A study of facility based management at nutrition rehabilitation centres in Telangana state

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■ **ABSTRACT :** An observational prospective study was conducted at 12 NRCs in Telangana State, where 60 Severe Acute Malnutrition (SAM) children were recruited. Their socio-demographic details and anthropometric measurements were recorded. These SAM children were followed till the period of 3 follow-up visits to measure their weight. Majority of SAM children belong to rural area, age group less than 3 years, caste OBC (Other Backward Class), ST (Scheduled Tribe) and SC (Scheduled Caste). Outpatient doctors are playing key role in referring them to NRC. Mean scores of weight for age, BMI and MUAC were improved from the time of admission to discharge. Statistical significance found between the mean weight at the time of admission and discharge. Nutritional intervention at NRC decreased the severity of malnourishment among children. NRCs are effective in saving lives of SAM children but not in maintaining long term control on malnutrition.

■ **KEY WORDS:** Nutrition rehabilitation centre, Severe acute malnutrition, Body mass index, Mid upper arm circumference

Severe acute malnutrition is an important preventable and treatable cause of morbidity and mortality in children below five years of age in India. A number of state governments have taken the lead and are in the process of scaling up the establishment of Nutrition Rehabilitation Centers (NRCs) with the intention to improve the quality of care being provided to children with SAM and to reduce child mortality.

Nutrition Rehabilitation Center (NRC) is a special unit in a health facility where children with Severe Acute Malnutrition (SAM) are admitted and services are dedicated to the initial management and nutrition rehabilitation. Children are admitted as per the defined admission criteria and provided with medical and nutritional therapeutic care. Once discharged from the NRC, the child continues to be in the nutrition rehabilitation programme till she/he attains the defined discharge criteria from the programme. At a District Hospital/ Medical College Hospital, the NRC should have 10-20 beds depending on the size of that ward. The unit should be in a distinct area within the health facility and should be in proximity to the pediatric ward/in-patient facility (Government of India, 2011).

As per UNICEF (United Nations International Children's Emergency Fund) data, nearly half of all deaths in children under 5 are attributable to under-

nutrition. This translates into the loss of about 3 million young lives a year. Under-nutrition puts children at greater risk of dying from common infections and contributes to delayed recovery. Poor nutrition in the first 1000 days of a child's life can also lead to stunted growth, which is irreversible and associated with impaired cognitive ability and reduced school and work performance (UNICEF, 2016).

Malnutrition continues to be a significant health problem for children in India. Though there has been decline in the percentage of children who are underweight from 42.5% in NFHS-3 (National Family Health Survey) to 35.7% in NFHS-4, the magnitude of malnutrition is still high (NFHS-4, 2015-16).

Severe acute malnutrition (SAM) is defined by very low weight-for-height/length (Z- score below -3SD of the median of World Health Organization child growth standards), a mid-upper arm circumference <115 mm, or by the presence of nutritional edema. SAM increases significantly the risk of death in children less than five years of age. It is proven by the NFHS data and confirmed by Ministry of Health and Family Welfare and GOI (Government of India).

Under National Health Mission, 12 Nutrition Rehabilitation Centres (NRCs) are functional in Telangana State for treatment and nutritional rehabilitation of children suffering from Severe Acute Malnutrition along with medical complications. The current study was conducted 12 NRCs in Telangana state to know its efficacy in terms of reducing morbidity and mortality of SAM children in the community.

■ **RESEARCH METHODS**

Observational prospective study was conducted at NRCs in Telangana State, India. Recruitment of children in the study was done for a period of around 6 months. During this period, five children from each NRC total 60 children from Telangana state were included in the study. 'Operational guidelines for facility based management of children with severe acute malnutrition (SAM), Ministry of Health and Family welfare, Government of India, 2011 were being followed at each NRCs. Children included in the study were followed up for 3 months after discharge from the centre. There were 3 follow ups, first designated follow up date (*i.e.*, after 15 days), second designated follow up date (*i.e.*, after 1 month) and third designated follow up date (*i.e.*, after 3 months).

Predesigned structured questionnaire was used for data collection. Basic details of children like age in months, gender, caste and referred by who were entered in the questionnaire. Weight of children was noted which is regularly checked on digital weighing machine at NRC. Weight at the time of admission and discharge were recorded from the NRC registers. Total weight gain was calculated to see if it was in accordance with the available guidelines (Government of India, 2011). Average acceptable stay should be 7-28 days as per operational guidelines

A total of 60 children were recruited in the current study. Not all children turned up for total 3 follow up visits. On each follow up, weight of the child was recorded.

Mid upper arm circumference (MUAC) was also recorded at the NRCs. MUAC, weight for age, height for age, weight for height and BMI were the various methods used for nutritional assessment.

The data were entered into Microsoft excel spreadsheet and analyzed using SPSS version 20. Student t test was applied to assess level of significance between mean weight at discharge and mean expected weight gain and assessed the level of significance between age group wise gain in weight vs expected weight gain. Two sample t test was applied to assess level of significance between gender difference in gain in body weight. Paired t test was applied to assess level of significance between admission weight and discharge weight. A p value (significance) of <0.05 is deemed statistically significant, <0.01 as highly significant and <0.0001 as very highly significant (Nageswara Rao, 2018).

■ **RESEARCH FINDINGS AND DISCUSSION**

Total 60 SAM children were enrolled during study period. Particulars of these children including socio-demographic profile are shown in Table 1.

From Table 1, it can be noted that majority of SAM children belong to age group between 7 months to 2 years 11 months, caste OBC, ST and SC and children were from rural area.

The Table 1 show that the major proportion of admitted children belonged to marginalized populations like other backward classes, scheduled tribes and scheduled caste communities, children under 3 years.

Role of Anganwadi Teacher, ANM and ASHA were to be important link between health centers and

Table 1 : Demographic profile of children with severe acute malnutrition at Nutrition Rehabilitation Centres, Telangana (n=60)			
Variables	Categories	Distribution	
		Number	Percentage (%)
Age groups	0-6 months	6	10
	7 m -2 yrs 11 m	44	73
	3 yrs - 5 yrs	10	17
Gender	Male	30	50
	Female	30	50
Caste	General	2	3
	OBC	19	32
	ST	18	30
	SC	15	25
	Minority	6	10
Area	Urban	12	20
	Rural	33	55
	Tribal	15	25
Referred by	AWT	15	25
	ANM	3	5
	Asha worker	9	15
	OP Doctor	33	55

the community but one of the observations in this study was that maximum (55%) children were referred by outpatient (OP) doctor in the current study.

As per operational guidelines, discharge criterion for children is 15 per cent weight gain and no signs of illness. This should be achieved through facility based care in NRC when community based programme is not in place. From the Table 2 shows that there was no significant difference between mean discharge weight and mean expected weight gain. According to Maurya *et al.* (2014) the Nutritional rehabilitation centers were effective in management of severe malnutrition.

The selected inpatients from 12 NRCs in the Telangana State were 30 children male and 30 were female. Table 3 shows the gender difference in gain in body weight of selected inpatients. There was no significant difference between mean discharge weight gain of boys and mean discharge weight gain of girls.

Weight of child was noted which is regularly checked on digital weighing machine at NRCs. Weight at the time of admission and discharge were recorded from NCRs registers. Table 4 shows there was significant difference between weight at the time of admission and discharge, which is in accordance with Paul and Nayak (2016).

Table 2 : Gain in weight				
Item	Mean	Test value	t-value	Significance
Gain in weight	7.22 [NS]	7.59	1.176	0.244

Not significant at 5% level

Table 3 : Gender difference in gain in body weight				
Item	Group variables	Mean	t-value	Significance
Gain in weight	Boys	6.94 [NS]	0.878	0.262
	Girls	7.49 [NS]		

Not Significant at 5% level

Table 4 : Initial weight vs final weight			
Item	Mean	t-value	Significance
Initial weight	6.6	13.398	0.000
Final weight	7.22		

Significant at 0% level

Table 5 : Age group wise gain in weight vs expected weight gain					
Item	Age group	Mean	Test value	t-value	Significance
Gain in weight	0 - 11 M	5 [NS]	5.18	0.389	0.702
	12 - 35 M	7.43 [NS]	7.8	1.669	0.105
	36 - 59 M	10.27 [NS]	10.98	0.773	0.459

Not significant at 5% level

Table 6 : Evaluation of follow ups after the discharges from NRCs		(n=60)	
		Yes	
Sr. No.	Evaluation of follow ups	N	%
1.	Whether the clients/patients brought to NRC for the first designated follow up date (*i.e.,* after 15 days)	57	95
2.	Whether the clients/patients brought to NRC for the second designated follow up date (*i.e.,* after 1 month)	51	85
3.	Whether the clients/patients brought to NRC for the third designated follow up date (*i.e.,* after 3 months)	45	75

From Table 5 shows the age group wise mean gain in weight vs mean expected weight gain of selected children. It was found that there was no significant difference between mean weight gain and mean expected weight gain.

From Table 6 out of 60 children, 95 per cent were brought to NRC for the first designated follow up date (*i.e.* after 15 days), 85 per cent of patients were brought to the NRC for the second designated follow up date (*i.e.* after 1 month) and 75 per cent of children were brought to the NRC for the third designated follow up date (*i.e.* after 3 months). Community mobilization plays major role. Marginalized population should be reached through volunteers, ASHAs, Anganwadi teachers and other community health workers and should be made known about facility based treatment for malnutrition at NRCs. They also should monitor the follow up of discharged children and help in decreasing the number of dropouts, which is in accordance with an Indian study by Parakh *et al.* (2008).

Conclusion :

NRCs are playing vital role in preventing deaths due to malnutrition. As length of stay and follow-up visits at NRCS are greater obstacles in sustaining health status of SAM children. It is important for NRCs to put in place an effective tracking and reporting systems so that children do not get lost and defaulters and deaths do not go unreported. The person designated the responsibility for NRCs supervision and monitoring in the district/state should ensure that children are followed up after discharge and smooth referral is possible from community to hospital and back.

Children discharged from NRCs should be followed up at the community level to ensure appropriate feeding, follow up at the NRC for scheduled visits and to identify children who are not responding to treatment for referral to the facility level. NRCs should have a complete list of PHCs, Subcentres and Anganwadis in its catchment area, so they can refer the child to the appropriate health facility closest to their community.

Close collaboration and information sharing between NRC and community based care (at PHC, Sub-center and AWC) are essential. The list of SAM children discharged from NRC should be shared with area specific ANM and ICDS supervisor. These children should be enrolled in the AWC and given supplementary food as per the guidelines. The AWTs should prioritize these children for home visits, every week in the first 4 weeks and then once in 2 weeks till the child is discharged from the program. During the home visits, AWT should observe feeding and provide appropriate counseling and support to the mothers.

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