East African Scholars Journal of Medical Sciences
Abbreviated Key Title: East African Scholars J Med Sci
ISSN: 2617-4421 (Print) & ISSN: 2617-7188 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-8 | Issue-4 | Apr-2025 | DOI: https://doi.org/10.36349/easms.2025.v08i04.004

Original Research Article

Effects of Structured Play Therapy on Growth of Children with Severe Acute Malnutrition

Suraiya Parvin[1*], Nazmul Alam[2]

[1]Assistant Registrar, Paediatric Cardiology, National Institute of Cardiovascular Diseases
[2]Associate Professor, Department of Clinical Oncology, KYAMCH

Article History
Received: 11.01.2025
Accepted: 14.02.2025
Published: 28.04.2025

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background*:** The World Health Organization (WHO) has approved a protocol advocating for the inclusion of psychosocial stimulation in the management strategy to mitigate the lasting negative developmental effects of Severe Acute Malnutrition (SAM). ***Aims*:** To assess the impact of structured play therapy along with nutritional support on physical growth of children with SAM. ***Methods*:** This randomized controlled trial was carried out the in the Department of Pediatrics, Sir Salimullah Medical College Mitford Hospital (SSMC MH), Dhaka from June 2019 to June 2020. This study enrolled a total of 174 children with severe acute malnutrition (SAM) between 6 months to 59 months and randomly allocated to intervention group (n=87) and control group (n=87). Intervention group received structured play therapy as psychosocial stimulation along with standard treatment and control group received standard treatment along with psychosocial stimulation in conventional way. Growth outcomes were measured in both groups during admission and during follow up at 15 days, 1 month, 2 months and 3 months after discharge. ***Results*:** Intervention group achieved improvement compared to control group from baseline in terms of the WAZ, LAZ, WLZ and MUAC after 1st, 2nd and 3rd month follow up. Among 72 children of intervention group, 51(70.8%) were found to achieve improvement in term of MUAC, WAZ, LAZ/HAZ and WLZ/WHZ and remaining 21(29.2%) could not achieve improvement. Children who received family food (43.1%) followed by formula (38.9), breast milk (13.9%) and other food (4.2%). **Conclusion:** Children afflicted with SAM demonstrated notable improvements in achieving catch-up growth when provided with psychosocial stimulation through structured play therapy in conjunction with nutritional support.

Keywords: SAM, Structured Play Therapy, Psychomotor and Psychosocial Stimulation, Developmental Growth, Linear.

INTRODUCTION

Severe Acute Malnutrition (SAM) is a critical health condition characterized by severe deficits in nutritional intake, often leading to extremely low weight-for-height, severe wasting, or nutritional edema. It is characterized by the manifestation of severe wasting and/or bi-pedal edema. A child falling within the age range of 6 to 59 months is classified as severely acutely malnourished if they exhibit one or more of the following criteria: a Mid-Upper Arm Circumference (MUAC) less than 115 mm, a Weight-for-Length Z-score (WLZ) below -3, or a Weight-for-Length Z-score (WHZ) less than -3, and the presence of bi-pedal edema (DGHS 2017). Severe acute malnutrition poses a significant global health challenge, impacting nearly 20 million preschool-age children, with a predominant prevalence in the African Region and South-East Asia Region [1]. In Bangladesh, the current rates of stunting and wasting among children under 5 years stand at 36.1% and 14.3%, respectively. Notably, the prevalence of stunting in Bangladeshi children under 5 years has declined from 51% in 2004 to 36%, while underweight has decreased from 41% in 2007 to 33%. However, the reduction in the wasting rate over the last decade has been less pronounced, only decreasing from 17% to 14.3%. A concerning aspect is that approximately 3.1% of children under 5 suffer from severe acute malnutrition based solely on the weight-for-length or height z-score (WHZ) <-3 criterion, estimated to be around 450,000 in total [2]. Risk factors for Severe Acute Malnutrition include inadequate nutrition, recurrent infections, poverty, low maternal education, poor water and sanitation, food insecurity, limited healthcare access, unhygienic household environments, and lack of awareness about proper nutrition and health practices. Nutritional

***Corresponding Author:** Suraiya Parvin
Assistant Registrar, Paediatric Cardiology, National Institute of Cardiovascular Diseases

deficiencies, especially during the initial 1000 days of life, are linked to severe consequences such as heightened susceptibility to infections, compromised developmental outcomes, and increased mortality rates [3]. Severe Acute Malnutrition (SAM) stems from inadequate caloric intake, infections amplifying nutrient needs, and socio-economic factors. This leads to metabolic adaptations, gut dysfunction, immunodeficiency, and an inflammatory response. SAM's pathogenesis involves a complex interplay of nutritional, infectious, and physiological factors, underscoring the need for comprehensive interventions. Severely malnourished children exhibit poor mental development in the acute stage, leading to enduring challenges in intelligence, behavior, and academic achievement throughout later childhood (Dewey and Begum 2011). Severely malnourished children face heightened vulnerability to infections, impaired growth and development, organ dysfunction, anemia, hypothermia, compromised immune function, and gastrointestinal problems, necessitating comprehensive interventions for nutritional rehabilitation, medical care, and ongoing support [4]. Malnutrition persists as a significant public health issue in the developing world, contributing to approximately 35% of the 7.6 million annual deaths in children under 5 years. Specifically, severe wasting is responsible for 4.4% of these deaths. Children with Severe Acute Malnutrition (SAM) face a nine-fold increased risk of death compared to well-nourished peers, impacting childhood morbidity, mortality, intellectual development, adult work capacity, and disease susceptibility in adulthood [5].

The World Health Organization (WHO) initially recommended emotional and physical stimulation for children with severe acute malnutrition (SAM) in their 1999 manual. The 2003 guidelines for inpatient treatment of severely malnourished children stress the importance of establishing a stimulating environment, involving primary caregivers in care and play, and advocating for 15–30 minutes of structured play therapy per day, incorporating activities to enhance language skills and motor development with simple toys. Despite not being detailed or evaluated in the 2013 updates on SAM management, this recommendation persists as one of the ten routine inpatient care steps. Conversely, the Community-based Management of Acute Malnutrition (CMAM) approach in 2007 does not provide recommendations for psychosocial stimulation for SAM-affected children in the community [6]. Play therapy, aimed at developing language and motor skills with simple toys, has been linked to improved development and growth [7]. However, rigorous evaluation of psychosocial stimulation, particularly structured play therapy, and its impact on developmental and nutritional outcomes in SAM children in Bangladesh is lacking. This study compares the growth outcomes of SAM patients receiving structured play therapy alongside dietary and supportive treatments with those receiving only dietary and supportive treatment, with the hope of promoting structured play therapy as a standard practice in inpatient and community SAM management.

MATERIALS AND METHODS

This single blinded randomized controlled trial study (RCT) was carried out on 174 admitted children with severe acute malnutrition (SAM) between 6 months to 59 months in the Department of Pediatrics, Sir Salimullah Medical College Mitford Hospital (SSMC MH), Dhaka from June 2019 to June 2020. They were randomly allocated to intervention group (n=87) and control group (n=87). Randomization was done by simple randomization method using computer-generated, block randomization scheme. Participants were unaware about the intervention thereby it was a single blinded study. Intervention group received structured play therapy as psychosocial stimulation along with standard treatment and control group received standard treatment along with psychosocial stimulation in conventional way, i.e. counseling of the caregiver to play and to enhance the interaction with children, without any structured protocol. Children with cerebral palsy, congenital hypothyroidism, congenital heart disease, down syndrome, other cause of developmental delay and caregiver unable to provide stimulation owing to any disability or impairment were excluded from the study.

Study Procedures

Data were collected after getting the research proposal from the honorable faculty members of ethical committee of this institute. After proper counseling about the objectives and procedure of the study only positive respondents were recruited. Informed written consent was taken from each parent or legal guardian before enrollment. The participants were allowed to withdraw themselves from the study even after participation whenever they liked. Parents were assured that will the data shall be collected anonymously and their information will be maintained with strict confidentiality. The research was conducted in full accord with ethical principles. The study was conducted on 174 patients with severe acute malnutrition. The weight, length (children below 2 year), height (for children above 2 year), OFC and mid–upper–arm circumference (MUAC) of the children had been measured according to new WHO Growth Reference Standards [8]. For children below one year of age weight (gm) was measured by Baby scale (Manual Baby Weighing Scale, India Mart, India) and weight of children above this age was measured by Bathroom Scale (kg). Supine length (cm) was taken for children under <2 year of age by Infantometer and height (cm) of children >2 year of age was measured by Stadiometer. OFC was measured by non-strechable plastic tape and MUAC was measured by specially designed Shakir's tape. Z scores for weight (WAZ), length (LAZ), height (HAZ) and weight for length (WLZ) and weight for height (WHZ) was calculated and bipedal edema was looked for. The admitted children were defined with having SAM when

they had presented with any one or more of the followings: MUAC<115 mm, or, weight-for- length (below 2 year) or, weight–for–height z–score<–3, or, bipedal edema for children aged 6 to 59 months old. Parents or caregivers had accompanied them. After subsidence of acute states and disappearance of bipedal edema, developmental assessment was done by Rapid Neurodevelopment Assessment [9]. Caregivers of both groups were trained for standard nutritional care during hospital stay and to continue it at home after discharge. Play sessions were arranged in play corner of Department of Pediatrics, SSMH MH and also in patient's beds. Mothers or caregivers were trained to make handmade toys from locally available ingredients and play with the children and to continue this at home. Structured play activities were arranged according to the National Guide lines for the facility-based Management of children with Severe Acute Malnutrition in Bangladesh, 2017 (Appendix-V, p. xxiv). Each child played individually for 15-30 minutes each day, in addition to informal group play. Each play session included language and motor activities, and activities with toys.

Structure Play Activities (*National Guidelines for the Facility Based Management of Children with Severe Acute Malnutrition in Bangladesh*)

Children with severe acute malnutrition have delayed mental and behavioural development which, if not treated, can become the most serious long-term result of malnutrition. Play therapy is intended to develop language and motor skills aided by simple toys. It should take place in a loving, relaxed and stimulating environment and can continue after discharge.

The aim should be to play with each child, individually, for 15-30 minutes each day, in addition to informal group play. Each play session should include language and motor activities, and activities with toys.

Language Activities

At each play session:
Teach local songs and games using the fingers and toes
Encourage the child to laugh
Describe what (s)he is doing, and repeat what (s)he says
Teach action words with activities e.g. 'bang bang' as (s)he beats a drum, 'bye bye' as (s)he waves etc.
Teach words at every opportunity, examples are in italics in the text below

Motor Activities

Encouraging the child to perform the next motor milestone
Bouncing the child up and down and hold him/her under the arms so that the feet support the child's weight
To prop the child up, roll toys out of reach, encourage the child to crawl after them
Holding hand and help the child to walk
When starting to walk alone, giving a 'push-along' and later a 'pull-along' toy

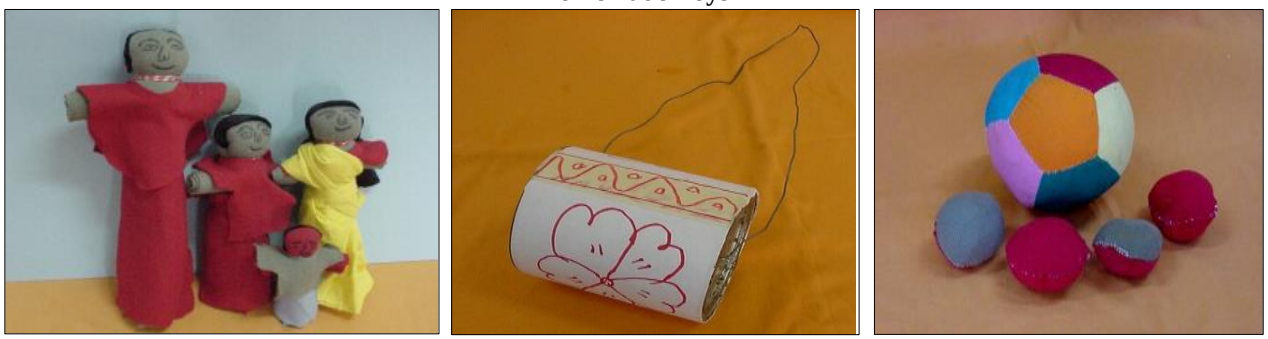
Activities with Toys

Simple toys can easily be made from readily available materials. These toys can be used for a variety of different motor activities, e.g:

'In and Out' Toy with Blocks

To let the child explore blocks and container.
Putting blocks into container and shake it, then teach child to take them out, one at a time, saying 'out' and 'give me'
Teaching the child to take out blocks by turning container upside down
Teaching the child to hold a block in each hand and bang them together
Letting the child put blocks in and out of container saying 'in' and 'out'
Growth parameters (Weight, Length/Height, WAZ, LAZ, WLZ, MUAC) were measured in both groups during admission and during follow up at 15 days, 1 month, 2 month and 3 months after discharge and were compared to see the difference.

Homemade Toys



Assessments and Efficacy Outcome

The primary efficacy outcomes were the gaining of weight, subsidence of bipedal oedema, control of diarrhoea, infection and correction of electrolyte imbalance and micronutrient deficiency. The secondary outcomes were the observation of the impact of structured play therapy along with nutrition on physical growth of children with SAM.

Operational Definitions:

Severe Acute Malnutrition:

For age 6-59 months: presence of one or more of the following-

Mid-upper arm circumference <115mm

Weight-for-length Z score (WLZ) < -3, Or

Weight-for-height Z score (WHZ) <-3

Bipedal oedema

Growth:

Increase in size of body parts evident by increase in weight, length, height, OFC, Mid upper arm circumference (MUAC) etc. In the present study, OFC changes were not analyzed on follow up for children between 6 months to 59 months, because OFC changes are unlikey in such short period.

Anthropometry

Tools to measure the physical growth. It includes measurement of:

Length/ Height

Weight

Mid upper arm circumference

Occipito-frontal circumference (OFC)

Domains of Development:

It was done according to Rapid Neuro developmental Assessment (RNDA)

Domains are:

Gross motor

Fine motor

Vision

Hearing

Speech

Cognition

Behaviour

Seizure

Statistical Methods

The numerical data obtained from the study was analyzed and estimated by using statistical methods. Computer based SPSS (Statistical Package for Social Science) version 22 was used. Continuous variables were compared through the student's t-test and for the categorical variables through the chi-square test. P value of 0.05 or less was considered as significant.

RESULTS

The mean age of children was 30.1±13.9 months in intervention group and 28.8±12.8 months in control group. Female was more common in both group, where 56(64.4%) and 50(57.5%) female was found in intervention and control group respectively. Nearly two third 57(65.5%) of the mothers received primary education in intervention group and 64(70.1%) in control group. Similarly maximum 49(56.3%) fathers received primary education in intervention group and 61(70.1%) in control group respectively. Majority of the SAM children belonged poor socioeconomic class, where 65(74.7%) and 57(65.5%) in intervention and control group respectively. In intervention group 47(54.0%) children came from rural area and 42(48.3%) in control group. In both group maximum SAM children live semi pacca house, where 45(51.7%) and 41(47.1%) in intervention and control group respectively. Normal health status of mother was found 59(67.8%) in intervention group and 51(58.6%) in control group. Socio-demographic status of children with SAM were almost alike (p>0.05) between two groups. Regarding birth history maximum were term in both groups 59(67.8%) and 58(66.7%) in intervention and control group respectively. Low birth was found 30(34.5%) in intervention group and 37(42.5%) in control group. There was no significant (p>0.05) difference of gestational age and birth weight found between two groups. Regarding the feeding history it was found only 12(13.8%) in intervention group and 10(11.5%) in control group received breast milk. Formula fed observed 36(41.4%) and 38(43.7%) in intervention and control group respectively. Mixed fed found 35(40.2%) in intervention group and 30(34.5%) in control group. Family food observed 4(4.6%) and 9(10.3%) in intervention and control group respectively. No significant (p>0.05) difference was seen between two groups.

Table 1: Comparison of WAZ growth status at follow up between intervention and control group (N=174)

WAZ	Intervention group (n=87) Mean±SD	Control group (n=87) Mean±SD	P value
Baseline	-2.68±1.31	-2.60±1.34	0.727
After 15 days	-2.65±1.31	-2.61±1.30	0.845
After 1 month	-2.63±1.31	-2.69±1.13	0.793
After 2 months	-2.52±1.35	-2.95±1.07	0.033 [s]
After 3 months	-2.59±1.24	-2.99±0.96	0.029[s]

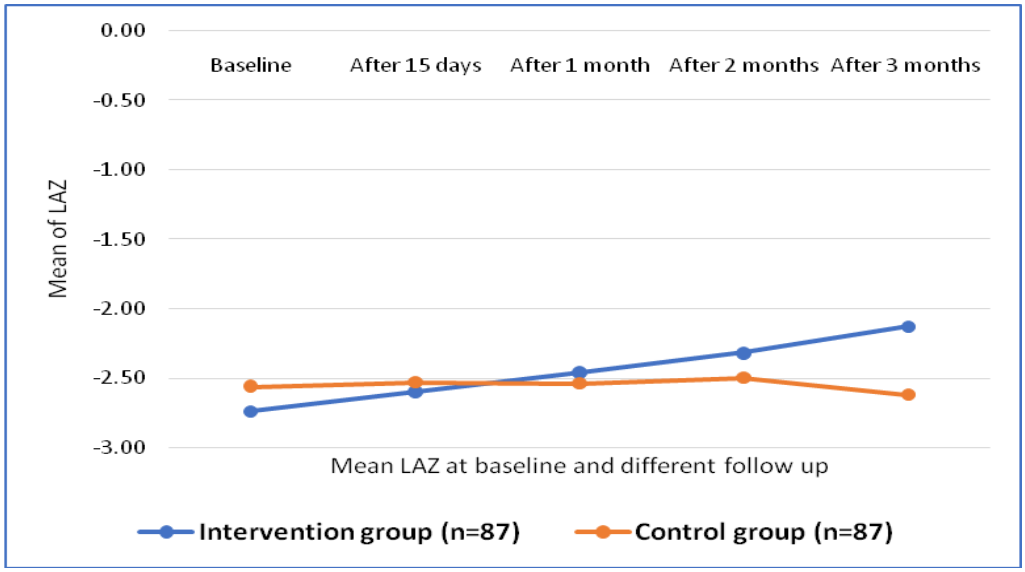


Figure 1: Line diagram showing the mean LAZ at baseline and follow up

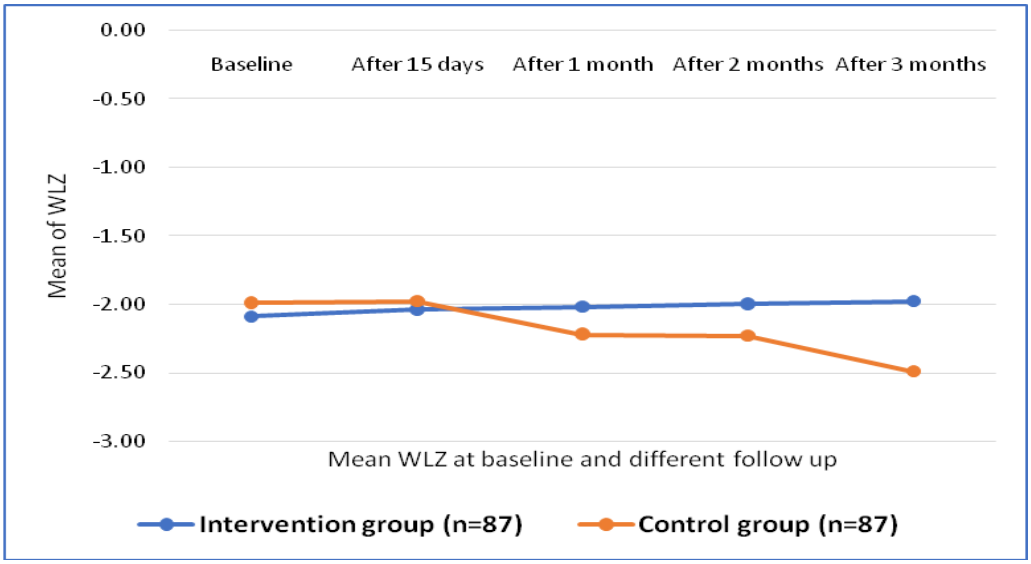


Figure 2: Line diagram showing the mean WLZ at baseline and follow up

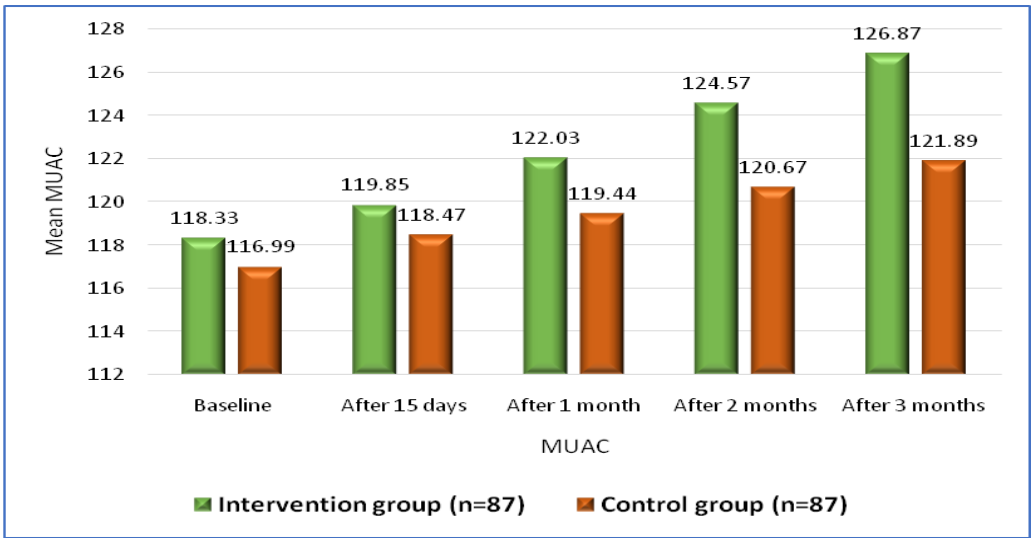


Figure 3: Bar diagram showing the mean changes of MUAC at baseline and follow up

Table 2: Association of sociodemographic parameters with improvement in growth after 3rd month follow up (n=72)

Variables		Improvement		p-value
		Yes (n=51)	No (n=21)	
Age group (months)	**N(%)**	**n(%)**	**n(%)**	
6-12 months	29(40.3)	18(35.3%)	11(52.4%)	0.314
12-24 months	15(20.8)	12(23.5%)	3(14.3%)	
24-36 months	18(25.0)	12(23.5%)	6(28.6%)	
36-48 months	7(9.7)	7(13.7%)	0(0.0%)	
48-59 months	3(4.2)	2(3.9%)	1(4.8%)	
Education of mother				
Illiterate	5(6.9)	3(5.9%)	2(9.5%)	0.699
Primary	53(73.6)	37(72.5%)	16(76.2%)	
SSC and Above	14(19.4)	11(21.6%)	3(14.3%)	
Socioeconomic status				
Poor	55(76.4)	38(74.5%)	17(81.0%)	0.558
Middle Class	17(23.6)	13(25.5%)	4(19.0%)	
Maternal health status				
Normal	45(62.5)	32(62.7%)	13(61.9%)	0.947
Below normal	27(37.5)	19(37.3%)	8(38.1%)	
Birth weight				
Normal	23(31.9)	18(35.3%)	5(23.8%)	0.488
LBW	48(66.7)	32(62.7%)	16(76.2%)	
WLBW	1(1.4)	1(2.0%)	0(0.0%)	
Feeding history				
Breast milk	10(13.9)	9(17.6%)	1(4.8%)	0.025[s]
Formula	28(38.9)	19(37.3%)	9(42.9%)	
Family food	31(43.1)	23(45.1%)	8(38.1%)	
Other food	3(4.2)	0(0.0%)	3(14.3%)	

Figures in the parentheses indicate corresponding percentage;
Chi-squared Test (χ^2) was done to analyze the data.

DISCUSSION

Structured play therapy emerges as a crucial component in fostering the growth of children aged 6 to 59 months grappling with severe acute malnutrition (SAM) [10]. This therapeutic approach, complemented by nutritional support, not only addresses physical recovery but also promotes psychosocial well-being. Additionally, the role of exclusive breastfeeding in tandem with structured play therapy cannot be overstated. Exclusive breastfeeding, during the initial months of life, provides essential nutrients crucial for early growth and immune system development. When integrated with structured play therapy, these interventions create a synergistic effect, accelerating the catch-up growth process. The combination of psychosocial stimulation through play and optimal nutrition, including exclusive breastfeeding, forms a holistic strategy to mitigate the impact of SAM, ensuring comprehensive and sustained growth for these vulnerable children. Malnutrition prevalence was higher in the 6-12 months and 12-24 months age groups in both study cohorts, aligning with findings in numerous studies across low-income countries. Schoenbuchner *et al*, noted a significant association between the younger age group and Severe Acute Malnutrition (SAM) in a northern India survey. Similarly, a study in Enugu, Nigeria identified elevated rates of wasting, stunting, and underweight in this age bracket [11, 12]. The heightened prevalence of SAM in these younger cohorts may be linked to factors like inadequate breastfeeding, improper complementary feeding, and a higher incidence of infections. Additionally, lower socioeconomic status and inadequate maternal education, contributing to improper breastfeeding practices; show a notable correlation with severe malnutrition [13]. The findings of this study revealed that, compared to the control group, the intervention group demonstrated significant improvements in WAZ, LAZ, WLZ, and MUAC after a period of three months as well as at the third follow-up in this study, it was also noted that among 72 children in the intervention group, 51 (70.8%) demonstrated improvement in terms of MUAC, WAZ, LAZ/HAZ, and WLZ/WHZ, while the remaining 21 (29.2%) did not exhibit improvement. Analysis of the relationship between improvement and socio-demographic factors revealed no significant association with the children's age, maternal education, socioeconomic status, maternal health, and birth. Similarly, comparable outcomes were observed in a separate randomized controlled study that assessed the impact of a community-based approach involving Psychosocial Stimulation (PS) and Food Supplement (FS) on the growth and development of severely malnourished children in Bangladesh,

conducted by Hamadani *et al*., The study included 507 severely underweight children aged 6-24 months, who were randomly assigned to receive PS, FS, PS + FS, clinic-control, or hospital-control upon discharge [14]. Psychosocial Stimulation involved play sessions and parental counseling on child development. Follow-up visits at fortnightly, 3-month, and 6-month intervals employed standard procedures to assess the children's growth and development. Those receiving any form of stimulation exhibited a significant improvement in weight gain ($P<0.05$). The enhanced effect on growth might be attributed to the synergistic impact of psychomotor stimulation and dietary therapy. Mothers in the intervention group were trained to engage in structured play, create toys, and interact with their children, fostering increased attention, bonding, and careful support between parents and children. Providing exclusive breastfeeding for the first six months after birth is a viable and health-promoting preventive measure against adverse health and nutritional consequences. According to the World Health Organization (WHO), inappropriate infant feeding is accountable for one-third of global malnutrition cases. This study revealed a noteworthy finding: children who received family food (43.1%) followed by formula (38.9), breast milk (13.9%) and other food (4.2%). The observed pattern of insufficient breastfeeding aligns with a previous trend identified in Bangladesh (UNICEF). Furthermore, this trend is echoed in findings from various studies conducted in Bangladesh and in low-income countries globally [15, 16]. Failing to practice exclusive breastfeeding is well-known to reduce breast milk consumption, contributing significantly to malnutrition [17]. Early introduction of complementary foods, reported as a risk factor for undernutrition in developing countries, can lead to growth faltering [18, 19]. Effective interventions to reduce acute malnutrition in the first two years include quality child feeding practices and disease prevention programs. Complementary foods are necessary when breast milk alone cannot meet nutritional needs, but introducing them too early or late can adversely affect a child's nutritional status, posing risks of morbidity and mortality, particularly in developing countries. Daniel *et al*, study showed that increased frequency of home visits demonstrated a significant performance enhancement [20]. For interventions focused on high-risk children, particularly those malnourished, heightened visitation frequencies may amplify benefits. However, the studied intervention lacked intensity, with a maximum of four follow-up visits within three months insufficient to adequately stimulate the child and empower often illiterate caregivers with effective techniques. It is contended that the impact of brief stimulation programs during episodes of malnutrition is transient, especially in the context of extreme poverty where children return. Disparities in achieving catch-up growth between two groups may arise not only from insufficient stimulation but also variations in food intake, infections, familial or social disruptions. Further research is imperative to explore these associations. Deprived home environments and inadequate nutrition continue to jeopardize intervention outcomes. Families of Severe Acute Malnutrition (SAM) children, residing in low socio-economic settings with impoverished home conditions, face challenges compromising the required care and attention. Generally, a minimum number of parenting sessions must be provided to sustain positive changes during acute states, considering the parents' challenges in offering necessary stimulation. Inconsistencies across studies in some outcomes may stem from differences in study design, follow-up duration, children's age and nutritional status, poverty levels, maternal education, assessment tools, and the quality and intensity of home stimulation, as well as support from the health system.

Limitation of the Study

The small sample size may not accurately reflect the intervention's true impact; a larger sample could provide a more precise estimation. Unexpectedly, follow-up visits were hindered by the Covid-19 pandemic, a significant factor in participants refusing hospital visits. Unlike prior studies, limited resources prevented consistent provision of food supplements and toy materials through home visits, potentially affecting participant adherence. The planned intervention couldn't be fully executed; out-patient treatment for SAM children reduced stimulation sessions and caregiver education. The risk of contamination exists as the study's playground was accessible to all children, and intervention and control groups could share information. The study's broad admission criteria also mean subjects may have various forms of severe acute malnutrition, introducing variability in nutritional deficiency severity among participants.

CONCLUSION

This study demonstrates that structured play-based stimulation benefits treating Severe Acute Malnutrition (SAM) in under-5 children in low-income settings. Over 1st, 2nd, and 3rd month follow-ups, stimulation significantly enhanced catch-up growth in the intervention group, improving WAZ, LAZ, WLZ, and MUAC compared to the baseline and the control group. Weight gain improved in the 1st and 2nd months, while height increased in the 3rd month. Breastfeeding and family food intake significantly improved in the intervention group. Despite modest effects, achieving them in a resource-constrained context highlights the intervention's potential for significant impact, presenting a simple, feasible, and cost-effective approach to mitigate SAM's detrimental effects on young children in low-income settings.

RECOMMENDATIONS

The study suggests incorporating structured play therapy, using locally made toys, for all Severe Acute Malnutrition (SAM) admitted children, alongside nutrition and support measures. Urgent research with

larger samples and extended follow-ups is necessary to reinforce the case for psychosocial stimulation in community and hospital settings. Further studies are essential to explore the feasibility of these interventions at institutional and national levels, with intervention packages ensuring access to balanced diets, regular home visits, and durations exceeding 6 months to capture gradual growth changes in older children.

REFERENCE

1. Tickell, K. D., & Denno, D. M. (2016). Inpatient management of children with severe acute malnutrition: a review of WHO guidelines. *Bulletin of the World Health Organization*, *94*(9), 642.
2. Rahman, M. S., Mushfiquee, M., Masud, M. S., & Howlader, T. (2019). Association between malnutrition and anemia in under-five children and women of reproductive age: Evidence from Bangladesh Demographic and Health Survey 2011. *PloS one*, *14*(7), e0219170.
3. Turnip, S. (2018). Narration in Health Communication for Stunting. *Journal of Health Promotion and Behavior*, *3*(4), 248-256.
4. Oktaria, V., Lee, K. J., Bines, J. E., Watts, E., Satria, C. D., Atthobari, J., ... & Danchin, M. H. (2017). Nutritional status, exclusive breastfeeding and management of acute respiratory illness and diarrhea in the first 6 months of life in infants from two regions of Indonesia. *BMC pediatrics*, *17*, 1-10.
5. Sultana, T. (2019). Current Workforce of Health Sector and Its Development in Bangladesh.
6. Bait, B. R., Rah, J. H., Roshita, A., Amaheka, R., Chrisnadarmani, V., & Lino, M. R. (2019). Community engagement to manage acute malnutrition: implementation research in Kupang district, Indonesia. *Bulletin of the World Health Organization*, *97*(9), 597.
7. Shahen, M. A., Islam, M. R., & Ahmed, R. (2020). Challenges for health care services in Bangladesh: an overview. *IOSR Journal of Nursing and Health Science*, *9*, 13-24.
8. Nordstrøm, M., Retterstøl, K., Hope, S., & Kolset, S. O. (2020). Nutritional challenges in children and adolescents with Down syndrome. *The Lancet Child & Adolescent Health*, *4*(6), 455-464.
9. Shefa, J. (2019). *Nutritional status and iq level of the autistic children in Bangladesh along with the perception of their parents about autism* (Doctoral dissertation, University of Dhaka).
10. Worku, B. N., Abessa, T. G., Wondafrash, M., Lemmens, J., Valy, J., Bruckers, L., ... & Granitzer, M. (2018). Effects of home-based play-assisted stimulation on developmental performances of children living in extreme poverty: a randomized single-blind controlled trial. *BMC pediatrics*, *18*, 1-11.
11. Schoenbuchner, S. M., Dolan, C., Mwangome, M., Hall, A., Richard, S. A., Wells, J. C., ... & Moore, S. E. (2019). The relationship between wasting and stunting: a retrospective cohort analysis of longitudinal data in Gambian children from 1976 to 2016. *The American journal of clinical nutrition*, *110*(2), 498-507.
12. Mendy, M. P. K., & Hernandez, P. (2020). Severe Acute Malnutrition Infants from Six Months to Thirty-Six Months Old Todlers in Edward Francis Small Teaching Hospital, Banjul, The Gambia. *International Journal of Clinical Pediatrics and Child Health*, *2*(1), 1-9.
13. Zhao, J., Zhao, Y., Du, M., Binns, C. W., & Lee, A. H. (2017). Maternal education and breastfeeding practices in China: a systematic review and meta-analysis. *Midwifery*, *50*, 62-71.
14. Hamadani, J. D., Mehrin, S. F., Tofail, F., Hasan, M. I., Huda, S. N., Baker-Henningham, H., ... & Grantham-McGregor, S. (2019). Integrating an early childhood development programme into Bangladeshi primary health-care services: an open-label, cluster-randomised controlled trial. *The Lancet Global Health*, *7*(3), e366-e375.
15. Monsurul Hoq, M. H., Masum Ali, M. A., Ashraful Islam, A. I., & Charulatha Banerjee, C. B. (2019). Risk factors of acute malnutrition among children aged 6-59 months enrolled in a community-based programme in Kurigram, Bangladesh: a mixed-method matched case-control study.
16. Razzaque, S. M. A., Islam, T., Rahman, A. M., & Poly, N. N. (2020). The diagnostic value of fine needle aspiration Cytology in pediatric cervical lymphadenopathy. *IAR Journal of Medicine and Surgery Research*, *5*(5), 1-8.
17. Saeed, O. B., Haile, Z. T., & Chertok, I. A. (2020). Association between exclusive breastfeeding and infant health outcomes in Pakistan. *Journal of pediatric nursing*, *50*, e62-e68.
18. Campoy, C., Campos, D., Cerdó, T., Diéguez, E., & García-Santos, J. A. (2018). Complementary feeding in developed countries: the 3 Ws (when, what, and why?). *Annals of Nutrition and Metabolism*, *73*(Suppl. 1), 27-36.
19. Imonikebe, B. U., & Iroriteraye, I. (2009). Breastfeeding practices and infants' nutritional status in Isoko north/south local government areas of Delta state, Nigeria. *African Research Review*, *3*(5).
20. Daniel, A. I., Bandsma, R. H., Lytvyn, L., Voskuijl, W. P., Potani, I., & Van Den Heuvel, M. (2017). Psychosocial stimulation interventions for children with severe acute malnutrition: a systematic review. *Journal of global health*, *7*(1).

Cite This Article: Suraiya Parvin & Nazmul Alam (2025). Effects of Structured Play Therapy on Growth of Children with Severe Acute Malnutrition. *East African Scholars J Med Sci*, *8*(4), 133-140.