

Clinical Profile and Outcomes of Severe Acute Malnutrition (SAM) in Under-Five Children Admitted to a Tertiary Care Hospital

Anchala Kumari¹, Navin Kumar², Ashok Kumar³

¹Senior Resident, Department of Paediatrics, Darbhanga Medical College & Hospital, Darbhanga, Bihar, India

²Senior Resident, Department of Paediatrics, Darbhanga Medical College & Hospital, Darbhanga, Bihar, India

³HOD, Department of Paediatrics, Darbhanga Medical College & Hospital, Darbhanga, Bihar, India

Received: 24-12-2025 / Revised: 23-01-2026 / Accepted: 25-02-2026

Corresponding Author: Navin Kumar

Conflict of interest: Nil

Abstract:

Background: Among children under five, severe acute malnutrition (SAM) is a leading cause of morbidity and mortality, especially in underdeveloped nations. Infections and other problems can affect clinical outcomes in children with SAM.

Objective: To evaluate the clinical profile, associated complications, and outcomes of under-five children diagnosed with severe acute malnutrition admitted to a tertiary care hospital.

Methods: An observational study was carried out on 120 children under five who were admitted to a tertiary care hospital with SAM. Hospital records were used to gather information on age, gender, clinical problems, and treatment results. Descriptive statistics and chi-square tests were used in the statistical analysis to ascertain the relationship between clinical problems and outcomes.

Results: Most of the kids were between the ages of six and twenty-four months. Sepsis (10%), pneumonia (30%), and diarrhea (35%) were the most frequent consequences. After therapy, the majority of kids healed, although a smaller percentage needed to be referred or died. Clinical outcomes and complications were statistically significantly correlated ($p = 0.0001$).

Conclusion: For children under five, severe acute malnutrition continues to be a major health concern. Treatment outcomes are greatly impacted by common infectious complications like pneumonia and diarrhea. Improving survival and recovery rates requires early discovery, prompt intervention, and bolstering nutritional programs.

Keywords: Severe Acute Malnutrition, Under-Five Children, Tertiary Care Hospital, Pediatric Nutrition, Clinical Outcomes.

DOI: 10.25258/ijcpr.18.2.353

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Severe acute malnutrition (SAM) is a primary contributor to illness and mortality in children under five, especially in low- and middle-income nations. It constitutes a severe public health issue and substantially contributes to child mortality, either directly or by enhancing vulnerability to life-threatening illnesses [1]. Global health estimates indicate that malnutrition accounts for a significant percentage of childhood mortality and is linked to enduring developmental deficits. Severe Acute Malnutrition (SAM) is clinically defined by significant wasting (low weight-for-height), bilateral nutritional edema, or a substantially diminished mid-upper arm circumference [2].

Children with severe acute malnutrition (SAM) exhibit impaired immune function, rendering them particularly susceptible to illnesses including

pneumonia, diarrhea, sepsis, and tuberculosis [3]. These diseases not only elevate the risk of mortality but also deteriorate the nutritional state of affected children, establishing a detrimental cycle of illness and malnutrition. The simultaneous presence of illness and malnutrition greatly complicates therapeutic care and negatively impacts results [4].

The significant prevalence of malnutrition in impoverished and developing nations is ascribed to various interconnected variables. Poverty, food instability, substandard newborn and young child feeding practices, recurrent infections, inadequate sanitation, and restricted access to healthcare services all contribute to the onset and persistence of severe acute malnutrition (SAM). Besides its immediate health repercussions, malnutrition has significant long-term impacts, such as hindered

physical growth, delayed cognitive development, subpar academic achievement, and diminished economic production in adulthood [5].

Hospital-based research is crucial for comprehending the clinical characteristics, related problems, and outcomes of children hospitalized with severe acute malnutrition (SAM). These investigations facilitate the identification of prevalent co-morbidities, the assessment of therapy responses, and the evaluation of management plan efficacy. This information is essential for enhancing clinical care and decreasing fatality rates. This study is to evaluate the clinical features, complications, and outcomes of children hospitalized with severe acute malnutrition in a tertiary care facility, aiming to refine management options and enhance survival rates among affected children [6].

Methods

Study Design: An observational hospital-based study was conducted.

Study Population: The study included 120 children

aged below five years admitted with severe acute malnutrition to a tertiary care hospital.

Inclusion Criteria

- Children aged below 5 years. (between 6 month to 59 complete month)
- Diagnosed with severe acute malnutrition according to WHO criteria
- Admitted for inpatient treatment.

Exclusion Criteria

- Children with chronic systemic diseases
- Incomplete medical records

Statistical Analysis

In order to analyze the data, descriptive statistics were used. Percentages and frequencies were computed. The relationship between clinical complications and treatment results was examined using the Chi-square test. Statistical significance was defined as a p-value of less than 0.05.

Results

Table 1: Demographic Distribution of Study Participants (n = 120)

Gender	Age Group	Number of Children
Female	6–12 months	22
Female	13–24 months	18
Female	25–59 months	11
Male	6–12 months	23
Male	13–24 months	31
Male	25–59 months	15

Most children admitted with SAM were between 6 and 24 months of age.

Table 2: Association Between Clinical Complications and Outcomes

Complication	Recovered	Referred	Death
Diarrhea	33	7	2
Pneumonia	28	6	2
Sepsis	4	4	4
No major complication	30	0	0

p-value = 0.0001

This indicates a statistically significant association between complications and clinical outcomes.

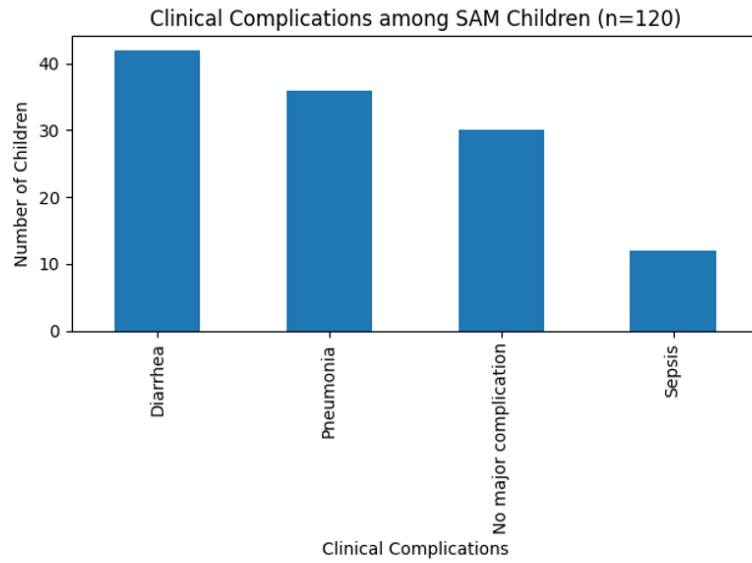


Figure 1: Distribution of Clinical Complications

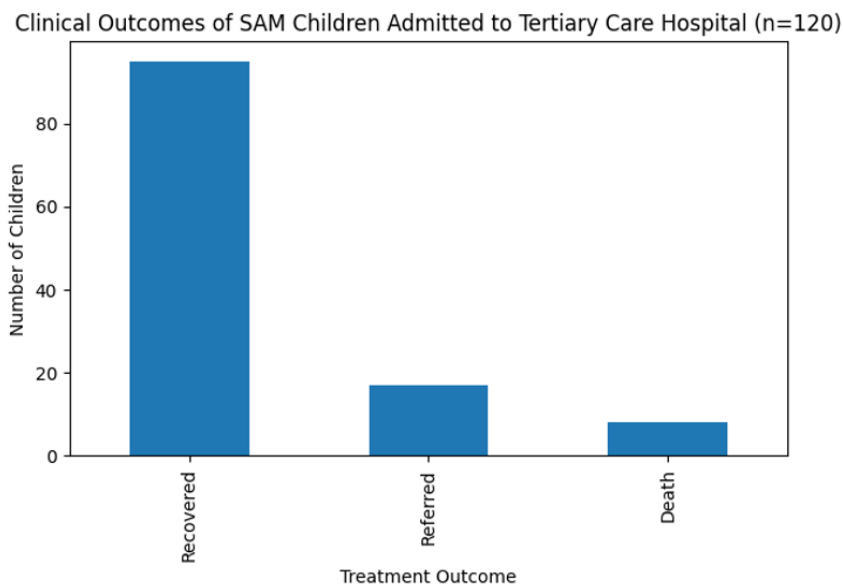


Figure 2: Treatment Outcomes

Table 3: Age Group Vs Treatment Outcome

Age Group (months)	Recovered	Death	Defaulted
6-12	27	14	4
13-24	36	12	7
25-59	15	5	0

p-value = 0.418

Table 4: Complications vs Treatment Outcome

Complication	Recovered	Death	Defaulted
Yes	50	21	7
No	28	10	4

p-value = 0.933

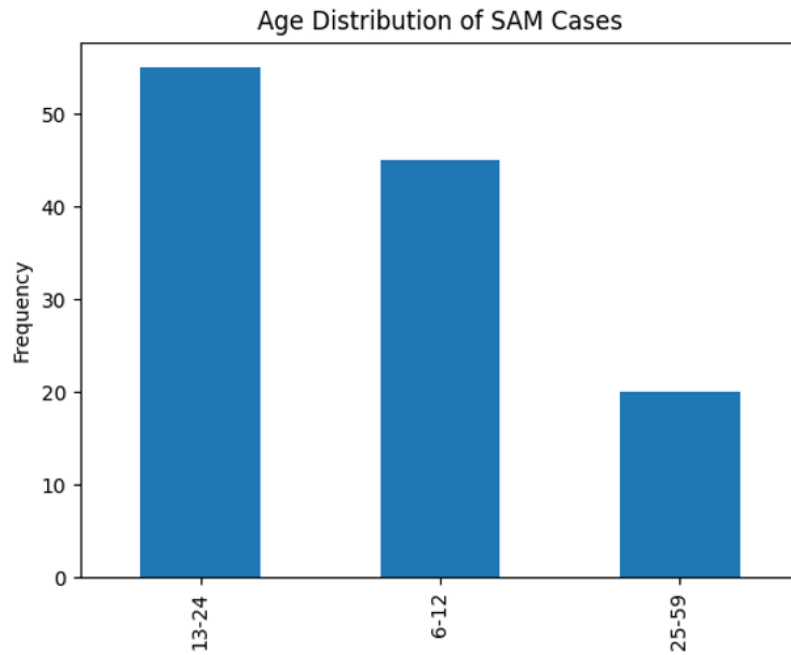


Figure 3: Age distribution of SAM cases

Discussion

This study evaluated the clinical features and outcomes of children under five years old admitted with severe acute malnutrition (SAM) in a tertiary care facility. The results offer significant insights into the influence of age, infections, complications, and treatment outcomes, which are essential for enhancing clinical care and decreasing mortality rates.

The majority of children afflicted by SAM in this study were aged between 6 and 24 months. This age range signifies a pivotal transition from exclusive nursing to supplemental feeding, which may not consistently fulfill the child's nutritional needs. Substandard feeding habits, along with heightened susceptibility to illnesses, render this population especially vulnerable [7]. Despite statistical research revealing no significant correlation between age and treatment outcomes ($p = 0.418$), a greater incidence of fatalities was noted among younger children, particularly those aged 6–12 months. This discovery corresponds with earlier research that designates infancy and early childhood as critical periods of elevated risk due to underdeveloped immunity and recurrent illnesses [8].

Children with severe acute malnutrition (SAM) had a heightened vulnerability to infectious illnesses, with pneumonia and diarrhea as the predominant comorbidities. These infections exacerbate nutritional status by diminishing appetite, hindering nutrient absorption, and elevating metabolic needs (9). Despite being less prevalent, sepsis was linked to more severe clinical manifestations and increased

mortality, underscoring its significance as a major consequence. The study results align with previous research demonstrating that infections significantly contribute to morbidity and mortality in children with severe acute malnutrition (SAM) [10].

The occurrence of problems was assessed in relation to treatment outcomes. Although statistical analysis revealed no significant correlation between complications and outcomes ($p = 0.933$), children with problems exhibited a greater incidence of mortality and inferior recovery relative to those without issues [11]. Conversely, certain studies have indicated a statistically significant correlation between complications and outcomes, implying that severe infections elevate the risk of referral and mortality. The insignificance shown in the current study may stem from the restricted sample size or efficient hospital-based care [12].

The overall recovery rate in this trial was promising, with the majority of children demonstrating improvement after receiving adequate treatment, which included nutritional rehabilitation and care of concurrent illnesses. The reported fatality rate continues to be a worry, indicating the severity of SAM and the necessity for prompt management. Despite being modest, default rates may signify socioeconomic constraints, caregiver awareness deficiencies, or complications in extended hospital care [13].

These findings underscore the significance of early detection, timely intervention for infections, and compliance with established management regimens. Enhancing community-based screening initiatives,

advocating for breastfeeding and suitable complementary feeding, and guaranteeing prompt medical attention are vital methods to mitigate the impact of severe acute malnutrition (SAM). In conclusion, SAM remains a significant factor in under-five morbidity and mortality. Age and related infections are critical determinants of outcomes, necessitating thorough early intervention to enhance survival and long-term health.

Conclusion

Among children under five who are admitted to tertiary care facilities, severe acute malnutrition continues to be a serious health concern. Most affected children are younger than two years old, and comorbidities including pneumonia and diarrhea are frequently present. Clinical problems and treatment results were shown to be significantly correlated in the study. Compared to children without difficulties, those with serious infections fared worst. Improving recovery and lowering mortality among children with severe acute malnutrition requires early detection, efficient infection control, and bolstering community-based nutrition initiatives.

References

1. Chama GC, Siame II, Kapoma C, Hamooya BM. Severe acute malnutrition among children under the age of 5 years. *PLoS One* [Internet]. 2025;19(8):1–12. Available from: <http://dx.doi.org/10.1371/journal.pone.0309122>
2. Rakesh Amroliwala, Ashutosh Singh Rathore, Tejal Odedara Poja Soni. A Study of Clinical Profile & Outcome in Children with Sam Amroliwala Dr. Ashutosh Singh. *INDIAN J Appl Res*. 2018;8(1):1–3.
3. Tiwari AK, Jaiswal AK, Saurabh K. A study of clinical profile and outcome of SAM children admitted in nutritional rehabilitation centre, Patna Medical College and Hospital. *Int J Contemp Pediatr*. 2018;5(4):1497–504.
4. Ahmad K, Faridi MMA, Srivastava G. Epidemiological characteristics, clinical profile and nutritional status of hospitalized under five children. *Int J Community Med Public Heal*. 2020;7(8):3111–8.
5. Dhanwadkar SS, Bhosgi R, Sarvi JB, Rayee AG. Socioeconomic Determinants Influencing Tuberculosis Prevalence Among Severe Acute Malnutrition Children in Pediatric Ward, Gims, Kalaburagi. *Int J Med Pharm Res*. 2025; 6(6):439–45.
6. Abdullah M, Amad A, Al-eryani SY, Algendari K. Rate and time of recovery and its predictors among children aged 6 – 59 months admitted to inpatient therapeutic feeding centers for the treatment of severe acute malnutrition in Sana'a, Yemen: a prospective cohort study. *BMC Pediatr*. 2025;25(811):1–13.
7. Baruah MN, Gogoi B, Biswanath P. Clinical Profile of Children with Severe acute Malnutrition Admitted to the Nutritional Rehabilitation Centre of a Tertiary Care Teaching Hospital of Assam. *jmscr*. 2018;06(03):944–8.
8. Andleeb M, Shagufta Y, Hussain TS. Clinical Profile and Outcome of Children with Severe Acute Malnutrition. *J Contemp Clin Pract*. 2024;11(10):691–7.
9. Aliyu I, Ibrahim HU, Idris U, Michael GC, Ibrahim UA, Mohammed A, et al. The clinical profile and outcome of children with acute malnutrition in a tertiary health center in North - West Nigeria: A 1 - year retrospective review. *J Clin Sci*. 2020; 17:120–6.
10. Kumar S, Kumar V, Sinha KK, Priyadarshi A. Study of Prevalence of Complications in Severe Acute Malnutrition. *Res J Med Sci*. 2023;17(12):10–5.
11. Mekonnen GB, Wondie WT, Legesse BT. Recovery rate of sever acute malnutrition and its predictors among children admitted to therapeutic feeding unit in. *Sci Rep*. 2025;15(14767):1–12.
12. Adere TS, Tarekegn TK, Hailu KT, Betemariam Y, Aberha HM, Abriha FN, et al. Treatment Outcome and Associated Factors Among Severely Malnourished Under-five Children Admitted to Zewditu Hospital October, 2023. *Int J Nutr Res Heal*. 2024;3(1):1–12.
13. Chimanuka C, Zalinga CC, Neven A, Amani G, Mwene-batu P, Wells J, et al. Nutritional status of children aged 6 – 59 mo born to mothers treated for severe acute malnutrition in childhood: an observational Lwiro cohort study in Democratic Republic of Congo. *Am J Clin Nutr* [Internet]. 2025;122(6):1679–88. Available from: <https://doi.org/10.1016/j.ajcnut.2025.09.040>