessment findings for SCs showed that of the twenty SCs surveyed only one was assessed to be semi functional while all others were functional staff at the SC found to be semi-functional, had newly recruited staff that had yet received their training and stocks of therapeutic food. The only gap identified in the rest was that some of SCs were not sharing their monthly report with the provincial office of IRMNCH using the standard reporting format.

It was found that all facility in-charges were well informed about the presence of the SC at their health facility. It was also verified that two staff nurses had been recruited at all ten DoH managed SCs. 90 percent of the SC nurses were present at the time of verification visit but not found at DHQ Bhakkar (District Bhakkar) and THQ Kot Addu (District Muzaffargarh). Figure 7 shows that 85% of the SC staff have received the prescribed training on treatment protocols of inpatient care of malnourished children. Training had not been arranged for newly recruited staff nurses at Layyah, Bhakkar and Mianwali districts.

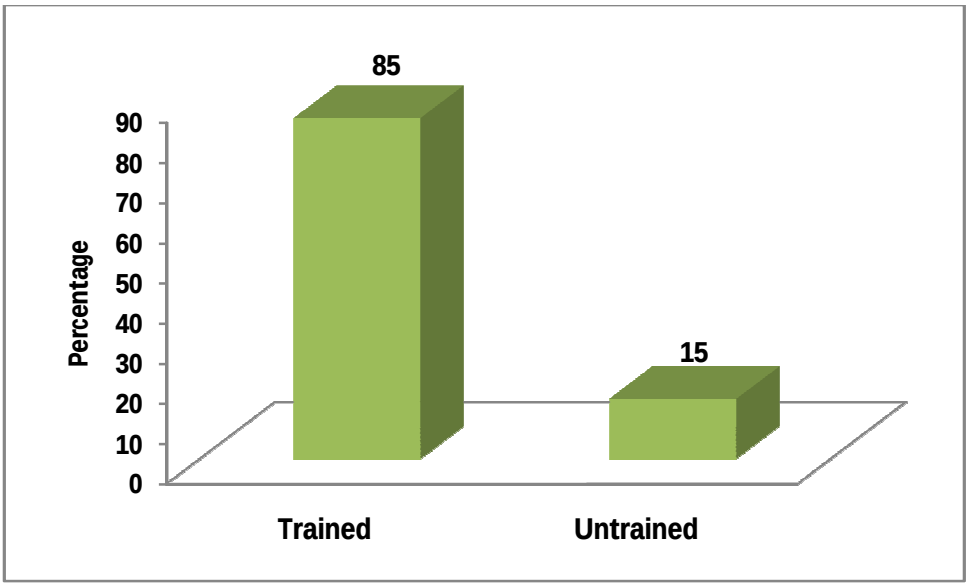

Fig. 6 : Training status of stabilization centre staff

A separate space had been allocated in all twenty hospitals and water boiling facilities were available in most of them. The remaining SCs at DHQ Hospital Mianwali and DHQ Hospital Bahawal nagar, were using bottled mineral water. MUAC tapes were available at all SCs and thermometers were found to be not available at DHQ Layyah and DHQ D.G.Khan only. Weighing scales were available and in working condition at all facilities except for DHQ Layyah where their scales had not been working for the last month. Refrigerators were available at all SCs except DHQ Bahawalnagar. Feeding cups were available at nineteen SCs, DHQ Layyah the only SC without feeding cups.

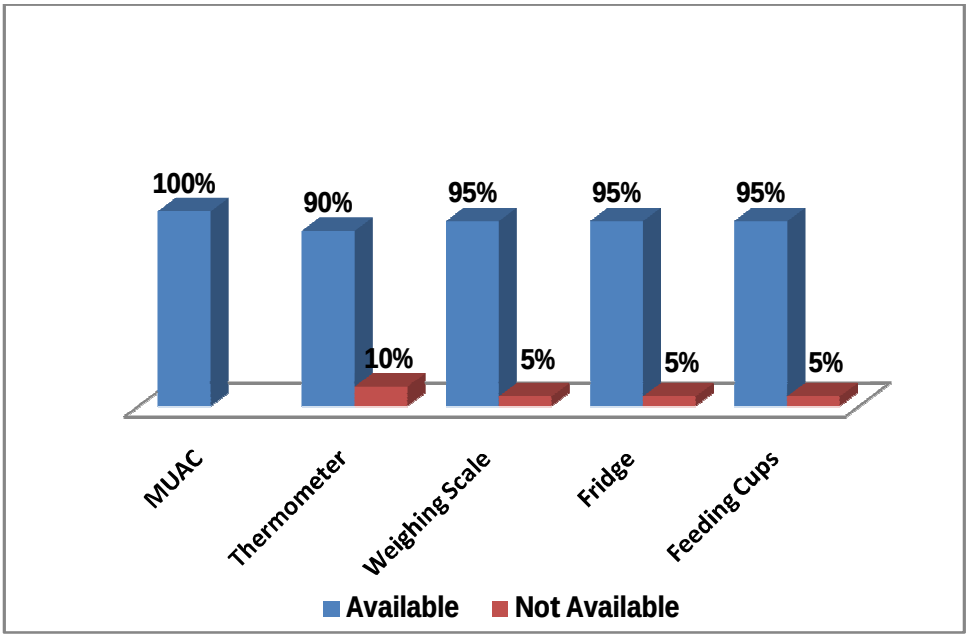

Fig.7 : Equipments and supplies

The protocols were available and displayed in 18 of the SCs but not at DHQ Bhakkar and R.Y.Khan. Stock of therapeutic feeds F75, F100 and RUTF was found at 17 (85%) of the SCs. THQ Kot Addu had been out of stock for one week for all commodities and DHQ Hospital R.Y Khan had been out of stock of F75 for the last two months. DHQ Hospital Bahawalnagar, which has just started functioning as an SC had only RUTF available.

The standard record keeping stationery for inpatient care was found at 17 of the SCs. Seventy percent (14 SCs) were preparing and submitting monthly reports using the monthly reporting register for Punjab nutrition program. The SCs at Mayo Hospital, Children Hospital and Sir Ganga Ram hospital in Lahore, Nishtar hospital Multan, Children Hospital Multan and THQ Alipur were preparing manual reports using their own formats.

Table 5: Shows the parameter wise summary for all SCs

Sr. No.	Districts	Health Facility	Staffing	Space and Water boiling facility	Equip/Supplies	Records	Status
1	D.G Khan	DHQ Hospital	F	F	SF	F	F
2	Layyah	DHQ Hospital	SF	F	NF	F	F
3	M.Garh	THQ Ali Pur	F	F	F	F	F
4	M.Garh	DHQ Hospital	F	F	F	F	F
5	M.Garh	THQ Kot Addu	F	F	SF	F	F
6	Bhakkar	DHQ Hospital	SF	F	SF	F	F
7	Mianwali	DHQ Hospital	SF	NF	SF	NF	SF
8	Multan	Children Hospital	F	F	F	SF	F
9	Multan	Nishtar Hospital	F	F	F	SF	F
10	Gujranwala	DHQ Hospital	F	F	F	F	F
11	Lahore	MAYO Hospital	F	F	F	SF	F
12	Lahore	Gangaram Hospital	F	F	F	SF	F
13	Lahore	Children Hospital	F	F	F	F	F
14	R.Y Khan	DHQ Hospital	F	F	SF	F	F
15	Bahawalpur	DHQ Hospital	F	F	SF	F	F
16	Bahawalnagar	DHQ Hospital	F	F	NF	F	F
17	Rajanpur	DHQ Hospital	F	F	F	F	F
18	Faisalabad	Allied Hospital	F	F	F	F	F
19	Gujrat	DHQ Hospital	F	F	F	F	F
20	Sargodha	DHQ Hospital	F	F	F	F	F

CONCLUSION

Generally in case of public health, primary health structure focuses on the preventive side, where main aim of the programs is to consistently deliver to the community (Pelletier, 1994), so in the light of this CMAM program had been built up to a five times higher than inpatient-only program also high in coverage which was steadfast to meet the international Sphere minimum standards (Sphere 2004) through which the key performance indicators had been alike to or improved than inpatient only programs (Collins, 2004; Collins *et al.* 2006a; Collins *et al.* 2006b). Conclusively United Nations generally recognized CMAM as top practice in the preventive side (WHO *et al.* 2006), along with health departments, and various NGOs (Khara and Collins 2004; Collins *et al.* 2006a).In order to bring uniformity, staff notification from Executive District Officer (Health) for the OTP and SC centers should be issued in those districts which have not already done so far, in order to make program more effective (Puoane *et al.* 2004). New staff deputed should undergo training by the district & provincial administration to equip all the health care provider basic skills (Simoes *et al.* 1997). All the missing equipment and supplies should be procured and provided at the centers, which are the key component for proper service delivery (English *et al.* 2004). Ensure the availability and display of standard treatment protocols for all centers, and supply standard reporting and recording stationery to all centers (Rowe et al. 2005).

REFERENCES

1. Bandawe, C. and N. Kabwazi (2003). Cultural and Social Factors Affecting the Implementation and Success of the Community-Based Therapeutic Care (CTC) Approach to Treating Severe Malnutrition in Dowa, Malawi, Report.

2. Bhutta, Z.A., J.K. Das, A. Rizvi, M.F. Gaey, N. Walker, S. Horton, P. Webb, A. Lartey and R.E. Black (2013). Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? Lancet. 382: 452–77.

3. Black, R.E., S.S. Morris and J. Bryce (2003). Where and Why Are 10 Million Children Dying Every Year. Lancet 28-6;361:(9376), 2226-2234.

4. Caulfield, L.E., M. de Onis\ and R.E. Black (2002). Under nutrition As an Underlying Cause of Child Deaths Associated With Diarrhea, Pneumonia, Malaria, and Measles. Amer J. Clin Nutri. 80:(1),193-198.

5. Collins S. (2004). Community-based therapeutic care: a new paradigm for selective feeding in nutritional crises. Humanitarian Practice Network Paper 48. London: Overseas Development Institute.

6. Collins, S., K. Sadler, N. Dent, T. Khara, *S.* Guerrero, M. Myatt, M. Saboya and M. Walsh (2006b). Key Issues in the success of community-based management of severe malnutrition. Food Nutri Bul Suppl. 27: S49–S82

7. Collins, S., N. Dent, P. Binns, P. Bahwere, K. Sadler and A. Hallam (2006a). Management of severe acute malnutrition in children. Lancet. 368, 9551: 1992–2000.

8. English M, Esamai F, Wasunna A, Were F, Ogutu B, Wamae A, Snow RW and Peshu N (2004). Assessment of inpatient paediatric care in first referral level hospitals in 13 districts in Kenya. Lancet. 363(9245):1948–53.

9. Government of the Punjab (2013). PC-1 for Integrated Reproductive, Maternal, New-born, Child Health and Nutrition Program, Department of Health.

10. Khara T and Collins S (2004). Community-based Therapeutic Care (CTC). Valid International. Oxford, UK: Emergency Nutrition Network. Special Supplement Series.

11. Myatt M, Feleke T, Collins S and Sadler KA (2005). Field Trial of a Survey Method for Estimating the Coverage of Selective Feeding Programs. Bulletin of the World Health Organization. 83:(1),20-26.

12. National Nutrition Survey (NNS) (2011). Planning Commission, Islamabad, Pakistan.

13. Pelletier DL (1994). The relationship between child anthropometry and mortality in developing countries: implications for policy, programs and future research. J. Nutr 124:2047S–81S.

14. Pelletier DL and Frongillo EA (2003). Changes in Child Survival Are Strongly Associated With Changes in Malnutrition in Developing Countries. J. Nutr. 133(1):107-119.

15. Puoane T, Sanders D, Ashworth A, Chopra M, Strasser S and McCoy D (2004). Improving the hospital management of severely malnourished children by participatory research. Int. J. Qual. Health Care.16:31–40.

16. Rice, AL, Sacco L, Hyder A and Black RE (2000). Malnutrition as an underlying cause of childhood deaths associated with infectious diseases in developing countries. Bulletin of the WHO. 78:(10),1207-1221.

17. Rowe AK, de Savigny D, Lanata CF and Victora CG (2005). How can we achieve and maintain high-quality performance of health workers in low-resource settings? Lancet. 366(9490):1026–35.

18. Sabih F, Bile KM, Buehler W, Hafeez A, Nishtar S and Siddiq S. Implementing the district health system in the framework of primary health care in Pakistan: can the evolving reforms enhance the pace towards the Millennium Development Goals., EMHJ, vol 16 supplement 2010.

19. Simoes, E.A., T. Desta, T. Tessema, T. Gerbresellassie, M. Dagnew, S. Gove (1997). Performance of health workers after training in integrated management of childhood illness in Gondar, Ethiopia Bull. WHO.75 (S1):43–53.

20. Sphere Project team (2003). The SPHERE Humanitarian Charter and Minimum Standards in Disaster Response. 2 (Draft), Geneva. Sphere Project Team (2004). The Sphere Project: Humanitarian Charter and Minimum Standards in Disaster Response. 2 (Draft), Geneva.

21. United Nations Children's Fund (UNICEF) (2011). Pakistan floods uncover dire nutrition situation. Available at http://www.unicef.org/Pakistan/media_6750.htm, accessed on 10 Oct. 2015.

22. United Nations Children's Fund (unicef) (2013). Evaluation of Community Management of Acute Malnutrition (CMAM), Pakistan Country case study. United Nations Children's Fund 3, UN Plaza, New York, NY 10017.
23. World Food Program, (WFP) (2010). Pakistan Floods Impact Assessment. available at http://vam.wfp.org.pk/Publication/WFP%20Pakistan%20Flood%20Impact%20Assessment_Sept%202010.pdf, accessed on 10 Oct. 2015.

24. World Health Organization, (WHO) (2006). Report of an informal consultation on the community-based management of severe malnutrition. WHO, Geneva.