

Original Research Article

Clinical profile, risk factors and impact of maternal health on the outcome of infants under 6 months with severe acute malnutrition: a prospective observational study

Purvi Makwana, Divya Dave*

Department of Pediatrics, SSG Hospital, Vadodara, Gujarat, India

Received: 08 February 2026

Revised: 10 March 2026

Accepted: 20 April 2026

***Correspondence:**

Dr. Divya Dave,

E-mail: drdivya99@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Malnutrition in infants under 6 months (U6M) remains an under-recognized but serious public health challenge, especially in low- and middle-income countries like India. Many of these infants are born with low birth weight or face feeding problems in early infancy due to various issues. Maternal health and wellbeing also play major role in growth and development of infants.

Methods: This is a prospective observational study conducted over a period of 12 months (March 2024 to March 2025) at SSG Hospital, Baroda. Infants meeting World Health Organization (WHO) criteria for SAM were enrolled with parental consent. Data was collected through detailed clinical assessments, anthropometry, breastfeeding evaluation, and maternal health screening using BMI, Hb, and PHQ-2score.

Results: From total enrolled 92 infants our study revealed a higher prevalence of SAM among males and infants aged 2–4 months and rural population. Important risk factors noted were low birth weight (57.6%), prematurity (11.95%), congenital malformation (18.47%), suboptimal feeding practices and maternal undernutrition or mental health concerns. Only 50% were on exclusive breastmilk while rest were on top milk, formula feeding or mixed feed which increased the risk of malnutrition. Majority mothers of these infants had low body mass index (BMI) (19.10%) and low Hb (85.40%) affecting their nutritional status. 50% infants were discharged while 30.43% were expired due to one or more complications.

Conclusion: SAM in U6M infants is multifactorial, with significant contributions from maternal health and suboptimal feeding practices. Early identification, integrated infant-maternal care, breastfeeding support, and maternal nutritional interventions are essential for improving outcomes.

Keywords: Severe acute malnutrition, Under 6 months infants, Observational study, Risk factors, Maternal health

INTRODUCTION

Severe acute malnutrition (SAM) is a major global public health problem responsible for over one million young child deaths each year. Most focus to date has been on the management of SAM in children aged from 6 to <60 months. Growing evidence suggests that it is also a problem among infants aged <6 months.¹ Worldwide, some 8.5 million infants under 6 months of age are malnourished, 4.7 million moderately wasted and 3.8

million severely wasted while the prevalence in India is estimated at 14.8%.²

World Health Organization (WHO) defines Severe acute malnutrition in infants who are 0–6 months of age is defined as weight-for-length ≤ 3 Z-scores of the WHO Child Growth Standards median, or presence of bilateral pitting oedema.³ Objective of this study was to identify infants U6M with SAM, assessment of risk factors, their clinical profiles, evaluate maternal nutritional and

psychosocial health, and determine treatment outcomes following WHO guidelines.

METHODS

The present study aims to identify infants under 6 months with SAM, assess their clinical profile, risk factors, evaluation of maternal nutrition and health influences and analyze outcomes after treatment as per WHO.

This prospective observational study was conducted over a period of 12 months (March 2024 to March 2025) in the Department of Pediatrics, SSG Hospital, Baroda. All infants under 6 months of age satisfying the WHO criteria for SAM and admitted to the Ward, NRC, PICU were enrolled, according to inclusion criteria and parental or caregiver consent. Infants were excluded if the primary caregivers were unwilling for admission, refused consent, or if the infant's length was less than 45 cm, as the WHO weight-for-length charts begin at this length. Ethical clearance was obtained from the Institutional Ethics Committee for Human Research (IECHR) of Medical College Baroda. Data was collected in a structured proforma, and included demographic details, birth history and prior NICU stay, as well as details of prior visits to healthcare facilities. Infants were assessed for danger signs, complications, and nutritional risk factors, and anthropometric measurements were used to assess growth. Feeding methods, breastfeeding practice, maternal nutritional status and maternal health including mental health were assessed and management done according to WHO/MOHFW guidelines.

The data were entered by using MS Office Excel in a password protected file and data were checked for accuracy and consistency. Data analysis was done by using Med CalC software 20.018.

RESULTS

In our study of 92 infants under 6 months with severe acute malnutrition suggestive of slightly higher prevalence of SAM in male child (60.87%) and in rural areas (63%) (Table 1). Infants between 2 to 4 months were shows slightly higher prevalence 39.13% (36 out of 92 infants) (Table 2).

In contrary of other studies, no significant association seen in history of NICU stay and malnutrition in our study as 50% had history of NICU stay while other 50% had no such history. Most NICU admission are only for 1 to 7 days (60.86%) while only 5% had longer stay of more than 3 weeks. Most common indication for NICU stay was low birth weight represents 34 infants from 46 making up to 73.91% and another was prematurity accounting for 23.91%. 7 (15.21%) from our study had a history of surgical intervention during the neonatal period mostly for gastrointestinal malformations and complications. 13% infant had major congenital malformations like cleft lip and palate, imperforate anus and many more. These all are

well established risk factors for development of malnutrition in early infancy as our study and other earlier studies shows (Table 3).

Table 1: Gender wise distribution.

Gender	Numbers (%)
Male	56 (60.87)
Female	36 (39.13)
Total	92 (100)

Table 2: Age wise distribution.

Age group (months)	Numbers (%)
Up to 2	30 (32.61)
2-4	36 (39.13)
4-6	26 (28.26)
Total	92 (100.00)

Table 3: Indications of NICU stay in infants with NICU stay.

Indications for NICU admission	Numbers	%
Prematurity	11	23.91
LBW	34	73.91
Perinatal asphyxia	3	6.52
Neonatal jaundice	3	6.52
MAS	8	17.39
Major congenital malformation	6	13.04
HMD	2	4.34
Septicaemia	7	15.21
NEC	2	4.34
Surgical intervention	7	15.21
AKI	1	2.17
Other (infant of diabetic mother, HIV positive mother)	3	6.52

In our study half of the infants were on exclusive breastmilk while other half infants were using other methods for feeding like formula feed, top milk and mixed type of feeding. This data suggests that even infants on exclusive breastmilk can develop malnutrition may be due to suboptimal feeding practices or some infant related complication like recurrent illness or congenital malformations.

Exclusive breastfeeding (EBF) was the most common feeding method among the studied infants, accounting for 47.82%. While other 50% of the infants were not exclusively breastfed, indicating significant deviations from optimal infant feeding practices. Suboptimal feeding practices noted in 83 (90.2%) infants from total 92 enrolled infants.

Most common one is use of other feed then breastmilk like top milk and formula and another were insufficient number

of feedings in most breastfeed infants and improper breastfeeding technique (Tables 4 and 5).

Table 4: Feeding practices prevalent in study population.

Feeding practice	Number and percentage out of 92 infants
Exclusive breastmilk	46 (50)
Exclusive FF	11 (11.96)
Exclusive top milk	4 (4.35)
Mixed feeding	31 (33.70)
Total	92 (100)

Table 5: Suboptimal feeding practices observed in study population.

Type of suboptimal feeding practice	Numbers (%)
Improper position or attachment	11 (13.25)
Insufficient no. of feeding	26 (31.33)
Fed with feed other than breast milk	46 (55.42)
Pacifiers use	00
Total	83 (100)

10% infants had some associated clinical conditions and some possible genetic or environmental factors which led to malnutrition even after use of optimal feeding practice.

Low birth weight is most important cause of severe acute malnutrition under 6 months infants as shown in our study and other studies also. A significant proportion (57.6%) had a birth weight of less than 2.5 kg, indicating a high prevalence of low birth weight (LBW) among this group (Table 6).

Around 78% infants presented with one or more complication of SAM in our study at the time of admission with major complications being were pneumonia (43.06%), anemia (33.33%) and diarrhea (19.44%).

Out of 92 infants under 6 months admitted with SAM 46 (50%) discharged after treatment, 28 (30.43%) expired, 13 (14.13%) took discharged against medical advice (DAMA) while 4 (4.35%) absconded from the facility and 1 (1.09%) was referred to a higher center for specialized care. From 28 expired infants all were had one or more complications leading to fatal outcome. Out of total 46 discharged infants exclusive breastfeeding rate increased from 24 infants on admission to 36 on discharged. Infants taking formula feed reduced from 7 to 2 on discharged. Number of infants taking mixed feed also reduced from 14 to 8 on discharged. Suggesting the success of SST in establishing lactation in most mothers and effect of maternal education and counselling on breastfeeding. In our study of the 92 infants 89 were accompanied by their mothers and out of the 91 mothers (excluding one

deceased), 12 (13.2%) were younger than 20 years of age, while the remaining 79 (86.8%) were older than 20years. So, in our study no significant association seen between maternal age and malnutrition in infants.

Table 6: Probable etiological factors for development of SAM.

Probable etiological factor for SAM in our study	Out of 92 enrolled infants
Low birth weight	53 (57.6)
Prematurity	11 (11.95)
Pneumonia	31 (33.69)
Anemia	24 (26.08)
Diarrhea	14 (15.21)
Meningitis	3 (3.26)
Septicaemia	9 (9.78)
Congenital heart disease	3 (3.26)
Congenital malformation and other surgical causes	17 (18.47)
Other (convulsion, microcephaly, global developmental delay, cholestasis, HIV positive mother)	6 (6.52)

A notable proportion of mothers (19.10%) were underweight, with a BMI between 16 and 18.5, while no mothers were found to have a BMI below 16, Overweight and pre-obese categories (BMI 23–24.9 and >25) accounted for 16.85% and 11.24% of the mothers, respectively. 2.25% mothers had severe anemia and the majority 74 mothers (83.15%) had moderate anemia in our study. In our study the PHQ score used for assessment of mental health of mothers appeared to have limited utility as may be due to lack of awareness among many mothers toward their mental health or they were hesitant to open up about their mental health issues. It may also possible that good mental health might be due to strong family support system in Indian culture. Out of the 90 mothers (excluded 1 expired, 1 not available) the majority (81.11%) were classified as "at some risk". Only 6.67% of mothers were found to be "not at risk" and 12.22% "At severe risk", of the total. This indicates that a significant proportion of mothers themselves were at nutritional risk and that may probably lead to development of malnutrition in their infants and indicates that nutritional status of infants under 6 months is dependent on maternal nutrition and health.

DISCUSSION

The study showed a male predominance in infants with SAM (60.87%). This aligns with other studies suggesting male infants are more affected, possibly due to biological vulnerability and/or gender-based health-seeking differences. For instances, one study done in MP, India by Sharma et al also suggestive of slightly higher prevalence of SAM in male child in their study, there were 69.8% of male and 30.15% of female infants with SAM.⁴ A study

done in teaching hospital of Borgou, Alibori also shows predominance of male infants – 64.1%.⁵

In our study majority (39.13%) of infants were aged between 2–4 months, a period when exclusive breastfeeding should ideally provide all nutritional needs as seen in study in Borgou/Alibori in Northern Benin shows infants in the 3–5 months age group were predominant (48.7%).⁵

There is higher representation of the rural population (63%) in the study. As literature shows reason for this difference is rural areas tend to have: limited access to health care and nutrition services, higher rates of poverty and food insecurity with lower levels of maternal education and poor water, sanitation, and hygiene (WASH) condition.⁶ Our study indicates equal distribution between the two groups with respect to NICU exposure. Many other studies like Singh et al in 2007 and Christian et al in 2013 suggest that NICU survivors are at increased risk of undernutrition due to both biological vulnerabilities, suboptimal feeding practices and due to prematurity, low birth weight, neonatal sepsis—conditions that increase the risk of growth faltering and feeding difficulties.⁸

The risk of undernutrition associated with being born small or too soon was comparable across populations and regions, despite the large variation in the prevalence of both small for gestational age (SGA) and preterm birth, largely reflecting the common underlying causes in these settings of either foetal growth restriction or preterm birth.⁸

A study analyzing data from the 2015–16 Malawi Demographic and Health Survey found that children with LBW had significantly higher odds of undernutrition: compared to children who had normal birth weight those with LBW had an increased odds of being stunted (crude odds ratio [CrOR]:1.72; 95% confidence interval [CI]: 1.35–2.20), of being under-weight (CrOR: 2.30; 95% CI: 1.68–3.14), and, of being wasted (CrOR: 2.42; 95% CI: 1.38–4.25).⁹ Similarly, in a study of infant growth patterns and their relations to birth weight in Bangladesh found that birth weight was the most essential predictor of succeeding growth status for the period of infancy.¹⁰ A study done by Sharma et al shows 54.76% of the cases had birth weights <2.5 kg and the association between the low birth weight and non-responder among the SAM case was also statistically significant ($p < 0.05$). Cases with birth weight <2.5 kg had 43.47% non-responders (30/69) while cases with birth weight >2.5 kg had only 14.89% non-responders (7/47) which shows significantly increased risk for treatment failure ($p = 0.037$).⁴

This finding indicates low birth weight as an important risk factor for development of malnutrition in early infancy so importance of strengthening maternal health and nutrition during pregnancy is necessary to reduce the incidence of LBW and subsequently, SAM in infancy.

In our study, only 50% were on exclusive breastmilk while 4.35% were on top milk, formula feeding (11.96%) or mixed feed (33.70%). Similar findings have been reported in other studies. A study conducted in India by Kumar et al in 2019 among malnourished infants found that only 45% were exclusively breastfed, while a significant portion receiving mixed or formula feeds.¹¹ A trial in rural Ghana shows 16% of neonatal deaths could be saved if all infants were breastfed from day 1 and 22% if breastfeeding started within the first hour with the risk of neonatal death was fourfold higher in children given milk-based fluids or solids in addition to breast milk.¹²

Thus, it suggests that maternal education is necessary for exclusive breastfeeding with focus on proper breastfeeding method and frequency for effective and adequate breastfeeding for prevention of malnutrition in infants. The use of top milk and formula feeding should be actively discouraged in favor of exclusive breastfeeding. In our study Suboptimal feeding practices noted in 83 (90.2%) infants from total 92 enrolled infants. Most common one is use of other feed then breastmilk like top milk and formula and another were insufficient number of feedings in most breastfeed infants and improper breastfeeding technique. Similarly, A study done in Mysore, India revealed that a large number of mothers practiced suboptimal breastfeeding (66%), with approximately 1 in 3 delaying breastfeeding and 1 in 2 practicing nonexclusive breastfeeding.¹³ A study in Varanasi in 0–12 months infants shows in addition to breast feeding 74.72% mother were supplementing their babies with top milk among them 34.2% were using bottle and rest 64.8% of mothers were using spoon for introducing top milk to their infants. It was observed overall prevalence of PEM was significantly higher in bottle fed group (72.73%). In a study by Sharma et al, 64.22% of cases did not receive exclusive breastfeeding.^{4,14}

The most frequently observed complication in our study was pneumonia (43.06%), followed by anemia in 24 infants (33.33%). Diarrhea was present in 14 cases (19.44%), and septicemia was noted in 12 infants (16.67%). Like our study a study done in Jawaharlal Nehru Medical College Hospital Uttar Pradesh in which total 72 cases of SAM under 6 months studied shows the most common complications were anemia (80%), diarrhea (59%), pneumonia (29%), and septicemia (17.9%).¹⁵

We tried supplementary suckling technique in almost 50 eligible infants. And out of our 46 discharged patient we successfully discharged 36 infants on exclusive breastfeed in which 13 infants were earlier on formula or on mixed feeding practices.

A study done in Uttar Pradesh on 108 infants under 6 months with SAM shows that SST tried in 62 infants and it was successful in 34 (55.7%) infants.¹⁵

In a study done in Sudan in 37 infants 31 infants (80.6%) showed a significant response to SST treatment.¹⁶

A study done in Yemen on 108 infants less than 6 months with uncomplicated SAM shows 87 infants (80.6%) responded to SST treatment while 13 were defaulters, 6 died and only 2 did not respond to treatment.¹⁷

Out of 92 infants under 6 months admitted with SAM, 46 (50%) were discharged, 28 (30.43%) expired, 13 (14.13%) were discharged against medical advice (DAMA), 4 (4.35%) absconded from the facility and 1 (1.09%) was referred to a higher center for specialized care. All expired patients (100%) had one or more complications related to malnutrition and need of intensive care. The notably higher mortality rate observed in our study may be attributed to the fact that our hospital is a tertiary care center, where we receive patients after multiple referrals or at a late stage of the disease. A study in Borgou/Alibori, Northern Benin 41% of the infants (32/78) were cured and in-hospital mortality was estimated at 19.3% (15/78) and 39.7% (31/78) of the infants left the hospital against medical advice.⁵

Maternal age is a key demographic factor associated with child health outcomes, including nutritional status. Younger mothers, particularly adolescents, are more likely to face challenges such as limited access to health information, lower education levels, and inadequate socioeconomic support, all of which can negatively impact infant feeding practices and increase the risk of malnutrition.¹⁸

A study done in Ghana shows children of teenage mothers, compared to those of adult mothers, were 8 times more likely to be stunted [adjusted odds ratio (AOR)=7.56; 95% confidence interval (CI) 4.20–13.63], 3 times more likely to be wasted (AOR=2.90; 95% CI 1.04–8.04), and 13 times more likely to be underweight (AOR=12.78; 95% CI 4.69–34.81) after adjusting for potential confounders.¹⁹ In our study 13.2% mothers were younger than 20 years of age, while the remaining 86.8% were older than 20 years.

Our findings indicate a high prevalence of maternal anemia in the study population - 83.15% had moderate anemia while 2.25% had severe anemia.

A study done by Bhargava et al in 100 infants of age less than 6 months in Kenya to find out the association of maternal anemia and the weight gain pattern of these infants. The study finally stated that maternal hemoglobin concentration and weight of these less than 6 months old infants was positively correlated with a p value <0.05.²⁰ A study done in 25 mothers with normal hemoglobin and 18 mother with anemia and their breast milk composition at different stage as colostrum, transitional and mature milk concluded that maternal anemia leads to significant changes in both the immunological and nutritional components of breast milk at different stages of lactation. These alterations could impact the infant's nutrition and immune protection. Therefore, it is crucial to implement special measures for mothers at risk of developing anemia

to ensure the provision of high-quality breast milk to their infants.²¹

the majority of mothers (81.11%) were classified as "at some risk" in our study. Only 6.67% of mothers were found to be "not at risk" and 12.22% "at severe risk", of the total. This indicates that a significant proportion of mothers experienced some level of risk, with a notable fraction at severe risk. This risk classification is based on nutritional status (BMI) and hemoglobin level of mother so our findings indicated nutritional status of infants under 6 months is also affected by maternal health.

Limitations

Limitation of our study is that the data studied was from a single center and there were so many confounding factors present in our study. Our study did not include any control group for comparison. Almost all infants in our study presented with some health issues so uncomplicated SAM cases were not seen in our study and complicated cases lead to higher mortality and DAMA rate.

CONCLUSION

Out of 92 infants under 6 months with SAM studied, most were males (60.87%), aged 2–4 months, and from rural areas (63%). Key risk factors included low birth weight (57.6%), prematurity, congenital malformations, and suboptimal feeding practices. Only 47.82% were exclusively breastfed; the rest were on mixed, formula, or top feeding. 78% of infants presented with complications like pneumonia (43.06%), anemia (33.33%), or diarrhea (19.44%). Out of 92 infants 50% of infants were discharged, 30.43% died (mostly with complications), and others either left against advice or were referred. With the help of maternal education and counselling on breastfeeding and use of the supplementary suckling technique (SST), exclusive breastfeeding rates improved at discharge. On maternal health assessment shows - 19.1% were underweight, and 85.4% had anemia with 81.11% at some nutritional risk and 12.22% at severe nutritional risk.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Kerac M, Tehran I, Lelijveld N, Onyekpe I, Berkley J, Manary M. Inpatient treatment of severe acute malnutrition in infants aged <6 months Executive summary. 2012. Available at: <https://cdn.who.int/media/docs/default-source/nutritionlibrary/publications/malnutrition/guideline-updates-on-the-management-of-severe-acute-malnutrition-in-infants-and-children/updates-management-sam->

- infantandchildren-review9.pdf?sfvrsn=b98c8fb9_6. Accessed on 10 February 20.
- Randev S. Malnutrition in Infants under 6 months: Is it Time to Change Recommendations? *Indian J Pediatr.* 2020;87:684-5.
 - Organisation WH. Identification of severe acute malnutrition in under 6 months of age. WHO. 2023. Available at: <https://www.who.int/tools/elena/interventions/sam-identification-infants>. Accessed on 10 February 20.
 - Sharma AK, Das G. Infant and maternal risk factors of severe acute malnutrition under 6 months of age. *Indian J Child Health.* 2020;7(11):454-8.
 - Agbeille MF, Noudamadjo A, Kpanidja G, Falola B, Ewassadja E, Adedemy JD, et al. Severe acute malnutrition among infants under 6 months of age in the teaching hospital of Borgou / Alibori in Northern Benin. *J Pediatr Neonatal Care.* 2023;13(2):151-4.
 - UNICEF, WHO, World Bank Group. Levels and trends in child malnutrition: Key findings of the 2021 edition. 2021. Available at: <https://www.who.int/publications/i/item/9789240025257>. Accessed on 10 February 20.
 - Singh R, Patel A, Sharma A. Clinical Profile of Severe Acute Malnutrition in Infants under 6 Months: A Hospital-based Study. *Indian J Pediatr.* 2020;87(5):350-4.
 - Christian P, Lee SE, Donahue Angel M, Adair LS, Arifeen SE, Ashorn P, et al. Risk of childhood undernutrition related to small-for-gestational age and preterm birth in low- and middle-income countries. *Int J Epidemiol.* 2013;42(5):1340-55.
 - Ntenda PAM. Association of low birth weight with undernutrition in preschool-aged children in Malawi. *Nutr J.* 2019;18:51.
 - Rahman MS, Howlader T, Masud MS, Rahman ML. Association of low-birth weight with malnutrition in children under five years in Bangladesh: do mother's education, socio-economic status, and birth interval matter? *PLoS One.* 2016;11(6):e0157814.
 - Kumar D, Goel NK, Mittal PC, Misra P. Influence of infant-feeding practices on nutritional status of under-five children. *Indian J Pediatr.* 2019;76(8):817-21.
 - Edmond KM, Zandoh C, Quigley MA, Amenga-Etego S, Owusu-Agyei S, Kirkwood BR. Delayed breastfeeding initiation increases risk of neonatal mortality. *Pediatrics.* 2006;117(3):e380-6.
 - Veeranki SP, Nishimura H, Krupp H, Gowda S, Arun A, Madhivanan P. Suboptimal Breastfeeding Practices among Women in Rural and Low-Resource Settings: a Study of Women in Rural Mysore, India. *Ann Global Health.* 2017;83(3):577-83.
 - Nanda S, Mishra CP, Shukla A, Samantaray P, Mohanty M. Infant feeding practices and its impact on the prevalence of protein energy malnutrition. *Indian J Commun Health.* 1995;2-3:19-23.
 - Singh DK, Rai R, Dubey S. Supplementary suckling technique for relactation in infants with severe acute malnutrition. *Indian Pediatr.* 2014;51:671.
 - Baazab MSM, Bilal JA, Ba-Saddik IA, Arabi AM. "The Treatment Outcome Of Infants Less Than 6 Months Of Age With Uncomplicated Severe Acute Malnutrition (SAM) Fed With Supplementary Suckling Technique In Khartoum, Sudan". *Electron J Univ Aden Basic Appl Sci.* 2022;3(4):296-303.
 - Baazab MSM, Bilal JA, Ba-Saddik IA, Arabi AM. Supplementary suckling technique in infants less than 6 months of age with uncomplicated severe acute malnutrition: a prospective hospital-based study in armed conflict Yemen. *BMC Pediatr.* 2022;22(1):671.
 - Kassa GM, Arowojolu AO, Odukogbe AA, Yalew AW. Prevalence and determinants of adolescent pregnancy in Africa: a systematic review and Meta-analysis. *Reprod Health.* 2018;15(1):195.
 - Wemakor A, Garti H, Azongo T, Garti H, Atosona A. Young maternal age is a risk factor for child undernutrition in Tamale Metropolis, Ghana. *BMC Res Notes.* 2018;11(1):877.
 - Bhargava A. Modeling the effects of maternal nutritional status and socioeconomic variables on the anthropometric and psychological indicators of Kenyan infants from age 0-6 months. *Am J Phys Anthropol.* 2000;111(1):89-104.
 - França EL, Silva VA, Volpato RM, Silva PA, Brune MF, Honorio-França AC. Maternal anemia induces changes in immunological and nutritional components of breast milk. *J Matern Fetal Neonat Med.* 2013;26(12):1223-7.

Cite this article as: Makwana P, Dave D. Clinical profile, risk factors and impact of maternal health on the outcome of infants under 6 months with severe acute malnutrition: a prospective observational study. *Int J Contemp Pediatr* 2026;13:859-64.