

## Original Research Article

# Demographic and clinical profile of children with severe acute malnutrition admitted in a tertiary care hospital in Mahabubnagar, India

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### ABSTRACT

**Background:** All possible efforts are being made by the governments, and other agencies to reduce the burden of these problems of malnutrition and deaths associated with it but still it remains a challenge. Severe acute malnutrition continues to constitute an important risk for mortality and morbidity among the under five children. Objective of the study was to study the profile and risk factors of severe acute malnutrition of the under five children in a tertiary care hospital setting.

**Methods:** Hospital based cross sectional study was carried out among 60 under five children with severe acute malnutrition who were admitted for difference causes in the Pediatric wards of SVS Medical College and Hospital, Mahabubnagar. A detailed history and physical examination were done. Anthropometric indices like weight, length/height, MUAC and weight for height were recorded and analysed using WHO growth charts.

**Results:** Majority of the children with severe acute malnutrition were found in the age group of 1-2 years i.e. 48.3%. Males were more (69%) compared to females (31%) and this can be attributed to the hospital based cross sectional nature of the present study. Only 21.6% of the children were completely immunized for age. Majority of the children were found to have grade IV type of malnutrition i.e. 38.3%. Majority of the children presented with fever in 71.6% of the cases. Majority of the children had gastrointestinal related comorbidity in 54.6% of the cases.

**Conclusions:** Incomplete immunization, low social class, inappropriate feeding practices in young age of <1 year are important risk factors of severe acute malnutrition.

**Keywords:** Children weight, Height, Malnutrition, Profile, Study

### INTRODUCTION

For any country appropriate nutrition of the child is very important. The child can become stunted if the nutrition is not good especially during the first 1000 days of the life of the child. This stunting is not reversible. This is also found to be associated with impairment of the cognitive ability of the child and thus affecting the performance in the work and school.<sup>1</sup>

It has been estimated that around 55 million children of age less than five years suffer from acute malnutrition of severe

type all over the world. It has also been estimated that about 26 million of these 55 million children globally have actually the malnourishment of severe type. Among these children, majority hail from south Asia and sub-Saharan Africa. For country like India, malnutrition among children is an important challenge and public health problem. It has been estimated that about 20% of the Indian children suffer from wasting. Of the total wasted children from all over the world, 33% are from India.<sup>2</sup>

Similarly Of the total stunted children from all over the world, >33% are from India. Low social class is an

important risk factor. National family health survey 4 data reveals that the prevalence of wasting among under five children is 21%, that the prevalence of stunting among under five children is 38.4% and that the prevalence of underweight is 35.8%.<sup>3</sup> Telangana data reveals that the prevalence of wasting among under five children is 18.1%, that the prevalence of stunting among the under five children is 28% and that the prevalence of underweight is 28.4%. these figures show lower prevalence compared to national figures as well as improvement over the previous data, but the problem still remains.<sup>4</sup>

It has been estimated by World Health Organization that the risk of mortality among is nine times more among children with weight for height < -3SD when compared with the risk of mortality for children with weight for height > -1SD. The Indian Academy of Pediatrics adopted guidelines laid down by World Health Organization in the year 2006 for severely malnourished children management who are hospitalized. This has helped to reduce the mortality from 40 to 20% among these children.<sup>5</sup>

All possible efforts are being made by the governments, and other agencies to reduce the burden of these problems of malnutrition and deaths associated with it but still it remains a challenge. Severe acute malnutrition continues to constitute an important risk for mortality. With this background present study was carried out to study the profile and risk factors of severe acute malnutrition of under five children in the study settings.

**METHODS**

Study design was hospital based cross sectional study. Study area was department of Pediatrics, SVS Medical College and Hospital, Mahabubnagar. Study period was from January 2017 to December 2018. Study population was patients with severe acute malnutrition. Sample size was total of 60 under five children with severe acute malnutrition were included in the present study.

**Ethical aspects**

Before the start of the study, Institution Ethics Committee permission was obtained. Child assent i.e. informed consent from parents was taken.

**Inclusion criteria**

- Children between the ages of 6 months up to 5 years who fulfilled the definition of SAM by WHO were included in the study. SAM is defined as the presence of any one of the following features (in the age group 6 months-59 months).
  - Weight for height/length <-3 SD
  - Mid upper arm circumference MUAC <11.5 cm
  - Visible severe wasting
  - Bipedal edema

**Exclusion criteria**

- Children with non-nutritional cause for underweight, chronic disorders like cardiac, renal, CNS or metabolic disorders were excluded from the study.

In all admitted patients, a detailed history and physical examination were done and recorded in the predesigned, pretested, semi structured study questionnaire designed for the present study. Anthropometric indices like weight, length/height, MUAC and weight for height were recorded and analyzed using WHO growth charts. Investigations including complete hemogram, microscopy for malaria, urine routine and culture, CXR, Mantoux test, blood sugar and electrolytes were done in all cases.

**Statistical analysis**

The data was entered in the Microsoft Excel worksheet and analysed using proportions.

**RESULTS**

Table 1 shows distribution of the children as per age. Majority of the children with severe acute malnutrition were found in the age group of 1-2 years i.e. 48.3% followed by 6-12 months of age i.e. 30%. Above two years of age only few children were found to be with severe acute malnutrition. There were eighteen children with severe acute malnutrition in the age group of 6-12 months. There were thirty children with severe acute malnutrition in the age group of 1-2 years. There were five children with severe acute malnutrition in the age group of 2-3 years. There were three children with severe acute malnutrition in the age group of 3-4 years. There were five children with severe acute malnutrition in the age group of 4-5 years.

**Table 1: Distribution of the children as per age.**

Age	Number	Percentage
6-12 months	18	30
1-2 years	29	48.3
2-3 years	5	8.3
3-4 years	3	5
4-5 years	5	8.3
Total	60	100

Table 2 shows distribution of under five children as per sex. Males were more (69%) compared to females (31%). Thus, there were forty-one males which constituted 69% of the study subjects who were with severe acute malnutrition. There were nineteen females which constituted 31% of the study subjects who were with severe acute malnutrition. This does not mean that severe acute malnutrition is more common in males than the females as this is a hospital-based study. Hence these figure does not reflect true picture of the community. In

fact, it shows that female children are neglected in the community and they are not brought to the hospital for treatment. Males are given prompt attention and they are brought to the hospital and hence there is a greater number of males reflected here.

**Table 2: Distribution of under five children as per sex.**

Sex	Number	%
Male	41	69
Female	19	31
Total	60	100

Table 3 shows distribution of the study subjects as per the immunization status. Only 21.6% of the children were completely immunized for age. Majority of the children were not immunized at all i.e. 40% of the cases. Thus, thirteen children with severe acute malnutrition were found to be completely immunized which constituted only 21.6% of the study subjects which is the least percentage compared to partially immunized or not immunized.

Twenty-three children with severe acute malnutrition were found to be partially immunized which constituted 38% of the study subjects. Twenty-four children with severe acute malnutrition were found to be partially immunized which constituted 40% of the study subjects.

**Table 3: Distribution of the study subjects as per the immunization status.**

Immunization status	Number	%
Completely immunized for age	13	21.6
Partially immunized	23	38
Not immunized	24	40
Total	60	100

Table 4 shows distribution of the study subjects as per the degree of malnutrition. Majority of the children were found to have grade IV type of malnutrition i.e. 38.3%. Five children were found to have grade I malnutrition which constituted 8.3% of the study subjects. Ten children were found to have grade II malnutrition which constituted 16.6% of the study subjects. Twenty-two children were found to have grade III malnutrition which constituted 36.6% of the study subjects. Twenty-three children were found to have grade IV malnutrition which constituted 38.3% of the study subjects.

Table 5 shows distribution of the children as per the clinical features. Majority of the children presented with fever in 71.6% of the cases. Thirty-one children with severe acute malnutrition presented to the hospital with loose motions. Twenty-one children with severe acute malnutrition presented to the hospital with cough. Twenty-seven children with severe acute malnutrition presented to the hospital with vomiting. Eighteen children with severe acute malnutrition presented to the hospital

with edema. Four children with severe acute malnutrition presented to the hospital with rash. Two children with severe acute malnutrition presented to the hospital with ear discharge. One child with severe acute malnutrition presented to the hospital with seizure.

**Table 4: Distribution of the study subjects as per the degree of malnutrition.**

Degree of malnutrition	Number	%
Grade I	5	8.3
Grade II	10	16.6
Grade III	22	36.6
Grade IV	23	38.3
Total	60	100

**Table 5: Distribution of the children as per the clinical features.**

Clinical features	Number	%
Fever	43	71.6
Loose motions	31	51.6
Cough	29	48.3
Vomiting	27	45
Edema	18	30
Rash	4	6.7
Ear discharge	2	3.3
Seizure	1	1.6

Table 6 shows distribution of the study subjects with comorbidity. Majority of the children had gastrointestinal related comorbidity in 54.6% of the cases. Thirty-one children had respiratory related morbidity in 51.6% of the cases. Six children had septicemia i.e. 10% of the cases. Four children had urinary tract related comorbidity in 6.7% of the cases. Four cases had tuberculosis i.e. 6.7% of the cases. Two children had measles i.e. 3.3% of the cases. One child had HIV i.e. 1.7%.

**Table 6: Distribution of the study subjects with comorbidity.**

Comorbidity	Number	%
Gastrointestinal related	33	54.6
Respiratory	31	51.6
Septicaemia	6	10
Urinary tract related	4	6.7
Tuberculosis	4	6.7
Measles	2	3.3
HIV	1	1.7

**DISCUSSION**

Authors found an incidence of 3.3% of severe acute malnutrition in the present study which is lower compared to the NFHS figure of 6.4%. This difference is due to the fact that present study was hospital-based

study and hence not representative of the community problem.<sup>3</sup>

Majority of the children in the present study (90%) were below the age two years with mean of 14.2 months. Similar findings were reported by a study carried out by Sharma LM et al, and Mamidi RS et al, (71% of children below 24 months of age).<sup>6,7</sup>

Authors observed that males were more than females which may be due to the fact that males are given more preference for hospital-based treatment than females. Similar findings were reported by Ashraf S et al.<sup>8</sup> But Joshi S et al, in their study observed that females were significantly more affected than the males in terms of malnutrition.<sup>9</sup> 71% of the children in the present study were from rural areas. Similar findings were reported by Ashraf S et al.<sup>8</sup> 96% of the children in the present study belonged to lower social class as per Kuppuswamy scale used for the classification of the social classes. Similar findings that malnutrition is common among children who belonged to lower social classes were reported by Ashraf S et al, and Soni AL et al.<sup>8,10</sup> Thus low social class is an important risk factor for malnutrition.

Authors noted that the maternal education is an important risk factor for the malnutrition in their children. Similar findings were reported by Joshi S et al, and Sharma LM et al.<sup>6,9</sup>

Authors found that majority of the children were not immunized followed by partially immunized. Only few children were completely immunized for their age. Similar findings were reported by Sharma LM et al, and Shah PM et al.<sup>6,11</sup> Authors noticed that diarrhea and fever are the most common presenting features of the children to the hospital. Similar findings were reported by Ashraf S et al, Bernal C et al.<sup>8,12</sup>

Proper feeding practices including breast feeding practices were very poor as per the results of the present study. Jahan K et al, in their study also reported similar findings and stated that the improper breast feeding was associated with increased prevalence of malnutrition among the children.<sup>13</sup> Similarly, Hossain MI et al, in their study recommended appropriate breast-feeding practices with timely weaning is required to support the proper nutritional growth among the children.<sup>14</sup>

## CONCLUSION

Incomplete immunization, low social class, inappropriate feeding practices in young age of <1 year are important risk factors of severe acute malnutrition. Incomplete immunization leads to increased risk of infections and increased risk of infections leads to the increased risk of malnutrition which is a significant risk factors again for infections. People from low social class do not afford good quality nutrition, and hence their children tend to be malnourished. Inappropriate feeding practices also

contribute to the increased risk of severe acute malnutrition.

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