

ORIGINAL ARTICLE

Malnutrition Treatment Centre in District Baran, Rajasthan Appraisal of Performance

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Abstract

Background: Rajasthan has topped the list of states with kids being born underweight as per Annual Health Survey (1). Malnutrition treatment centres (MNTC) have been started in District Baran, from 2006(2). Having started functioning for so many years, it is essential to evaluate its function so as to come forward with recommendations for future improvement. **Aims & Objectives:** Current study was conducted with an objective to analyze the impact of interventional measures in improving the health and nutritional status of severe malnourished children admitted at one of the MNTC in district Baran. **Material and Method:** Observational Prospective study was conducted at Community Health Centre (CHC) Atru MNTC, District Baran, Rajasthan. Children admitted were observed for weight gain during their stay at MNTC and rate of follow-up was also observed. **Result:** A statistically significant difference was obtained between the weight of children who stayed for 1-6 days and children who stayed for 7-28 days in MNTC. 54.1% children cured after treatment. Follow-up rate was very poor 51.5%, 30.3%, 23.2%, and 18.2% over the four follow-up visits. **Conclusion:** The MNTCs were effective in improving and saving the life of admitted children, but the effects were not sustained due to inadequate stay and poor follow up rate.

Key Words

Malnutrition Treatment Center; Severe Acute Malnutrition; Average weight gain

Introduction

The modest decline of under-nutrition levels between the last two rounds of the National Family Health Survey is well known and India continues to remain off-track from the Millennium Development Goal (MDG-1) target. The third National Family Health Survey (NFHS-3) reported 6.4% under-five children in India as severely wasted and 19.8% as wasted, translating to about 8.1 million children with severe acute malnutrition (SAM)(3). The efficacy of WHO guidelines and regimens for reduction of mortality through hospitalized management of SAM children in Africa (compared with conventional treatment) is well established (4, 5, 6). This led to Nutritional Rehabilitation Centers (NRC) /

Malnutrition Treatment Centers (MNTC) emerging as the strategy of choice in India for institutionalized management of malnourished children.

The District Baran in Rajasthan is known to have around 21% tribal population, largely the Sahariya tribe “the only primitive tribe of Rajasthan”. According to the food security atlas of rural Rajasthan 2010 released jointly by the Institute of Human Development and the United Nations World Food Programme (UNWFP), Baran is one of those food insecure districts, needing immediate intervention to improve the status and is also identified as high focused district on the basis of health and nutritional status. The Sahariyas living in Baran came to national attention in 2002 because of

several hunger deaths in the community followed by deaths in 2004 and 2009 (2).

Taking a note on the situation of malnutrition in the district Baran, the State government established MNTC in the district in 2006. Survey done in 2011 highlighted that with reduction in percentage of severely underweight children from 35.32% in DLHS-2 to 13.55% in 2011, the prevalence of SAM children has also reduced in the district (2).

Aims & Objectives

To analyze the impact of interventional measures in improving the health and nutritional status of severe malnourished children admitted at one of the MNTC in district Baran.

Material and Methods

An observational prospective study was conducted at CHC Atru MNTC in district Baran, Rajasthan. Recruitment of children in the current study was started from April 2013. On an average, 3-5 children per month get admitted in this centre. Recruitment was continued for two years till March 2015. Over this period total 135 children were admitted in Atru MNTC. All 135 children were recruited in the current study. Maximum period of stay was 28 days. After discharge, four Follow-up visits are conducted at every 15 days (7). Children included in the study were followed up for 2 months to observe the rate of follow-up. Hence, along with the recruitment, follow-up was started simultaneously from mid-April 2013 considering minimum stay of 1 day. Including the follow-up period, total study period was from April 2013 to June 2015.

Weight of each and every child was noted which is regularly checked on digital weighing machine at MNTC. Weight at the time of admission and discharge and daily weights were recorded from the MNTC registers; average weight gain was calculated to see if it was in accordance with the available guidelines (7). Average acceptable stay should be 7-28 days as per operational guidelines. To know whether it has impact on outcome, weight gain was compared between children having 1-6 days stay and children having 7-28 days stay. Not all children get cured after the treatment. Therefore, children cured, referred, non-responders and defaulters were compared between children having acceptable and non-acceptable stay in MNTC. Socio-demographic data of all children was included. Mid upper arm circumference (MUAC) is also being recorded at this MNTC. Weight of a child is more sensitive variable

and discharge criteria also considers weight gain of a child as per guidelines (7). Hence MUAC was not analyzed in the current study.

The data were entered into Microsoft excel spreadsheet and analyzed using SPSS version 20. For qualitative data, Pearson's Chi-square test was applied to test the relationship of categorized independent and dependent variables. For quantitative data, mean and standard deviation were calculated. Student t test was applied to assess weight gain in relation to duration of stay at MNTC.

Results

Total 135 malnourished children were observed during study period. [Table 1](#) shows socio-demographic data of these children.

[Table 2](#) Cured children are those who have reached discharge criteria within the reporting period or stay at MNTC. Discharge criterion for children is 15% weight gain and no signs of illness. Defaulters are those who defaulted during the stay or left treatment against medical advice. Defaulter will be a child with SAM admitted to the ward but absent (from the ward) for three consecutive days without been discharged. Non-responders include those beneficiaries who fail to respond to the treatment e.g. the patient remains for a long period of time under the target weight (7).

Average weight gain was distinctly more in children who stayed for acceptable duration (7-28 days) at MNTC and the association was very highly significant ([Table 3](#)). This very high significance was also observed when association between duration of stay and achievement of acceptable weight gain was observed ([Table 4](#)). As per operational guidelines, acceptable MNTC performance indicators include average weight gain of minimum 8 gm/kg/day (7).

Out of 135 children recruited in the study 36 children were defaulters. Hence remaining 99 children were checked for compliance for follow-up visits. All 99 children did not complete four desirable follow-up visits. Rate of follow-up declined over four follow-up visits. [Figure 1](#) shows actual number children turned up for follow-up visits after discharge from MNTC.

Discussion

Though MNTCs have started functioning in the state of Rajasthan from year 2006 but still the quality of health care provided at these centres and awareness in the community need to be improved. This is very much depicted in the current study. Out of 135

children recruited in the current study, about one third children were from Sahariya tribe which belongs to Scheduled Tribe. No gender disparity was observed. Majority of children were referred to MNTC by ASHA who are playing a key role. Families of these children were predominantly illiterate and belonged to lower socio-economic class. The findings are in accordance with that of NFHS-III, which states that children belonging to the SC, ST, and OBC and that those with illiterate mothers have the highest rates of malnutrition (3). Not a single child was observed from upper and upper-medium socio-economic class which has better affordability to fulfill nutritional requirement of their family including children.

The most satisfactory part of the observation during this study was that no death occurred over the period of about two years making the death rate 0%. Observed cured rate was 54.1% and defaulter rate was 26.7%. As per operational guidelines performance indicators, acceptable cured rate should be >75%, death rate <5% and defaulter rate <15% (7). Cured rate in studies done by Teferi *et al* (8) and Hossain *et al* (9) was in the acceptable range but in ours and in another recent studies (10,11) it was below the acceptable range. This could be because of high number of defaulters and inadequate length of stay in the current study. Observed defaulter rate was quite high as was in study conducted by Singh K *et al* (10). This could be because of lack of awareness about the utility of the provided services among families. 12.6% of children were referred from MNTC because of associated complications like severe anaemia, high grade fever or generalized oedema (9). Children were non-responders because they did not gain adequate weight during their stay at MNTC. Ideally these children need to be referred but were not.

Success of MNTC services lies in adequate weight gain by malnourished child. To know the impact of duration of stay on weight of a child, association was analyzed at the time of admission and at the time of discharge. In both groups having acceptable (1-6 days) and non-acceptable (7-28 days) stay no statistical difference was observed at the time of admission. This was desirable and it makes both groups comparable. At the time of discharge, weight was significantly high in group having acceptable stay at MNTC. Similarly, in terms of weight gain also statistically very high significance of duration of stay

was observed. This proves the importance of duration of stay of malnourished child at MNTC.

The study findings reveal increasing drop outs rates with each successive follow-up. Taneja G *et al.* also revealed same finding in their study (12). In the current study, just about half of the discharged children came for the first follow-up. Further it decreased over the next follow-ups. Only 18.2% children completed desirable four follow-up visits. This is extremely poor follow-up rate. Hence, it does not assure the sustainability of weight gain among discharged children.

Conclusion & Recommendation

Undoubtedly, MNTC is playing significant role in decreasing the deaths among malnourished children but quality of health care services are yet to be improved. Utmost importance needs to be given to the duration of stay at MNTC and the follow-up visits.

Relevance of the study

The WHO guidelines and regimens for reduction of mortality through hospitalized management of SAM children was the main focus of the study. In current study institutionalized management of malnourished children through MNTC strategy in India was evaluated.

Authors Contribution

All authors contributed equally.

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Tables

TABLE 1 Socio-demographic variables among admitted children at MNTC

Variable	Categories	Distribution	
		No.	%
Caste	Scheduled Caste	37	27.4
	Scheduled Tribe (Excluding Sahariyas)	13	9.6
	Sahariya tribe	40	29.6
	Other Backward Caste (OBC)	44	32.6
	Others (General)	1	0.7
Gender	Female	65	48.1
	Male	70	51.9
Referred to MNTC by	ASHA	83	61.5
	SELF	37	27.4
	ANM	8	5.9
	AWW	4	26.9
	OPD	3	5.5
Parent’s Literacy	Illiterate	104	77.0
	Just Literate	15	11.1
	Literate	16	11.8
Socio-economic status (As per BG Prasad Economic classification)	Low	93	68.9
	Low-Medium	41	30.4
	Medium	1	0.7
	Upper-Medium	0	0.0
	Upper	0	0.0

TABLE 2 Outcome of Admitted children in relation to their stay at MNTC

Stay in MNTC	Outcome of admitted children at MNTC				Total
	Cured	Defaulter	Referred	Non- Responders	
1-6 days stay at MTC	2(4.0)	32(64.0)	15(30.0)	1(2.0)	50(100)
7-30 days stay at MTC	71(83.5)	4(4.7)	2(2.4)	8(9.4)	85(100)
Total	73(54.1)	36(26.7)	17(12.6)	9(6.6)	135(100)

Pearson’s $\chi^2 = 103.84$, $df = 3$, $p < 0.0001$; Note: Figures in parentheses indicate percentages

TABLE 3 WEIGHT OF ADMITTED CHILDREN IN RELATION WITH DURATION OF STAY AT MNTC

Weight	1-6 days stay in MNTC	7-28 days stay in MNTC	Test of significance
Weight on admission			
No.	50	85	t= 0.304
Mean	6.668	6.749	p= 0.762
SD	1.7243	1.3490	
Weight on discharge			
No.	50	85	t= 3.061
Mean	6.765	7.641	p= 0.003
SD	1.7306	1.5308	
Average weight gain (gm/kg/day)			
No.	50	85	t= 6.533
Mean	3.6281	10.1978	p< 0.0001
SD	6.18	5.303	

TABLE 4 AVERAGE WEIGHT GAIN IN RELATION WITH DURATION OF STAY AT MNTC

Stay at MNTC	Average weight gain (gm/kg/day)		Total
	Not Acceptable (<8)	Acceptable (≥8)	
1-6 days	28 (56.0)	22 (44.0)	50 (100.0)
7-28 days	15 (21.42)	70 (82.35)	85 (100.0)
Total	43	92	135 (100.0)

Pearson’s $\chi^2 = 21.33, df = 1, p < 0.0001$; Note: Figures in parentheses indicate percentages

Figures

FIGURE 1

