



## HEALTH PROFILE OF CHILDREN ADMITTED TO NUTRITION REHABILITATION CENTRE(NRC) IN A TERTIARY CARE HOSPITAL

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**ABSTRACT** Malnutrition has been acknowledged as a major public health challenge across the globe affecting individual of all age groups. However, the maximum brunt of the problem is seen to be on the growing children. Malnutrition which often refers to under nutrition in our context, is a consequence of several key social & economic factors such as lack of awareness & education, inadequate health care services, poor health seeking behaviour & faulty cultural practices. Many programmes are in place to combat under nutrition of which Nutrition Rehabilitation Centre(NRC) is one of the important facility based intervention programme. In the present study an attempt has been made to assess the health profile of children admitted to NRC in a tertiary care hospital.

**Objective:** 1. To study the hospital based prevalence of SAM children, 2. To study the morbidity profile of children admitted to NRC and 3. To identify gaps if any and suggest remedial measures.

**Material & Methodology:-** This was a Record based retrospective study at NRC, SLNMCH, Koraput undertaken during the period 01.04.2019 to 30.06.2019. Data for the Reference period 01.04.2016 to 31.03.2019 were collected from the NRC database with the help of a Pre-designed schedule. The data thus collected were analyzed by SPSS Version 21.

**Results:-** Out of 622 study subjects, 322(52%) were male child and 300(48%) were female child. The range of age was less than one month to 59 months. The mean age of attendees was 14.93± 11.05 months. Maximum, that is, 65.3% study subjects were ST.

Common reasons for admission to NRC were cough 112(18%), Loss of appetite(16.6%), fever(12.7%), severe anaemia(7.4%), Diarrhoea(4.8%), Any other(6.8%) and If parents unable to care(5.9%).

Out of 520 study subjects 436(83.8%) were SAM children having MUAC <11.5 cm.

Out of 622 study subjects, data on z score both at the time of admission & discharge was available in case of 600 study subjects. At the time of admission out of 600 study subjects, 29(4.8%) had Z score between  $\leq -1$  to  $\geq 2$ ; 96(16%) had Z score between  $\leq -2$  to  $\geq 3$ ; 300(50%) had Z score between  $\leq -3$  to  $\geq 4$  and 175(29.2%) had Z score between  $\leq -4$  to  $\geq 5$ .

Maximum, that is 215(34.5%) were referred from RBSK followed by 202(32.4%) by MOs, 76(12.2%) by ASHA, 67(10.7%) by AWW & lastly 62(10.2%) from other sources.

Nearly 99% of NRC attendees were from Koraput.

**Conclusion:** Among admitted children male and female ratio were almost same. The mean age of attendees was 14.93 months. Most of them(65.3%) belong to schedule tribe. Children admitted to NRC were referred mostly from RBSK(37.6%) and Medical officers(36.17%). Reasons for admission among inmates were commonly due to cough related problems(18%), loss of appetite(16.6%) and fever(12.7%). Most of the referral i.e. 614(98.8%) were from different block of Koraput district.

**KEYWORDS :** NRC, AWW, ASHA, RBSK, AWC.

### INTRODUCTION:

Child under nutrition encompasses stunting(chronic malnutrition), wasting(acute malnutrition) and deficiencies of micronutrients (essential vitamins and minerals).

It significantly contributes to under five mortality as undernourished children have increased susceptibility to infections and hence frequent episodes of diarrhoea, acute respiratory infections, malaria and measles are the key contributing factors for child mortality.

It also leads to growth retardation and impaired psycho-social and cognitive development. This has impact on education attainment. The degree of cognitive impairment is directly related to the severity of stunting and iron deficiency anaemia.

Without treatment children who are affected by moderate/severe acute malnutrition during the critical stage of life between conception and age two, if not provided with timely and quality care, will find it difficult to achieve their full potential. Scientific evidence has shown that beyond the age two to three years, many effects of chronic under nutrition are irreversible. This means that to break the intergenerational transmission of poverty and under nutrition, children at risk must be reached during their first two years of life.

After treating the life-threatening problems in a hospital, the child with acute malnutrition will be transferred to NRC for intensive feeding to recover lost weight, development of emotional and physical stimulation, capacity building of the primary caregivers of the child with acute malnutrition through sustained counselling and continuous behavioural change activities. Thus NRC will be intended to function

as a bridge between hospital and home care. Hence, NRC will be a short stay home for children with acute malnutrition along with the primary care givers. In this academic endeavour effort has been made to find the extent of SAM prevalence & reasons for admission to NRC along with identification of gaps if any.

### Objective:-

1. To study the hospital based prevalence of SAM children
2. To study the morbidity profile of children admitted to NRC
3. To identify gaps if any and suggest remedial measures.

### METHODOLOGY:-

The present study was undertaken at NRC, SLN Medical College & Hospital, Koraput during the period 01-04-2016 to 31-03-2019. The NRC was set up in SLN Medical College & Hospital, Koraput on 30-03-2012 but date of functioning is 09-10-2012. This centre is utilized to initiate treatment, diet, counselling, indoor admission facility etc.

### Selection of study subjects:-

All cases admitted to NRC during the period from 01-04-2016 to 31-03-2019 were considered for the present study.

### Exclusion criteria:-

Cases having incomplete data or data not available were excluded from final analysis.

### DATA Collection:-

Data were collected with the help of Pre-designed schedule to capture relevant information pertaining to study objectives.

**DATA Analysis:-**

After cleaning of the collected data, the analysis was done with the help of SPSS version 21 & Microsoft excel 2007. The results of the analysis were interpreted in the perspective of study objective.

**Observation:-**

The pertinent findings of the present study were tabulated, analysed & presented in the following paragraphs.

**Table No.1: Sex wise distribution of cases(n=622)**

Sex	No. Of cases	Percentage
Male	322	52%
Female	300	48%
Total	622	100%

Out of 622 study subjects 322(52%) were male child and 300(48%) were female child.

**Table No.2: Age wise distribution of study subjects in months (n=622)**

Age in months	No. Of cases	Percentage
≤ 1 month	21	3.4
> 1 month< 12 months	329	52.9
>12 months< 24 months	197	31.7
>24m<60 months	75	12
Total	622	100

Most of the study subjects i.e 329(52.9%) were between the age > 1 month and < 12 months. The mean age was 14.93 with standard deviation of 11.05.

**Table No.3: Caste wise distribution of study subjects(n=622)**

Caste	No.of cases	Percentage
General	127	20.4
SC	83	13.3
ST	402	65.3
Total	622	100

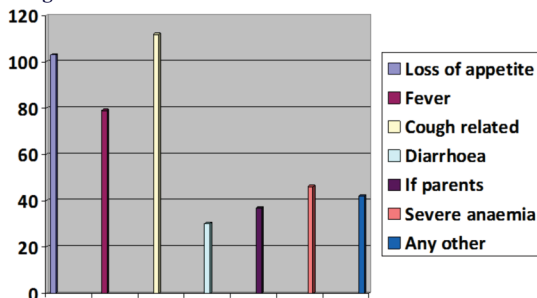
Exploring the caste wise distribution of study subjects it was revealed that maximum belonging to schedule tribe i.e 402(65.3%) followed by 127(20.4%) belong to general caste and 83(13.3%) belong to schedule caste.

**Table No.4: Reason for admission to NRC(n=622)**

Reasons	No. Of cases	Percentage
Cough related	112	18
Loss of appetite	103	16.6
Fever	79	12.7
Severe anaemia	46	7.4
If parents unable to take care	37	5.9
Diarrhoea	30	4.8
Any other	42	6.8

The above table depicts the reasons for which children were admitted. From among 622 study subjects, 112(18%) were admitted for cough related problems, followed by loss of appetite(16.6%), fever(12.7%), severe anaemia(7.4%), inability of parents to take care(5.9%) Diarrhoea(4.8%). However 42 children were admitted due to other causes(6.8%).

**Bar diagram of referral for admission:-**



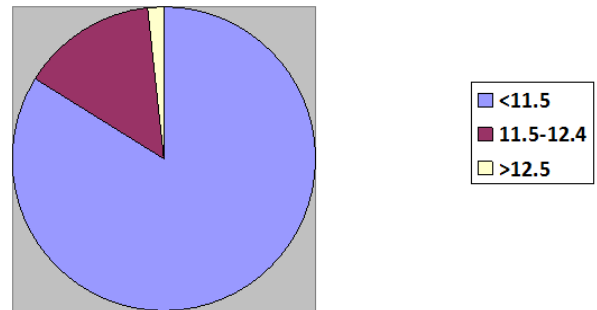
**Table No. 5: Anthropometry at the time of admission(n=520)**

MUAC	No. Of cases	Percentage
< 11.5 cm	436	83.8

11.5-12.4 cm	75	14.4
>12.5 cm	09	1.8
Total	520	100

Out of 520 study subjects 436(83.8%) had MUAC <11.5 cm, followed by 75(14.4%) were between 11.5-12.4 cm and only 09(1.8%) were >12.5 cm. Hence majority were SAM children.(83.8%).

**Pie chart of MUAC during admission:-**



**Table No.6: Z score of children(Weight for age)(n=600)**

Z score	At the time of admission(%)	At the time of discharge	
		Improved(%)	No change(%)
≤-1 to ≥ 2	29(4.8)	0(0)	29(100)
≤-2 to ≥ 3	96(16)	0(0)	96(100)
≤-3 to ≥ 4	300(50)	210(70)	90(30)
≤-4 to ≥ 5	175(29.2)	125(71)	50(29)
Total	600	335(55)	265(45)

The above table reveals the percentage of improvement in Z score(Weight for Height) at the time of discharge.

Out of 622 study subjects, data on z score both at the time of admission & discharge was available in case of 600 study subjects. At the time of admission out of 600 study subjects, 29(4.8%) had Z score between ≤ -1 to ≥ 2; 96(16%) had Z score between ≤ -2 to ≥ 3; 300(50%) had Z score between ≤ -3 to ≥ 4 and 175(29.2%) had Z score between ≤ -4 to ≥ 5.

At the time of discharge the first two group of study subjects did not show any improvement in the Z score. However out of 475 study subjects 235(70.5%) showed an improvement.

**Table No.7: Weight gain of children(n=622)**

Percentage of weight gain	No. Of cases	Percentage
0%	22	3.6
<15%	31	4.9
≥15%	569	91.5
Total	622	100

Weight gain during NRC stay, 22(3.5%) of study subjects were having 0% weight gain, 31(4.9%) had 1-15% weight gain and 569(91.6%) had ≥15% weight gain.

**Table No.8:Duration of stay at NRC(n=622)**

Duration of stay in days	No. Of cases	Weight gain(%)
< 5 days	23	23(100%)
5-10 days	122	122(100%)
> 10 days	477	455(95.3%)
Total	622	600(96.4%)

So far as duration of stay is concerned, out of 622 study subjects, 23(3.6%) stayed for less than 5 days, 122 (19.6%) for 5-10 days, & 477(76.6%) for more than 10 days.

Out of 622 study subjects, 600(96.4%) cases registered weight gain. It is quite interesting to observe that all the subjects who stayed for less than 5 days or 5 to 10 days showed 100% weight gain whereas from among those who stayed for more than 10 days, only 455(95.3%) subjects registered weight gain.

**Table No. 9: Source of referral to NRC(n=622)**

Referred from	No of cases	Percentage
RBSK	215	34.5
MO	202	32.4
ASHA	76	12.2

AWW	67	10.7
Others	62	10.2
Total	622	100

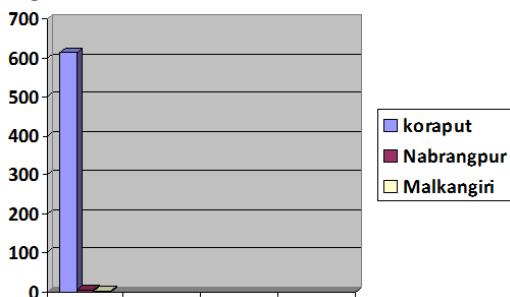
The above table reveals the sources from where the children were referred to NRC. Maximum, that is 215(34.5%) were referred from RBSK followed by 202(32.4%) by MOs, 76(12.2%) by ASHA, 67(10.7%) by AWW & lastly 62(10.2%) from other sources.

**Table No.10: Distribution of study subjects as per district(n=622)**

Name of district	Number of admission	Percentage
Koraput	614	98.8
Nabarangpur	06	0.9
Malkangiri	02	0.3
Total	622	100

614(98.8%) of study subjects were from different block of Koraput district, followed by 6(0.97%) cases were from Nabarangpur district and 2(0.32%) were from Malkangiri district.

**Bar diagram of children referred from different district:**



**DISCUSSION:**

Out of 622 study subjects, 322(52%) were boys and 300(48%) were girls. In another study conducted by Gunjan Taneja et al the study group consisted of 48 boys and 52 girls<sup>2</sup>.

In this study the mean age was found to be 14.93 months. Similar study conducted by Bhatnagar S et al, the mean age for the entire group was 13.68 months<sup>4</sup>.

Exploring the caste wise distribution of study subjects it was revealed that maximum belonging to schedule tribe i.e 402(65.3%) followed by 127(20.4%) belong to general caste and 83(13.3%) belong to schedule caste<sup>7</sup>.

Maximum, that is 215(34.5%) were referred from RBSK followed by 202(32.4%) by MOs, 76(12.2%) by ASHA, 67(10.7%) by AWW & lastly 62(10.2%) from other sources.

From among 622 study subjects, 112(18%) were admitted for cough related problems, followed by loss of appetite(16.6%), fever (12.7%), severe anaemia(7.4%), inability of parents to take care(5.9%) Diarrhoea(4.8%). However 42 children were admitted due to other causes(6.8%).

Out of 622 study subjects, data on z score both at the time of admission & discharge was available in case of 600 study subjects. At the time of admission out of 600 study subjects, 29(4.8%) had Z score between  $\leq -1$  to  $\geq 2$ ; 96(16%) had Z score between  $\leq -2$  to  $\geq 3$ ; 300(50%) had Z score between  $\leq -3$  to  $\geq 4$  and 175(29.2%) had Z score between  $\leq -4$  to  $\geq 5$ .

At the time of discharge the first two group of study subjects did not show any improvement in the Z score. However out of 475 study subjects 235(70.5%) showed an improvement.

The average weight gain during stay at NRC was 15%. Here in our study 96.4% of cases gain weight where as only 3.6% fail to gain weight. Similar study by Golden M et al reveals that the average weight gain during the stay at centres was  $9.25 \pm 5.89$ . A statistically significant difference was obtained between the weight of children at admission and discharge ( $p < 0.001$ )<sup>6</sup>. Hence it may be inferred that the interventions at NRC has an important role to play in improving the weight of the admitted children which will have a definite impact on their subsequent growth & development.

614(98.8%) of study subjects were from different block of Koraput

district, followed by 6(0.97%) cases were from Nabarangpur district and 2(0.32%) were from Malkangiri district.

**CONCLUSION:**

NRC have been playing a prominent role to cope with malnutrition along with anaemia. Appropriate counselling of mothers in NRC about knowledge of nutrition and dietary practices may be provided potentially to prevent malnutrition and anaemia among children.

Community based follow up of the children following discharge from NRC and appropriate feedback to the mothers is very much essential for sustained results.

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