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# Treatment Outcome and Associated Factors of Severe Acute Malnutrition (SAM) among Under Five Children in Selected Nutritional Rehabilitation Centres (NRC) of Odisha

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## ABSTRACT

**Background:** Children with severe acute malnutrition are therapeutically managed in the nutritional rehabilitation centres in terms of diet and required medicines based on their medical complication. There is visible improvement in the treatment outcome indicators at a minimal stay of fifteen days in nutritional rehabilitation centre.

**Objectives:** Study objective was to assess the associated actors of SAM and to identify the treatment outcome among under five children admitted in nutritional rehabilitation centres.

**Methods:** Quantitative approach with descriptive research design was adopted. A total of 62 samples were taken by using non-probability convenience sampling. Data were collected by using interviewer administered questionnaire on demographic characteristics and associated factors of SAM. Health assessment was done by the structured outcome indicators on admission, at one week of treatment and on discharge to identify the treatment outcome.

**Result:** Findings of the study revealed that there were significant association between occupation of mother and exclusive breastfeeding practice at 0.05 level of significance as the p value is < 0.05*. The repeated measure ANOVA analysis shows that there are significant changes occurring in the treatment outcome indicators from admission to discharge as the p value is 0.00* and the selected treatment outcome weight is associated with age of the child at 0.05 level of significance.

**Conclusion:** Hence the treatment outcome of SAM is good in terms of outcome indicators. Lack of exclusive breastfeeding practices due to occupation of mother is the factor associated with SAM.

**Keywords**: Associated factors, NRC, Severe acute malnutrition, Treatment outcome.

## INTRODUCTION

Every child today is the future tomorrow. A healthy childhood excels to a healthy adulthood. Nutrition plays a major role in the utmost growth and development of a child. So, it is essential for each child to get minimum required calorie at daily basis to prevent the consequences of malnutrition. Children under 5 years of age are vulnerable to malnutrition and several types of infectious diseases.[1]

Malnutrition is the major cause of under-five morbidity and mortality and it is

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manifested as under-weight (37%), stunting (41%), wasting (11%). Children with severe acute malnutrition (SAM) are nine times more likely to die than children without malnutrition. Globally SAM cases were reported from lower- and middle-income countries like Nepal and India. [2]

It has been found that, 7.9% of under-five children in India suffer from SAM. It is distinctively seen in socio-economically deprived communities. From various studies, it has been outlined that; age, gender, parental illiteracy, income, occupation and large family size are the associated risk factors of SAM. [3]

Combating child malnutrition is of great public health importance to the future economic development and social well-being of countries. It is essential to know the causes and risk factors of child malnutrition to deal with the problem of child malnutrition adequately. The prevalence of malnutrition in India and various parts of India is relatively well documented, but there is very minimal information for associated factors of severe acute malnutrition (SAM). [4]

While being in clinical posting, often researcher was coming across of many malnourished children were from rural communities of Odisha and according to NFHS report of 2015-16 prevalence of SAM was 6.4 % in Odisha. Researcher also observed that, there was lack of awareness among the parents of under five children regarding requirement of balance diet, malnutrition and factors contributing to SAM. So, researcher took interest to conduct this study to identify the associated factors of SAM and how far the treatment of SAM children while being in NRC is helpful for prognosis and depletion in complication related to SAM.

## OBJECTIVES

1. To assess the associated actors of SAM.
2. To find out the association between selected associated factors of SAM with selected socio demographic variables.
3. To identify the treatment outcome among under five children in selected NRC.
4. To find out the association between treatment outcome with selected sociodemographic variables of under five children in selected NRC.

## METHOD AND MATERIAL

Quantitative approach with descriptive survey design was adopted to assess treatment outcome and associated factors of severe acute malnutrition among under-five children. The present study was conducted in the selected nutritional rehabilitation centers of eastern zone of Odisha. Under-five children aged 6 months to 5 years are fulfilling inclusion and exclusion criteria were included in the study. Total 62 children were selected for the study by using convenience sampling technique. Before conducting study, ethical permission was taken from the Institutional Ethical Committee and administrative permission was taken from the respective CDMOs of the hospitals attached with nutritional rehabilitation center. The tools used to collect data were as follows: (1) Demographic questionnaire, (2) Structured questionnaire for associated factors of SAM, (3) Structured Outcome checklist. The reliability value of structured questionnaire is r = 0.79 and structured outcome checklist is r = 0.99. Data were collected from the under- five SAM children on admission to the nutritional rehabilitation center by using structured demographic questionnaire, structured questionnaire for associated factors of SAM by interview schedule. Initial health assessment was done by structured outcome checklist on admission, after 1 week of treatment and on discharge to assess the treatment outcome of SAM at the end of staying in Nutritional rehabilitation center by using physical assessment technique. The data were analyzed using descriptive and inferential statistics with SPSS version 20.

## RESULT

Demographic characteristics of under- five SAM children shows that highest percentage of SAM children (47%) belongs to the age group 1.1 -3 years. Highest percentage of under- five

SAM children (53%) were female child. In context of level of education, a highest of 43.54% of mothers of under- five SAM children have no formal education and a highest of 37.09% of fathers of under – five SAM children have no formal education. In terms of religion a highest of 90.32% of under- five SAM children belong to Hindu and a highest of 58.06% under- five SAM children belong to joint family. Most of 83.87% under- five SAM children reside in rural area. Demographic characteristics in terms of occupation, fathers of under- five SAM children represents that, a highest of 93.54% of fathers were working in private sector and a highest of 87.09% of mothers of under- five SAM children were house wife. Highest percentage of 43.54% of under- five SAM children come under Rs. 1001- 3000 per capita monthly family income group (Table 1).

The data in table 1 represented that the calculated chi- square value 15.12 which is more than tabulated value of chi square at 0.05 level of significance at df =8 which implies there is association between occupation of mother with Exclusive breast feeding (Table 2).

Repeated measure analysis of treatment outcome of SAM is effective in terms of all the outcome indicator is effective from admission to discharge (the F value is greater than tabulated F value at df =1 and df = 61 and p value is 0.00, which is statistically significant).

Data represented in figure 1 shows that there is a significant weight change for the age group 0-1 year as the admission mean value of 5399.68 to discharge mean value of 6307.72, For the age group 1.1- 3 year the admission mean value of 7295.37 to discharge mean value of 8331.37 and for the age group 3.1 – 5 year the admission mean value of 9643.75 to discharge mean value of 11140.75. Hence treatment outcome of SAM is effective in terms of weight gain.

Data represented in figure 2 shows that there is a significant change in height for the age group 0-1 year as the admission mean value of 64.96 to discharge mean value of 65. 28, For the age group 1.1- 3 year the admission mean value of 77.65 to discharge mean value of 78.03 and for the age group 3.1 – 5 year the admission mean value of 91.75 to discharge

**Table 1:** Chi-square analysis to findout the association between occupation of mother and exclusive breast feeding **N= 62**

| *Factors* | *df* | *chi square* | *p value* |
|---|---|---|---|
| Exclusive breast feeding | 8 | 15.12 | .056 * |

$p \leq 0.05$* is significant

**Table 2: Repeated measure analysis to identify the treatment outcome of SAM N= 62**

| *Indicators* | *F value* | *df* | *P value* |
|---|---|---|---|
| Weight | 785.88 | 1, 61 | 0.00 |
| Height | 2482.77 | 1, 61 | 0.00 |
| MUAC | 3197.99 | 1, 61 | 0.00 |
| Edema | 375.61 | 1, 61 | 0.00 |
| Abdominal girth | 5138.38 | 1, 61 | 0.00 |
| Pulse | 4301.01 | 1, 61 | 0.00 |
| Respiration | 3241.56 | 1, 61 | 0.00 |
| Temperature | 1554.11 | 1, 61 | 0.00 |
| Vomiting | 370.18 | 1, 61 | 0.00 |
| Appetite | 919.43 | 1, 61 | 0.00 |
| Cough | 345.62 | 1, 61 | 0.00 |

mean value of 92.37. Hence treatment outcome of SAM is effective in terms of increase in height.

Data represented in figure 3 show that there was a significant change in MUAC for the age group 0-1 year as the admission mean value of 10.40 to discharge mean value of 11.18, For the age group 1.1- 3 year the admission mean value of 11.45 to discharge mean value of 12.25 and for the age group 3.1 – 5 year the admission mean value of 12.15 to discharge mean value of 12.66. Hence treatment outcome of SAM is effective in terms of increase in MUAC.

Data represented in figure 4 show that there was a significant change in edema for the age group 0-1 year as the admission mean value of 1.16 to discharge mean value of 1.32, For the age group 1.1- 3 year the admission mean value of 1.10 to discharge mean value of 1.27 and for the age group 3.1 – 5 year the admission mean value of 1.12 to discharge mean value of 1.25. Hence treatment outcome of SAM is effective in terms of decrease in edema.

Data represented in figure 5 show that there was a significant change in abdominal girth for the age group 0-1 year as the admission mean value of 13.16to discharge mean value of 13.00, For the age group 1.1-3 year the admission mean value of 14.72 to discharge mean value of 14.27 and for the age group 3.1 – 5 year the admission mean value of 16.87 to discharge mean value of 16.37. Hence, treatment outcome of SAM is effective in terms of decrease in abdominal girth.

The data in the table 3 show that calculated chi square value of out come indicator in terms

N= 62

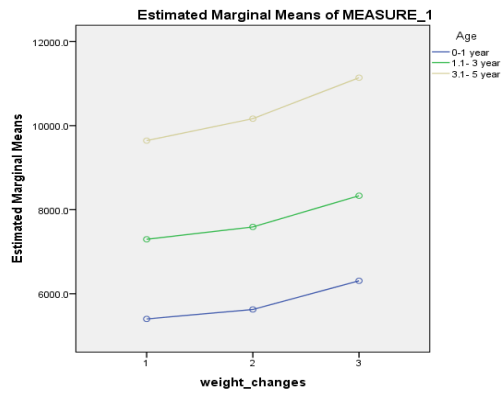


**Fig. 1: Estimated weight gain**

N=62

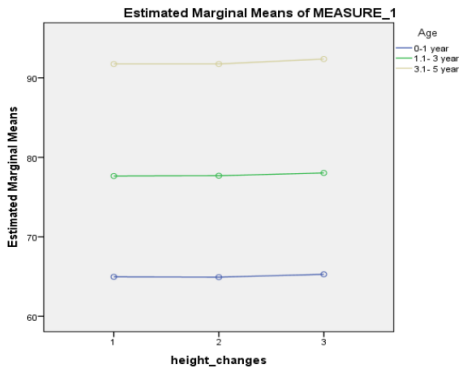


**Fig. 2: Estimated changes in height**

N=62

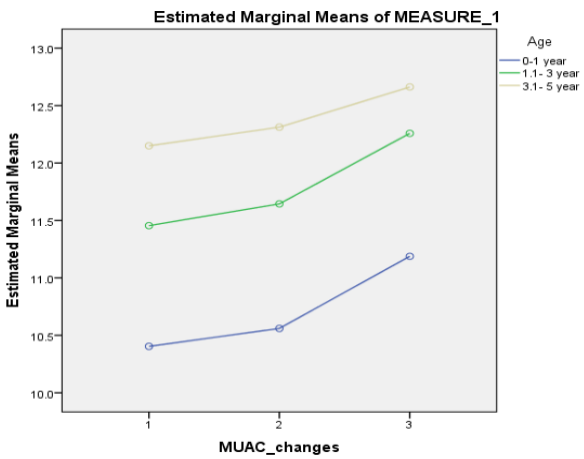


**Fig.3: Estimated changes in MUAC**

N=62

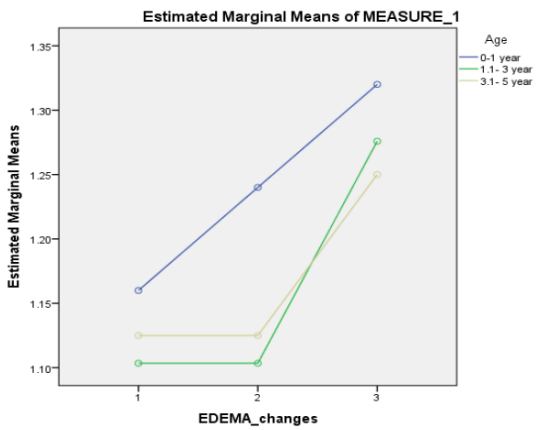


**Fig.4: Estimated changes in edema**

N= 62

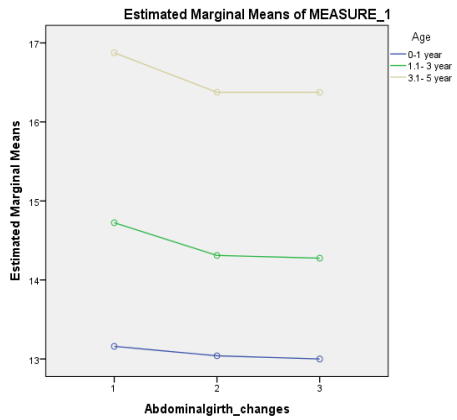


**Fig. 5: Estimated changes in abdominal girth**

**Table 3: Chi- square analysis to find out the association between treatment outcome and selected socio demographic variable age.**

**N=62**

| *Outcome indicators* | *df* | *chi square* | *p value* |
|---|---|---|---|
| weight | 4 | 10.80 | **0.029*** |
| Height | 9 | 15.01 | 0.090 |
| MUAC | 8 | 12.11 | 0.146 |

**p ≤ 0.05* is significant**

of weight and demographic variable age is 10.80 which is more than tabulated value of chi square at 0.05 level of significance at df=4 which implies there is significant association between treatment outcome in terms of weight with demographic variable age.

## DISCUSSION

### Discussion related to other studies on socio demographic variables

In the present study the result show that 83.87% SAM children reside in rural area and remaining 16.12% SAM children reside in urban area. This result is supported by the study of Wafaa Y. Abdel Wahed et.al (2017), where majority of malnutrition children were from rural areas of Fayom district. [5] This result also supported by Sujata Murarkar et.al. (2020), where majority of under nourished children were residing in rural areas of Maharastra. [6]

In the present study the result reveal that 58.06% SAM children belong to joint family and 41.93% belong to nuclear family. This result is supported by the study of Umesh Ghimire et.al. (2020), where the severe acute malnutrition was significantly associated with larger family size (five or more members).[7] This result is also supported by AS Bhadoria et.al. (2017), where majority of SAM children were from joint family.[8]

### Discussion related to associated factors of SAM

Chi square analysis was done to determine the associated factors of severe acute malnutrition. The p value for the chi square analysis of occupation of mother and exclusive breast feeding is < 0.05. Therefore, the occupation of mother and exclusive breastfeeding practices is associated with each other. This result is supported by the study of Umesh Ghimire et.al. (2020) where exclusive breastfeeding practice was significantly associated with SAM. [9]

### Discussion related to treatment outcome of SAM.

In the present study the treatment outcome of SAM is assessed by a set of indicators weight, height, MUAC, Abdominal girth, pulse rate, respiration rate, temperature, vomiting, appetite, cough. Significant changes from admission to discharge is analyzed by repeated measure analysis, where calculated F value is greater than tabulated F value at df=1 and df=61, p =0.00, which is statistically significant. This result is supported by Mahama Saaka et.al (2015), where SAM children were discharged from treatment when there is visible subside in edema, weight for height z score is ≥−2 -score and MUAC is ≥125 mm. [10]

## CONCLUSION

Treatment outcome of severe acute malnutrition in this study is good. It shows that mother occupation is associated with the exclusive breast- feeding practices as unavailability of mother cause lack of practice of exclusive breastfeeding. Treatment outcome of SAM children in terms of changes

in weight, height, MUAC, edema, abdominal girth, vital signs, vomiting, appetite, cough are assessed on admission, at 1 week of treatment and on discharge, which shows statistically significant improvement in each indicator. To improve the treatment outcome for children with SAM, continuous supervision has to be done for health care professionals and initiatives need be taken to create awareness in the community setting regarding functions of NRC in management of SAM children. So that defaulter from the treatment of SAM will be less which will incorporate towards a positive treatment outcome of SAM among under five children.

Ethical clearance – Ethical permission was taken from institutional ethical committee of Siksha O Anusandhan, deemed to be University, Bhubaneswar and Superintendent of SVPPGIP, Cuttack, Superintendent of Capital hospital, Bhubaneswar, Chief District Medical Officer of Athagarh, Bhadrak, Balasore, Baripada (Mayurbhanj)

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**Conflict of interest** – Nil

## REFERENCES

1. Chhetri UD, Sayami S, Mainali P. Nutritional Assessment of Under Five Children Attending Pediatric Clinic in a Tertiary Care Hospital in the Capital of Nepal. Journal of Lumbini Medical College. 2017 Dec 1;5(2):49-53.
2. Collins S, Dent N, Binns P, Bahwere P, Sadler K, Hallam A. Management of severe acute malnutrition in children. The lancet. 2006;368(9551):1992–2000.
3. Sam M David, Ruby A Pricilla, Sherin S Paul, Kuryan George, Anuradha Bose, Jasmin H Prasad, Risk factors for severe acute malnutrition among children aged 6–59 months: A community-based case-control study from Vellore, Southern India, jfmpc.2020 Volume : 9, Issue : 5,Page : 2237-2243
4. UNICEF. Children and the Millennium Development Goals. Progress for children a report card on nutrition. 2007.
5. Abdel Wahed WY, Hassan SK, Eldessouki R. Malnutrition and its associated factors among rural school children in Fayoum governorate, Egypt. Journal of environmental and public health. 2017 Oct 23;2017.
6. Ghimire U, Aryal BK, Gupta AK, Sapkota SS. Severe acute malnutrition and its associated factors among under-five children in two districts of Nepal.
7. Murarkar S, Gothankar J, Doke P, Pore P, Lalwani S, Dhumale G, Quraishi S, Patil R, Waghachavare V, Dhobale R, Rasote K. Prevalence and determinants of undernutrition among under-five children residing in urban slums and rural area, Maharashtra, India: a community-based cross-sectional study. BMC public health. 2020 Dec;20(1):1-9.
8. Bhadoria AS, Kapil U, Bansal R, Pandey RM, Pant B, Mohan A. Prevalence of severe acute malnutrition and associated sociodemographic factors among children aged 6 months–5 years in rural population of Northern India: A population-based survey. Journal of family medicine and primary care. 2017 Apr;6(2):380.
9. Ghimire U, Aryal BK, Gupta AK, Sapkota S. Severe acute malnutrition and its associated factors among children under-five years: a facility-based cross-sectional study. BMC Pediatric 2020 201 [Internet]. 2020 May 26 [cited 2021 Sep 7];20(1):1–9.
10. Saaka M, Osman SM, Amponsem A, Ziem JB, Abdul-Mumin A, Akanbong P, Yirkyio E, Yakubu E, Ervin S. Treatment outcome of severe acute malnutrition cases at the tamale teaching hospital. Journal of nutrition and metabolism.
11. Organization WH. Guideline: updates on the management of severe acute malnutrition in infants and children: World Health Organization; 2013.
12. Save the children international, A life free from hunger: "Tackling Child Malnutrition," Geneva. 2012.
13. UNICEF. Levels and trends in child malnutrition UNICEF-WHO-World Bank Group joint child malnutrition estimates: key findings of the 2015 edition. New York: UNICEF, WHO, World Bank Group; 2015.