

A STUDY TO EVALUATE THE EFFECT OF NUTRITIONAL INTERVENTION MEASURES ON CHILDREN WITH SEVERE ACUTE MALNUTRITION ADMITTED IN NUTRITION REHABILITATION CENTER AT CIVIL HOSPITAL BAIRAGARH, BHOPAL, MADHYA PRADESH

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ABSTRACT: BACKGROUND: The state of Madhya Pradesh has 1.3 million severely malnourished children. Nutrition rehabilitation centers (NRCs) were started in the state to control severe malnutrition and decrease the prevalence of severe malnourished children to less than 1% among children aged 1–5 years. **OBJECTIVE:** To assess the effect of nutritional interventional measures for children with severe acute malnutrition (SAM) admitted in Nutrition Rehabilitation Center by reviewing anthropometric indicators. **Material and methods:** The present study was conducted from July 2014 to December 2014; all children admitted during the study period in NRC civil hospital Bairagarh, Bhopal were observed during their stay at NRC to analyze the effect of interventional measures on select anthropometric and outcome indicators. The data were entered into Microsoft excel spreadsheet and analyzed. **RESULT:** 61.8 % of the total 102 children admitted were female, 42.1% were in the age group of 13–24 months and 34.3% in the age group of 0-12 months. About 60% of the population belonged to schedule caste and tribe. The mean weight at admission was 6.4 kg and on discharge 7.09 kg. Of the total 102, 8 children defaulted and 92 were discharged amongst them 66.3% were recovered. **CONCLUSION:** The study reveals a proportion of 66.3% children amongst the study group recovered with at least 15% weight gain of initial weight

KEYWORDS: Nutritional Rehabilitation Centre, Severe Malnutrition, Outcome Indicators.

INTRODUCTION: Worldwide, 10.9 million children under five years of age die every year due to malnutrition, of which 2.42 million deaths occur in India alone. The National Family Health Survey-3 (2005-06) estimates that 8 million under-five children in India are suffering from severe acute malnutrition (SAM).^[1]

The state of Madhya Pradesh has the largest number of malnourished children in India; 6 million children under five are malnourished including 1 million moderately malnourished and 1.3 million severe malnourished children.^[2] To prevent deaths among severe malnourished children identified under the drive, the Government further started the Nutrition rehabilitation centers (NRCs) under the Bal Shakti Yojna with support from UNICEF. The objectives of the programme are to control malnutrition among the children aged 1–5 years in the state and to bring down the percent of severe malnourished children to less than 1%.^[3]

With this background our study aims to assess the effect of nutritional Interventional measures on children with severe acute malnutrition.

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MATERIAL AND METHODS: The present study was conducted in NRC located at civil hospital, Bairagarh; Bhopal from July 2014 to December 2014 with the study group comprised the study of children 0-60 months of age, admitted in NRC.

All the children with SAM admitted in the NRC during the study period were included in the study. At the NRC, age, weight, height/length, MUAC, presence or absence of bilateral edema and appetite were assessed in all the children. SAM was defined as per WHO recommendations by the presence of bilateral edema or presence of severe wasting. Severe wasting was defined as per WHO guideline by a MUAC below 115 mm and/ or a weight for height/length z-score (WHZ) below -3 SD of WHO child growth standards.^[4]

Children were discharged from the NRC when they met the following discharged Criteria:

- 1) The child was active or alert
- 2) The child had no signs of bilateral pitting edema, fever, and /or infection.
- 3) The child had completed all age appropriate immunizations.
- 4) The child was being fed 120-130 kcal/kg weight/day; and
- 5) The primary caregiver knew the care that the child needed to receive at home.

A detailed data of the patients including name, age, sex, caste, address, religion, anthropometric and outcome indicators were taken over the predesigned Performa. Weight at the time of admission and discharge and daily weights were recorded from the NRC registers; average weight gain was calculated to see if it was in accordance with the available guidelines. [5] The data were entered into Microsoft excel spreadsheet and analyzed.

Characteristics	No. (%)
Sex	
Male	39 (38.2)
Female	63 (61.8)
Age	
0-12	35 (34.3)
13-24	43 (42.1)
25-36	15 (14.7)
37-48	03 (2.9)
49-60	06 (5.8)
Caste	
ST	38 (37.3)
SC	23 (22.5)
OBC	25 (24.5)
General	16 (15.7)

Table 1: Sociodemographic characteristics of the study children

Age groups month	Mean wt admission (overall) kg	Mean wt discharge (overall) kg
0-12	5.1	5.7
13-24	6.4	7.1
25-36	7.9	8.6
37-48	8.1	8.5
49-60	9.04	10.1
Overall average	6.4	7.09

Table 2: Mean weights at admission and discharge

Outcome	All children with SAM (N=102) n (%)
Admitted	
Exits	100 (98.03)
Transfers	2 (1.97)
Exits	
Deaths	0 (0)
Defaulters	8 (8)
Discharged	92 (92)
Discharged	
Recovered	61 (66.3)
Non-recovered	31 (33.7)

Table 3: Outcome in study children with severe acute malnutrition

Exits: All the children who left NRC by the way of discharge, death, default excluding transfer.

RESULT:

Sociodemographic profile of Subject: A total of 102 children were included in the analysis amongst them 39 (38.2%) boys and 63 (61.8%) girls. Majority 42.1% were in the age group of 13–24 months and 34.3% in the age group of 0-12 months. Majority 37.3% of the study population belonged to the scheduled tribe (ST) group and rest 24.5%, 22.5%, 15.7% to SC, OBC and general respectively [Table 1].

Effect on anthropometric Indicators: The overall mean weight of admission for these children was 6.4 kg and the mean weight at discharge for the study group was 7.09 kg. No statistically significant difference was observed between the mean weight at discharge and the mean weight at admission for the study group ($t=0.29$, $P=0.78$) [Table 2]. The average weight gain for the study group during their stay at the centers was 3.2 ± 2.3 g/kg/day.

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Outcome Indicators: The outcome indicators are detailed in table 3. Of the total exits (deaths, defaulters and discharged), the proportion of children who defaulted was 8% and 92 children (92 % of the exits) were discharged from the programme when they met the discharge criteria. Amongst discharged children 66.3% were recovered.

DISCUSSION: The study findings show that a major proportion of the admitted children belonged to the marginalized population groups. The findings are in accordance with that of NFHS-III, which states that children belonging to the ST, SC, and OBC and that those with illiterate mothers have the highest rates of malnutrition.^[6] Weight has been taken as the main anthropometric measure as an improvement in weight of severe malnourished children has the most significant effect in reducing the mortality among them. In present study mean weight on admission was 6.4 kg and on discharge 7.09 kg and there were no statistically significant difference was observed between the mean weight at discharge and the mean weight at admission for the study group unlike in G.Taneja et al study which observed significant difference in their study.^[7] Cole craft et al. in a study at four day care NRCs also reported a significant increase in weight for age for the admitted children.^[8]

The average weight gain for the entire study group was 3.2 ± 2.3 g/kg/day, which was poor compared to national and internationally agreed upon minimum average weight gain (> 8 gm/kg body weight /day).^[9,10] G. Taneja et al in their study found that the average weight gain for the entire study group was 9.25 ± 5.89 g/kg/day.^[7] Rinki H.Shah observed that 40% of patients gained weight between 5-10 gm/kg/day.^[11] Savadago et al. in a study at Burkina Faso reported an average weight gain of 10.18 ± 7.05 g/kg/day.^[12]

The proportion of children who defaulted was (8%) significantly below the national and international standards of care ($< 15\%$)^[9,10] high defaulter rate was observed by K. Singh et al in their study in Uttar Pradesh, India which was about 45 %.^[13] In this study the proportion of children discharged was 92 % amongst them 66.3% gained at least 15% of their initial weight, the minimum weight gain recommended by WHO and India's ministry of Health to discharge children as recovered.^[9,10] K. Singh et al found amongst 51.7 discharged children only 46.8 % children with SAM were recovered.^[13]

CONCLUSION: The study reveals the average weight gain amongst the children was poor and a proportion of 66.3% children amongst the study group recovered with at least 15% weight gain of initial weight.

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