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ABSTRACT

AIM: To study the performance of Nutritional Rehabilitation Centre (NRC) at District Hospital, Karnataka

METHODS: Anthropometry details of children admitted in NRC from January 1st to December 31st 2022 were recorded at admission and discharge and compared. Statistical analysis was done using MS Excel and SPSS Software.

RESULTS: Out of 149 children admitted, 10 children were excluded from the study as they were discharged against medical advice (8) or referred to higher centre(2). Out of the 139 children, 77 were female and 62 children were male. The average age at admission was 28±13.9 months. Statistically significant difference was noted between admission weight and discharge weight, between both boys and girls. Mean duration of stay was 14±1.3 days.

CONCLUSION: Statistically significant weight gain was observed among SAM children treated at NRC, as analysed by comparing the weight at admission and discharge. NRC has a good outcome on improving the nutritional status of the children admitted.

KEYWORDS: Nutritional Rehabilitation Centre, Anthropometry

INTRODUCTION

The younger generation are the future of our nation. The health of these are hugely compromised due to various reasons. The main reason being under nutrition. It is one of the most common causes of morbidity and mortality among children <5 years of age.[1] Worldwide, over 5 million children below 5 years die every year due to it.[2]. Under nutrition and infectious diseases are tightly linked in a self-reinforcing cycle. Undernourishment significantly increases the risk of case fatality rate in children suffering from diarrhoea, measles, and pneumonia. Children who are severely wasted are nine times more likely to die than well-nourished children.

Various growth standards were evaluated and established to classify children of malnutrition. The widely accepted are WHO growth charts. The WHO Multicentric Growth Reference Studywas conducted between 1997 and 2003 in 6 countries from diverse geographical regions: Brazil, Ghana, India, Norway, Oman and the United States. Weight-forage, length/height-for-age, weight-for-length/height and body mass index-for-age percentile and Z-score values were generated for boys and girls aged 0-60 months. The WHO child growth standards were derived from children who were breastfed and raised in environments that minimized constraints to

growth, such as poor diets and infection. The standards depict normal human growth under optimal environmental conditions and can be used to assess children everywhere, regardless of ethnicity, socioeconomic status and type of feeding. [3]Acute malnutrition can be divided into severe acute malnutrition, being defined as a weight-for-height Z-score <-3 or a mid-upper arm circumference of <11.5 cm, or moderate acute malnutrition, with a Weight-for-height Z score between -2 and -3 Z-scores or a MUAC (mid-upper-arm circumference) between 11.5 and 12.5 cm.

The concept of Nutrition Rehabilitation Centre (NRC) as an approach to address malnutrition and tackle SAM was proposed as early as in 1955.[4] The key in this procedure was that the child would recuperate on a diet using locally available food, and that the mothers of the children would learn to prepare their meals energy dense and feed and take care of them, and that the overall operation would be kept at the lowest possible cost.[5] In India, this concept was widely propagated for treatment of SAM children. The main objectives of facility-based management of SAM were to provide clinical management and reduce mortality of children with SAM, particularly among those with medical complications; to promote physical and psychosocial growth of children with SAM; and to build the capacity of mothers and other caregivers inappropriate feeding and caring practices for infants and young children.

Each NRC is manned by a Medical Officer/ Paediatrician, 1 or 2 diet counsellors, and 1 cook. In addition to treatment, special emphasis is given to improving the skills of mothers and caregivers on complete age appropriate caring and feeding practices. Anganwadi workers (AWWs) or ASHA are trained to identify SAM children from the field. There is anincentive for the field workers for counselling and motivating the mothers to stay for 2 weeks. Mothers receive free food, hands-on training on composition and preparation of therapeutic diets, and rupees 309 per day for daily wage loss. The protocols of “Operational Guidelines for SAM management” are used for management of children with SAM. [6] Children are followed-up on being discharged and again brought to the Centre by the AWWs on the designated follow-up dates. Children get readmitted, if necessary.

The functioning of NRC centres has not been studied in greater detail. There is a dearth of scientific literature on evaluation of the NRCs and the nature of its functioning in Southern states. This study aimed to assess the functioning of NRC in District Hospital, Chikmagalur, Karnataka.

AIMS:

1. To evaluate the performance of Nutritional Rehabilitation Centre ofChikmagalur district, Karnataka
2. To evaluate the weight gain of malnourished children admitted in NRC

MATERIALS AND METHODS

The present study was conducted at district Hospital, Karnataka. The study was conducted from January 2022 to December 2022. NRC at District Hospital is a 10 bedded facility. Children meeting the admission criteria from all over the district are admitted in the facility. The demographic details like name, age, sex were collected. Anthropometric measurements like Admission weight, length/height, head circumference, mid upper arm circumference, discharge weight were recorded. Z score for Weight for height was documented using WHO growth standards. Discharge weight was recorded and compared with admission weight. Informed consent was taken from the mothers/guardians before measuring anthropometric measurements. Ethical clearance was taken from Institute Ethical Clearance Committee.

Inclusion criteria: All children between the age group 0 to 60 months, who met the admission criteria (Weight for height <-2 SD and/or bilateral pedal oedema and/or Mid upper arm circumference <115mm/ presence of nutritional oedema) with or without medical complications.
Exclusion criteria: Children who had NRC stay less than 5 days (referred to higher centre or discharge against medical advice) were excluded from the study.

ANTHROPOMETRIC MEASUREMENTS:

Weight: The weight of the child was measured in a tarred digital weighing having sensitivity up to 10grams with minimal clothing every day at a fixed time.
Length: If a child was less than 2 years old, recumbent length is checked using Infantometer. The child was positioned on his back on the measuring board, supporting the head and placing it against headboard. The soles of the feet was placed firmly against the foot piece of infantometer. The knees were straightened as much as possible without hurting the child. The length was measured to the last completed 0.1cm and recorded.
Height: if a child was more than 2 years old, height was measured using stadiometer. The child was made to stand with back of the head, shoulder blades, buttocks, calves and heels touching the vertical board. The head of the child is positioned so that the child is looking straight ahead. The headboard was held firmly on top of head to compress hair and height was measured to the last completed 0.1cm and recorded.
Mid Upper Arm Circumference (MUAC):Child's left upper arm was flexed to 90^0. Midpoint between the end of the shoulder (acromion) and the tip of the elbow (olecranon) was measured using measuring tape. Then, the arm was allowed to hang freely and the circumference was measured around the midpoint, without pulling too tight.

STATISTICAL ANALYSIS

Statistical analysis was done by using MS Excel and SPSS software. Paired t test, average and standard deviation methods were utilized.

RESULTS:

Out of 149 children admitted to NRC in the year 2022, 10 children were excluded from the study as they were discharged against medical advice(8) or referred to higher centre(2).
Out of the 139 children, 77 were female and 62 children were male.There were only 2 children below the age of 6 months. The average age at admission, among girls was 26±12.4 months, among boys was 31±15.2 months. The overall average age at admission was 28±13.9 months.
The average admission weight, Age at admission, length/height at admission, head circumference at admission, MUAC at admission, Discharge weight and number of days of stay in NRC are summarised in table no.1

TABLE NO. 1

AVERAGE	GIRLS	BOYS	TOTAL
Age at admission (months)	26±12.4	31±15.2	28±13.9
Weight at admission (kg)	8±1.7	8.6±2.4	8.2±2.1
Length/height at admission (cm)	79.2±9.3	81.7±11.9	80.3±10.6
Head circumference at admission (cm)	43.6±2	44.8±3.2	44.2±2.7
MUAC at admission (cm)	12.7±1.6	12.8±1.7	12.8±1.6
Discharge weight(kg)	8.8±1.8	9.7±2.5	9.2±2.2

No of days stay	14±1.2	14±1.5	14±1.3

38(27.3%) children were classified as Moderate Acute Malnutrition and rest were classified was Severe acute malnutrition.

The weight gain in grams/kg/day and weight gain in percentage are tabulated in Table no. 2

TABLE NUMBER. 2

AVERAGE	Girls	Boys	Total
Weight gain (grams/kg/day)	9.8±3.4	10±4.4	9.9±3.9
Weight gain (%)	13.3±5	13.3±5.1	13.3±5

Statistically significant difference was noted between admission weight and discharge weight, between both boys and girls (p value <0.01). Comparison of percentage weight gain to duration of stay was statistically significant among boys (p value <0.05). However, not significant among girls. It implied that the weight gain percentage was directly related to the number of days of stay among boys, however did not make a statistical significance among girls.

DISCUSSION

NRC is an establishment at various taluk and district levels to ensure quality nutritional rehabilitation to malnourished children. The success of outreach NRCs has been documented since a long time. [7]

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. Our study noted a significant difference among admission weight and discharge weight. Taneja et al, [8] study of NRCs in Madhya Pradesh had also recorded statistical significance in admission and discharge weight. Colecraft et al, [9]in a study at four day care NRCs also reported a significant increase in weight for age for the admitted children.

The average weight gain in the study was 9.9g/kg/day,which is comparable to results observed by Savadago et al, [10] in a study at Burkina Faso which reported an average weight gain of 10.18 ± 7.05 g/kg/day. Similar weight gain was also noted by Taneja et al : 9.25 ± 5.89 g/kg/day [8.] However, Meenakshi et al in her study at Chattisgarh and Collins et al in their study at southern Malawi reported weight gain around 6g/kg/day [1, 11]

Statistical significant difference in weight gain between admission and discharge weight was noted in our study (p<0.05). Similar results were also noted by a study done in Madhya Pradesh. [8] Singh et al studied significant weight gain between admission and 3rd followup weight. [12]

The mean duration of stay in our study was 14±1.3 days, which was comparable to studies in other parts of the country, like Taneja et al (13.8±2.7days), Meenakshi et al (10.7±3.5)days. [8, 11]

We did not study education qualification of mothers of children admitted to NRC,[13]followup weight gain, [8,13] discharge MUAC [8]. The study was limited to a single setup admitting children from similar socioeconomic, similar ethnic backgrounds. A bigger study empanelling varieties of facilities, across states and countries will help in better demonstration of success of nutrition rehabilitation centres.

CONCLUSION

Statistically significant weight gain was observed among SAM children treated at NRC, as analysed by comparing the weight at admission and discharge. The length of stay at NRC was found statistically significant with weight gain at discharge. NRC has a good impact on improving nutritional status of undernourished children. The rate of discharge against medical advice was not high because of wage compensation being provided for the stay in NRC. Training of anganwadi workers, ASHA workers has enabled identification of malnourished children and hence treatment of the same.

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