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Effect of Nutritional Intervention in Undernourished Children at Nutritional Rehabilitation Centre, Ongole, Andhra Pradesh

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Abstract:
Context: *Malnutrition is the major public health problem in many developing countries such as India. Government of India started Nutritional Rehabilitation Centres (NRC) to rehabilitate the severe acute malnourished children. Aim: The aim of the present study is to assess the effectiveness of nutritional intervention measures in NRC. Methodology: It is a hospital based observational study using the secondary data, conducted at RIMS Ongole, during the period from October 2015 to December 2015. A total of 110 children are selected for study. Information about age, gender and anthropometric measurements of selected children is collected and Z scores of all anthropometric indicators are calculated using WHO Anthro software. Statistical analysis used: Comparison done for Z scores of anthropometric measurements at the time of admission and at discharge. Results: Maximum number of under nourished children are preschool children. Among the affected Children, Males are more in number when compared to female children. Average number of days of stay at NRC of under nourished children is 12.28 ± 4.27 days, average weight gain is 960 ± 500 grams. Mean Z scores of weight for age, height for age, weight for height, BMI and MUAC are improved from the time of admission to discharge. Statistical significance found for all the anthropometric indicators except for Z score of height for age. Conclusion: Nutritional intervention at NRC decreased the severity of malnourishment among children.*

Keywords : *Nutritional Rehabilitation Centre, Preschool children, severe acute malnourished children, under nutrition, WHO Anthro software.*

I. Introduction

Malnutrition is the major public health problem in many developing countries such as India. Effects of Malnutrition is a Pandoras Box of Illnesses including Stunted growth and Development of children in their prime years which causes Wasting, Vitamin Deficiency Diseases, increases the risk of infections, Convulsions, Cognitive Deficits. Malnourishment increases School dropout rates and Performance, increases Morbidity and Mortality and also increases Socio-economic Burden on families, Society, Nation and strains existing Health Care System and Economy. Hence Malnourishment Prevention and Rehabilitation services in the form of NRC Care is instituted by the Government of India. According to NFHS-3 about 43% of children are suffering with underweight and 6.4% of children among them had severe acute malnutrition (SAM) in India[1]. To support the growth and development of undernourished children, Government of India started Nutritional Rehabilitation Centres (NRC) in the year 2011. NRCs provide tertiary level of prevention measures such as disability limitation and rehabilitation to prevent further complications. NRC is a unit of health facility, where children with severe acute malnutrition are admitted and managed till they are rehabilitated completely.[2] Government of India established 896 NRCs throughout India and among them 30 NRCs are in Andhra Pradesh included a NRC which is functioning at Ongole in Prakasam District[3]. Based on this background the aim of the present study is to assess the effectiveness of nutritional intervention measures on malnourished children admitted at Nutritional Rehabilitation Centre, Ongole.

II. Methodology

The current study is a hospital based observational study conducted at Nutritional Rehabilitation Centre attached to Rajiv Gandhi Institute of Medical Sciences (RIMS), Ongole during the period from October 2015 to December 2015. All the undernourished children below 5 years of age admitted at NRC are considered as study population. Children admitted in NRC during the period from April 2013 to March 2014 are considered for the study. Prior permission taken from Principal, RIMS, Ongole to collect the data from NRC records. A total of 143 children are admitted in the NRC during the period from April 2013 to March 2014. All the Children admitted in NRC with under nutrition are included in the study. Children below 6 months of age, absconded children, discharged children against medical advice and children discharged from NRC less than 7 days are excluded from the study. Out of 143 children admitted at NRC a total of 110 children are selected for study after exclusion Criteria. Information about age, gender, weight, length / Height, Mid Upper Arm Circumference

(MUAC) of selected children is collected from the available records at NRC. Body Mass Index (BMI) (Quetelet's index) is calculated. Z scores of all anthropometric indicators are calculated for children using WHO Anthro software. Comparison done for children's Z scores of weight, length /height, and BMI at the time of admission and discharge. Microsoft Excel is used for statistical analysis.

III. Results

In the current study, Table no.1 shows that, maximum number of under nourished children belongs to 49-60 months of age group (23.6%), followed by 37-48 months (21.8%) and 6-12 months age groups (20.9%). Males are more in number when compared to female children. Children belong to BC caste and SC caste are more in number when compared to children belong to ST caste and OC caste.

Average number of days of stay at NRC for under nourished children is 12.28 ± 4.27 days. During their stayal at NRC children gained weight on an average of 960 ± 500 grams. Mean weight gain per day of under nourished children at NRC is 80 ± 40 grams. Table no.2 shows that, mean of Z score of weight for age at the time of admission is -3.29 ± 1.24. It is improved to -2.50 ± 1.24 at the time of discharge. Average Z score of weight for height is improved from -3.16 ± 0.60 to -1.90 ± 0.70. There is no significant improvement in Z score of height for age. Body Mass index is improved from 12.32 ± 0.74 to 13.67 ± 0.99. Z score of BMI for age is also improved from -3.00 ± 0.73 to -1.71± 0.83. Mid upper arm circumference (MUAC) improved by 0.56 cm from 12.31 to 12.87 cm. MUAC Z score is also improved from -2.91 to -2.37. Standard error of difference between two means of all anthropometric indicators are calculated. Statistical significance found for all the anthropometric indicators except Height for age. ($p<0.05$)

IV. Discussion

Most of the under nourished children in the current study belongs to preschool age i.e., both 37-48 months and 49-60 months age groups. It may be due to lack of awareness regarding the healthy young child feeding practices. As per IMNCI guidelines, children 2 years of age and above should take a variety of family foods three meals per day along with two nutritious foods such as biscuits, banana, snacks etc. between meals[4]. If the children had not taken sufficient food as per his requirements, the child may suffer with under nutrition.

Weight for Age Z score is an indicator of underweight. Children with Z score less than -2 SD are considered as underweight children and children with Z score -3 SD are considered as severe Underweight children[5]. At the time of admission mean weight for age Z score of study children is -3.29. It indicated that the children are severe underweight children. Whereas after intervention with nutritional measures at NRC the mean Weight for age Z score is improved to -2.50. The difference observed between two Z scores had statistical significance. Weight for age Z score is sensitive to the acute changes in the feeding practices. Children admitted at NRC are fed with special feeds for a period of two weeks. Thus children Z scores of Weight for age are improved. This finding is consistent with the results of Colecraft EK et al., study[6]. Studies conducted by G Taneja et al., and Gaboulaud et al. and B. Ramarao et al., also depicted that, there is weight gain in the NRC admitted children after nutritional intervention[7,8,9].

Weight for height Z score is an indicator of wasting. Children with Z score less than -2 SD are considered as wasted children and children with Z score -3 SD are considered as severely wasted children[5]. At the time of admission mean Weight for height Z score of study children is -3.16. It indicated that the children are severe wasted children. Whereas after intervention with nutritional intervention measures at NRC the mean Weight for height Z score was improved to -1.96. The improvement in weight for height Z score had statistical significance. It indicated that wasting in children is decreased with nutritional intervention measures at NRC. Study conducted by Colecraft EK et al., also depicted that, there is improvement in weight for height in NRC admitted children after nutritional intervention[6]. This finding is consistent with Sovadogo et al., study[10].

Height for Age Z score is an indicator of stunting. Children with Z score less than -2 SD are considered as stunted children and children with Z score of -3 SD are considered as severely stunted children[5]. At the time of admission mean height for age Z score of study children is -2.06. It indicated that the children are severe stunted children. Whereas after intervention with nutritional intervention measures at NRC the mean height for age Z score is improved to -2.05. It indicated that, the children's nutritional status is improved slightly with nutritional intervention measures at NRC. Stunting is the result of chronic malnutrition. The changes in the height for age Z score will occur after a prolonged period which cannot be observed in the short period of time. The mean duration of stay at NRC in the current study is 12.28 days. Hence the changes, height for age Z score not observed in the current study.

Body mass index is a composite indicator made up of weight and length/ height of children. Children with BMI less than 18.5 are considered as underweight[11]. In the current study, average BMI of study children is 12.32 at the time of admission and 13.67 at the time of discharge. Z scores of BMI is also improved from the time of admission (-3.00) to discharge (-1.71). The improvement observed in the current study has statistical significance.

Mid upper arm circumference is an indicator of skin fold thickness in the children. Children with MUAC less than 13.5 cm is considered as malnourished and less than 12.5 cm is considered as severely malnourished[12]. In the current study it is observed that there is a statistically significant improvement in MUAC by 0.56 cm from 12.31 to 12.87 cm and in MUAC Z score from -2.91 to -2.37 from admission to discharge. A similar finding observed in the studies conducted by G Taneja et al., Sovadogo et al[7,10]

V. Tables

Table no.1 Socio-demographic profile of study children

		Frequency n=110	Percentage
Age group	6-12 months	23	20.9
	13-24 months	17	15.5
	25-36 months	20	18.2
	37- 48 months	24	21.8
	49-60 months	26	23.6
	Total	110	100
Gender	Male	64	58.2
	Female	46	41.8
	Total	110	100
Caste	OC	6	5.5
	BC	53	48.1
	SC	44	40.0
	ST	7	6.4
	Total	110	100

Table no.2 Improvement of Anthropometric indicators in study children at NRC

	Admission (Mean±S.D)	Discharge (Mean±S.D)	Standard error of difference between two means	Z score (P value)
Weight for Age Z Score	-3.29 ± 1.24	-2.50 ± 1.24	0.16	4.72 (<0.05)
Weight for Height Z	-3.16 ± 0.60	-1.90 ± 0.70	0.08	14.33 (<0.05)
Height for Age Z score	-2.06 ± 2.22	-2.05 ± 2.28	0.30	0.03 (>0.05)
BMI	12.32 ± 0.74	13.67 ± 0.99	0.11	11.45 (<0.05)
BMI for Age	-3.00 ± 0.73	-1.71 ± 0.83	0.10	12.24 (<0.05)
MUAC in cm	12.31 ± 1.28	12.87 ± 1.31	0.17	3.20 (<0.05)
MUAC Z score	-2.91 ± 1.06	-2.37 ± 1.03	0.14	3.83 (<0.05)

VI. Conclusion

Malnutrition is observed mainly in Children of preschool age. Nutritional intervention at NRC decreased the severity of malnourishment among children. Information Education Communication (IEC) activities regarding Infant and Young Child Feeding Practices (IYCF) should be given to the parents to prevent Malnutrition in the first place. The Present study proved that the Nutritional Intervention measures carried at NRCs attached to District Hospitals or teaching hospital are effective. Further, It is advisable to initiate NRC facilities at Secondary Level Health Care Facilities such as Area Hospitals and Community Health Centres to address the malnutrition among children for better approachability and follow up.

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References

[1]. Fred Arnold. Sulabh Parasuraman, Arokiasamy.p, Monika kotari. Nutrion in India. National Family Health Survey (NFHS-3) India 2005-06. International Institute for population science.Deonar. Mumbai.
[2]. Operational Guidelines on Facility Based Management of Children with Severe Acute Malnutrition. Ministry of Health and Family Welfare Government of India, 2011
[3]. Press Information Bureau. Nutritional Rehabilitation Centres. Ministry of Health and Family Welfare. Government of India. available from: pib.nic.in/newsite/printrelease.aspx?relid=121407
[4]. Integrated management of neonatal and childhood illness (imnci) Modules 1 to 9. New delhi. Ministry of health and family welfare. Government of india.2009.p356.
[5]. WHO (2006), WHO Child Growth Standards, Length/ Height-for-age, Weight-for-age, weight-for-length, weight-for-height, weight-for-height and body mass index-for-age, methods and development.
[6]. Colecraft EK, Marquis GS, Bartolucci AA, Pulley L, Owusu WB, Maetz HM. A longitudinal assessment of the diet and growth of malnourished children participating in nutrition rehabilitation centres in Accra, Ghana. Public Health Nutr. 2004;7:487–94.

[7]. Gunjan Taneja, Sanjay Dixit, AK Khatri, Veena Yesikar, Deepa Raghunath, and Sanjay Chourasiya. A Study to Evaluate the Effect of Nutritional Intervention Measures on Admitted Children in Selected Nutrition Rehabilitation Centres of Indore and Ujjain Divisions of the State of Madhya Pradesh (India). Indian J Community Med. 2012 Apr-Jun; 37(2): 107–115.
[8]. Gaboulaud V, Dan-Bouzoua N, Brasher C, Fedida G, Gergonne B, Brown V. Could Nutritional Rehabilitation at Home Complement or Replace Centre-based Therapeutic Feeding Programmes for Severe Malnutrition? [Last accessed on 2009 Sep 15];J Trop Pediatr. 2007 53:49–51. Available from: http://msf.openrepository.com/msf/bitstream/10144/21177/2/gaboulaud.pdf .
[9]. B. Rama Rao, S. Appala Naidu, L. Siva Kumar, B. Devi Madhavi. Effectiveness of nutritional intervention measures on children admitted in nutritional rehabilitation centre (nrc) king george hospital- visakhapatnam. J Evid Based Med Healthc, pISSN-2349-2562, eISSN-2349-2570 / Vol. 2/ Issue60/ Dec.28, 2015
[10]. Savadogo L, Zoetaba I, Donnen P, Hennart P, Sondo BK, Dramaix M. Management of severe acute malnutrition in an urban nutritional rehabilitation centre in Burkina Faso. Rev Epidemiol Sante Publique. 2007;55:265–74. [PubMed]
[11]. Bietti, G.B. (1976). World Health, Feb- March.
[12]. Gopalan, C. (1973). Proccedings Nutr. Soc.india, N.I.N. Hyderabad