ASSESSMENT AND OUTCOME OF CHILDREN WITH SEVERE ACUTE MALNUTRITION A PROSPECTIVE CROSS SECTIONAL STUDY IN A TERTIARY CARE HOSPITAL

Dr.Satish Kumar Srivastav[1]

1. Associate Professor , Department of Peadiatric, BRD Medical College, Gorakhpur

***Email id of the corresponding author: sksrivastav@hotmail.com**

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ABSTRACT:

Background: In India, data from the National Family Health Survey 3 (NFHS-3) reveals a gradual decline in childhood malnutrition over the past fifteen years. Approximately 46% of children under 5 years of age in India are reported to be moderately to severely underweight, 38% are moderately to severely stunted, and around 19% suffer from moderate to severe wasting. **Material & Methods:** The present cross sectional, prospective study was carried out at department of pediatrics, at our tertiary care hospital. In this prospective study we enrolled 100 children aged less than 5 years with severe acute malnutrition diagnosed using WHO protocol were enrolled and their management, complications and outcome were recorded. Strict confidentiality was maintained with patient identity and data and not revealed, at any point of time. **Results:** Out of the total enrolled children 28% were males and 72% were females. Mean age of study participants was 1.3 ± 0.5 years. Out of total, PEM grade II was seen in 11% children, PEM grade III was seen in 49% children, PEM grade IV was seen in 32% children and kwashiorkor was seen in 8% children. Mean duration of hospital stay in present study was 16.5 ± 3.4 days. 42% of children were received vaccines according to national immunization schedule. 38% children shown good weight gain, 54% children shown moderate weight gain and 8% of children reported to shown poor weight gain. There was no mortality reported in present study. **Conclusion:** We concluded from the present study that children aged less than 5 years with severe acute malnutrition managed using WHO protocol and showed good outcome. 38% children shown >10gm/kg/day weight gain, 54% children shown 5-10gm/kg/day weight gain. There was no mortality reported in present study.

Keywords: Severe acute malnutrition, WHO protocol, Facility based treatment.

INTRODUCTION:

In India, data from the National Family Health Survey 3 (NFHS-3) reveals a gradual decline in childhood malnutrition over the past fifteen years. Approximately 46% of children under 5 years of age in India are reported to be moderately to severely underweight, 38% are moderately to severely stunted, and around 19% suffer from moderate to severe wasting **(1).** Shockingly, an estimated 10.6 million children succumb to mortality before reaching the age of five, with seven out of ten of these deaths attributed to causes such as diarrhea, pneumonia, measles, malaria, or malnutrition. Malnutrition not only increases the risk of chronic diseases but also contributes significantly to high child morbidity and mortality rates **(2).**

Moreover, malnutrition has far-reaching consequences, adversely affecting long-term physical development and cognitive skills, subsequently impacting school enrolment and productivity in later life. Severe Acute

Malnutrition (SAM) stands out as a significant and preventable cause of morbidity and mortality among children below 5 years of age in India **(3).** In the early 1990s, the mortality rate associated with SAM was alarmingly high at 49%, largely due to faulty case management, insufficiently trained staff, and the absence of standardized guidelines. To address this, the World Health Organization (WHO) developed guidelines in 1999, titled "The WHO Manual for Management of Severe Malnutrition," aimed at improving inpatient management for physicians and health workers. These guidelines underwent revision in 2002 **(4).**

Recognizing the high mortality rates among malnourished children in India, the Indian Academy of Pediatrics took the initiative to develop guidelines for SAM management in 2006, drawing inspiration from the WHO guidelines (5). Substantial adherence to these guidelines, involving interventions such as special feeds day and night, antibiotics, electrolytes, avoidance of intravenous fluids except in shock, and refraining from diuretics for oedema, has been associated with a consistent halving of mortality rates, decreasing from 40% to 20% (6). The present study was conducted to assess the operational aspects, management and outcome of SAM children using WHO guidelines.

MATERIALS & METHODS

The present cross sectional, prospective study was carried out at department of pediatrics, at our tertiary care hospital. The study duration was of one year from January 2012 to December 2012. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info software version 7.3. In this prospective study we enrolled 100 children aged less than 5 years with severe acute malnutrition diagnosed using WHO protocol were enrolled and their management, complications and outcome were recorded. Institutional Ethics Committee Clearance was obtained before start of study and written and informed consent from their mother and father for the study was obtained from all the patients. Strict confidentiality was maintained with patient identity and data and not revealed, at any point of time.

Children with tuberculous meningitis, static or chronic encephalopathy, congenital defects, chronic medical disease with clinical signs and symptoms were excluded from the present study. All data were entered in the MS office 2010 spread sheet and Epi Info v7. Data analysis was carried out using SPSS v22. Qualitative data was expressed as percentage (%) and Pearson's chi square test was used to find out statistical differences between the study groups and sensitivity, specificity, positive predictive value and negative predictive value were calculated. If the expected cell count was < 5 in more than 20% of the cells then Fisher's exact test was used. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05 and highly significant if p value less than 0.01.

RESULTS

In the present study, we enrolled 100 children aged less than 5 years with severe acute malnutrition diagnosed using WHO protocol and their management, complications and outcome were recorded at our tertiary care hospital during the study duration. Out of the total enrolled children 28% were males and 72% were females. Mean age of study participants was 1.3 ± 0.5 years. Out of total, PEM grade II was seen in 11% children, PEM grade III was seen in 49% children, PEM grade IV was seen in 32% children and kwashiorkor was seen in 8% children. Mean duration of hospital stay in present study was 16.5 ± 3.4 days. 42% of children were received vaccines according to national immunization schedule. (Table 1)

Table 1: Distribution of study participants according to study parameters.

Parameters	No. of patients
Male	28%
Female	72%
Mean age	1.3 ± 0.5 years
Moderate malnutrition (PEM grade II)	11%
Marasmus (PEM grade III)	49%
Marasmus (PEM grade IV)	32%
Kwashiorkor	8%
Mean duration of hospital stay	16.5 ± 3.4 days
Completely immunized child for age	42%

In the present study, out of total enrolled participants, on the basis of weight gain during hospitalization in response to proper nutrition and treatment 38% children shown good weight gain, 54% children shown moderate weight gain and 8% of children reported to shown poor weight gain. There was no mortality reported in present study. (Table 2)

In the present study, out of total enrolled participants, on the basis of complications, the most common complication was dehydration seen in 31% children out of that 20% had some dehydration. Hypoglycemia and hyponatremia was observed in 10% children respectively. Hyperkalemia observed in 8% and hypothermia, hypernatremia and hyperkalemia was observed in 2% children respectively. shock was reported in 1 child. (Table 3)

Table 2: Comparison of wight gain pattern among participants.

Weight gain pattern		No. (%)
Good weight gain	>10gm/kg/day	38%
Moderate weight gain	5-10gm/kg/day	54%
Poor weight gain	< 5 gm/kg/day	8%

Table 3: Distribution of study participants according to complications.

Parameters	No. of patients
Hypoglycemia	10%
Hypothermia	2%
Some dehydration	20%
Severe dehydration	11%
Hyponatremia	10%
Hypernatremia	2%
Hypokalemia	8%
Hyperkalemia	2%
Shock	1%

DISCUSSION

In the present study, we enrolled 100 children aged less than 5 years with severe acute malnutrition diagnosed using WHO protocol and

their management, complications and outcome were recorded at our tertiary care hospital during the study duration. Out of the total enrolled children 28% were males and 72% were females. Mean age of study participants was 1.3 ± 0.5 years. Similar findings were reported in a study conducted by S Bhatnagar et al conducted to assess the burden of children aged less than 5 years with severe acute malnutrition diagnosed using WHO protocol and their management. They reported similar results to present study **(7).**

In the present study, out of total, PEM grade II was seen in 11% children, PEM grade III was seen in 49% children, PEM grade IV was seen in 32% children and kwashiorkor was seen in 8% children. Mean duration of hospital stay in present study was 16.5 ± 3.4 days. 42% of children were received vaccines according to national immunization schedule. Similar findings were reported in a study conducted by Ann Ashworth et al conducted to assess the burden of children aged less than 5 years with severe acute malnutrition diagnosed using WHO protocol and their management. They reported similar results to present study **(8).**

In the present study, out of total enrolled participants, on the basis of weight gain during hospitalization in response to proper nutrition and treatment 38% children shown good weight gain, 54% children shown moderate weight gain and 8% of children reported to shown poor weight gain. There was no mortality reported in present study. Similar findings were reported in a study conducted by M Iqbal et al among the 138 children, they reported 88% children successfully discharged with a mean weight gain of 10.6 g/kg per day (SAM children) and 86% discharged in less than three weeks, and the case-fatality rate in their study was 10.8% **(9).**

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CONCLUSION

We concluded from the present study that children aged less than 5 years with severe acute malnutrition managed using WHO protocol and showed good outcome. 38% children shown >10gm/kg/day weight gain, 54% children shown 5-10gm/kg/day weight gain. There was no mortality reported in present study.

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