International Journal of Medical and Pharmaceutical Research
Website: https://ijmpr.in/ | Print ISSN: 2958-3675 | Online ISSN: 2958-3683
NLM ID: 9918523075206676
Volume: 4 Issue:2 (Mar-Apr 2023); Page No: 398-405

Research Article

IJMPR

Copyright@IJMPR

'Family Centered Structured Play Therapy': A Way To Combat Physical & Developmental Delay In Severe Acute Malnutrition

Dr.Sheetal Jadhaw[1], Dr. Sunita Koreti[2], Dr. Ajay Gaur[3]

[1]Junior Resident, Department of Pediatrics, Gajra Raja Medical College, Gwalior, M.P.
[2]Professor, Department of Pediatrics, Gajra Raja Medical College, Gwalior, M.P.
[3]Professor and Head, Department of Pediatrics, Gajra Raja Medical College, Gwalior, M.P.

ABSTRACT

Introduction-The WHO recommends incorporating psycho-motor and psycho-social stimulation into the management of SAM as it helps recover the psycho-motor and psycho-social deficit and stimulate the malnourished children to regain their appetite more quickly and gain weight faster. **Objectives**-To determine the effect of Play based Psycho-Motor and Psycho-Social stimulation on development and linear growth in children with SAM and to estimate the prevalence of delayed developmental milestones in SAM. **Methods**- This prospective study included 130 SAM children of 6 months to 5 years age, play-based psychomotor and psycho-social stimulation was provided. Linear growth and developmental growth were assessed during hospital stay and at 3 months, 6 months follow up and outcome was assessed. **Results**- Among 130 SAM children, 601.5% were of age group 13-36 months, 60% were male and 40% female, majority belongs to upper lower socioeconomic class (80%). In 8.1% pedal edema present. 91.54% have delayed milestones in at least 1 domain, delayed social personal domain noted in maximum children (66.92%), mean weight was 6.19+/-1.44 kg and mean height 73.3+/-8.4cm at admission. During 6 months follow up maximum improvement noted in fine motor in 76.19% children followed by gross motor in 61.62% children. Mean weight gain after 6months was 2.05+/-0.17 kg and mean height gain was 2.52cm+/-0.14cm. **Conclusion**- developmental delay is associated with SAM (91.5%) in atleast one domain. Structured play therapy has positive effect on developmental growth and linear growth of SAM children.

Key Words: *SAM, structured play therapy, Psychomotor and psychosocial stimulation, Developmental growth, Linear growth.*

***Corresponding Author**
Dr. Sheetal Jadhaw
Junior Resident, Department of Pediatrics, Gajra Raja Medical College, Gwalior, M.P

INTRODUCTION

Severe acute malnutrition (SAM) is major health problem in children with mortality rates among SAM children are nine times more than those in well-nourished children[1]. SAM is diagnosed by presence of any one of the following criteria among children 6 months to 59 months of age: weight for height Z scorelessthan-3SD, MUAC <115mm, malnutrition with bipedal edema or visible severe wasting[1].

According to the NFHS-3(2005-2006), 6.4% (approx. 8-9 million) of children below 60 months of age are suffering from SAM in India. Based on the comparison data from the NFHS-4 and the NFHS-3 in the National Nutritional Strategy report of NITI Aayog, reports decline of underweight prevalence of in children under 5 years in all states and Union Territories, although absolute levels remain high[1].

According to the NHFS-4 report, 9.2% of children of age group 0-5 years age group are severely wasted in Madhya Pradesh. Madhya Pradesh ranks second among all the states in India in terms of prevalence of severe wasting.

Malnutrition leads to impaired physical growth, motor and cognitive development leading to lower IQ, behavioral problems and deficient social skills in affected children [1,2,3]

Reviews of literature has shown that supplementing dietary rehabilitation with psychosocial stimulation can potentially reduce the adverse effects of malnutrition and improve developmental outcomes[4]. The World Health Organization (WHO) recommends incorporating psycho-motor and psycho social stimulation into the management of severe acute malnutrition[4] as it helps to recover the psycho-motor and psycho-social deficit and stimulate the malnourished children to regain their appetite more quickly and gain weight faster. There is little evidence on

effectiveness of these psycho-motor and psycho-social stimulation for SAM children. This study will evaluate the effect family centered structured play therapy to improve development, linear growth and nutritional outcome in children with SAM.

AIMS AND OBJECTIVES

Aim-

To determine the effect of Family centered structured Play based Psycho-Motor and Psycho-Social stimulation on development of children with Severe Acute Malnutrition (SAM).

Objectives-

PRIMARY OBJECTIVE-

To determine the effect of structured Play based Psycho-Motor and Psycho-Social stimulation on linear growth and outcome.

SECONDARY OBJECTIVE-

To estimate prevalence of delayed developmental milestones in Severe Acute Malnutrition (SAM).

MATERIALANDMETHODS

The Single Centre Observational Prospective study was conducted from year 2020 to 2022 at Severe Malnutrition Treatment Unit (SMTU) Department of Pediatrics, tertiary health care center.

Setting: Severe Malnutrition Treatment Unit (SMTU), Department of Pediatrics in Tertiary Health Care Centre

Study Design: Prospective Study.

Sample size calculation:

130

$$\boldsymbol{N = \frac{Z^2_{\propto/2}\, PQ}{d^2}}$$

Where taking α=5%At2tailed$Z_{\alpha/2}$=1.96

Absolute different d=5%

Since prevalence of SAM in Madhya Pradesh = 8.3%, then

$$n = \frac{(1.96)^2 \times 0.083 \times 0.917}{(0.05)^2}$$

=117.9

Minimum sample size = 117

considering10% of dropouts sample size =130

Sampling population: All severe Acute Malnutrition children

Study period: Two Years

Inclusion Criteria:

- All children aged 6 Months to 5 years of age admitted with malnutrition and fulfilling the criteria of SAM.

Exclusion Criteria:

- SAM children with complete deafness or blindness.
- SAM children having complications hindering mobility for play.
- SAM children with physical or mental disability.
- SAM children with severe medical complications.
- Parents not giving consent for the children to participate in the study

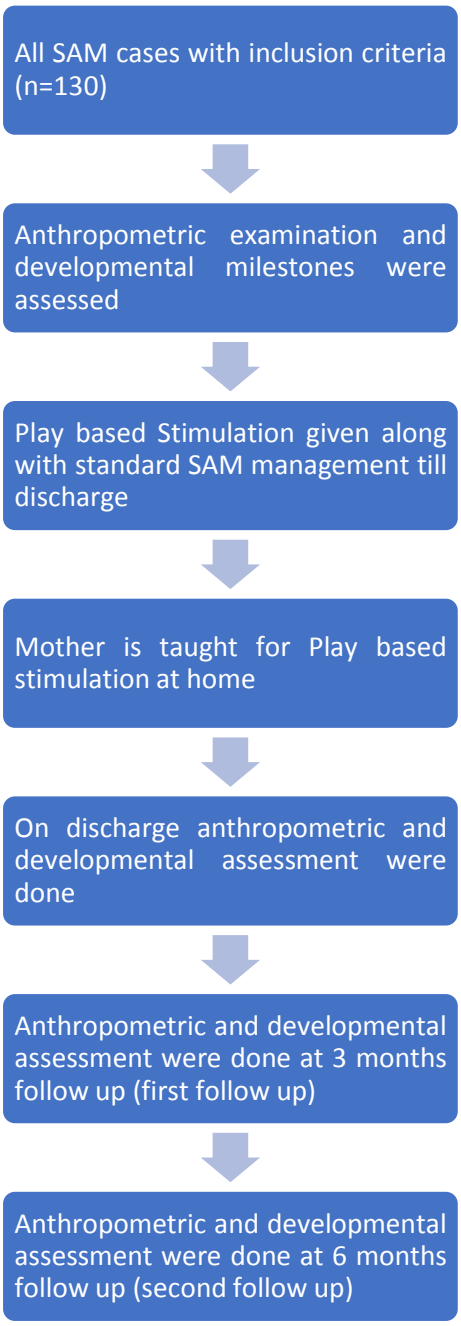
Methodology:

This Single Centered Prospective Study was conducted on SAM children admitted in tertiary health care center, SMTU Unit of Department of Pediatrics.

1. All SAM Children fulfilling inclusion criteria were enrolled for study.
2. Informed consent was obtained from parents and care givers of the children before including them in the study.
3. SAM children received routine medical care and nutritional treatment.
4. Anthropometric examination and developmental assessment of SAM children was done.

5. Structured Play-based psycho motor and psycho-social stimulation were given by primary investigator during hospital stay. Toys used were appropriate for age and appropriate for delayed domain.
6. Family centered stimulation given at home by mother/care taker for 6 months after being discharged. During hospital stay mothers/care takers were taught to give stimulation with age-appropriate and delayed domain appropriate toys. At the time of discharge toys were provided for home.
7. Physical Growth and Developmental growth were assessed again at discharge, at 3 months and at 6 months after discharge;
   a. The linear growth and nutritional status were determined through anthropometric assessment on following parameters- Weight, Length/ Height, Head Circumference, Pedal edema.
   b. Developmental assessment was done in all four domains. Assessment was done using adapted Denver scale II.
8. The overtime changes of these outcomes measured in SAM children were compared.
9. Outcome was measured on following parameter- 1. Linear Growth 2. Developmental Growth

STUDY FLOW CHART



STATISTICAL ANALYSIS

Collected data were entered in the Microsoft excel 2016 for further analysis, Qualitative data was presented with frequency and proportion while quantitative data were expressed in the form of mean and standard deviation. student t-

test were used to observe mean difference between bivariate variable. Chi-square test was used to observe the association between the qualitative variables. P-value <0.05 was considered as statistically significant at 5% level of significance. Statistical analysis was done with help of statistical software package of SPSS version 25.

RESULTS:

Table 1: Demographic profile of SAM cases

Demographic Variables		No. of SAM cases	Percentage
Sex	Male	78	60
	Female	52	40
Age	6-12 months	47	36.2
	13-36 months	80	61.5
	37-60 months	3	2.3
Socio-economic status	Lower	9	6.9
	Upper Lower	104	80
	Lower Middle	10	7.7
	Upper Middle	3	2.3
	Upper Class	4	3.1
Pedal edema	Present	21	8.1
	Absent	109	41.9

130 SAM patients were enrolled in our study, among which 78 (60%) are males and 52 (40%) are females, maximum (60.1%) are of age group 13-36 months, mother's age group of most of them is between 18 to 30 years (94.6%), mothers of majority were illiterate (36.2%) and majority belongs to upper lower economic class of modified Kuppuswamy classification (80%). Pedal edema is present in 21 cases among 130 (8.1%).

Table 2: Mean Anthropometry Parameters/measurements on admission, discharge and follow up

Anthropometry	Mean ± SD		T-test	P-value
	Admission	Discharge		
Weight in Kg	6.19 ± 1.44	7.10 ± 1.52	-4.944	<0.001
Height in cm	72.32 ± 8.40	72.57 ± 8.32	-0.242	0.809
MUAC in cm*	11.08 ± 0.79	11.76 ± 0.39	-8.707	<0.001
	At 3 Month	At 6 Month		
Weight in Kg	7.76 ± 1.52	8.24 ± 1.61	3.395	0.001
Height in cm	73.73 ± 8.15	74.84 ± 8.26	1.093	0.276
MUAC in cm*	11.98 ± 0.433	12.15 ± 0.45	3.129	0.002

*Done in >6 months age group

Among anthropometric parameters, mean weight of the babies were improved by 14.70% and while mean MUAC was improved by 6.13% and the difference between mean weight and MUAC during admission and discharge were statistically significant.

During the follow up in 3 months and 6 months, among anthropometric parameters, mean weight of the babies were improved by 6.18% and while mean MUAC was improved by only 1.14% and the difference between mean weight and MUAC after 3 months and 6 months were statistically significant.

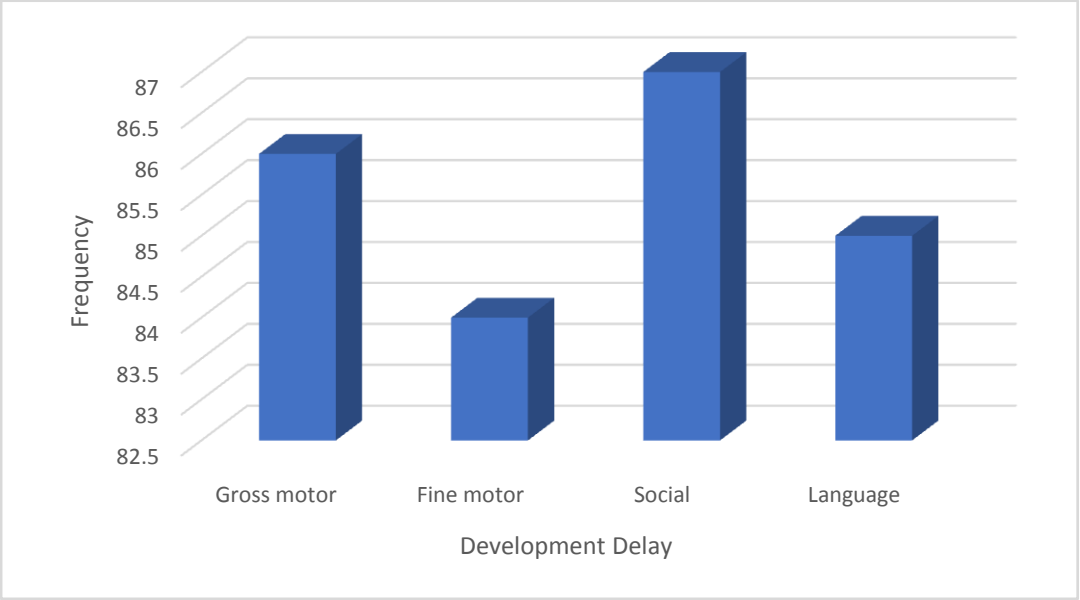


Fig 1: Developmental Delay in different developmental fields on admission.

In our study among 130 cases all were had delayed mile stone in at least 1 domain with 91.54% were suspect and 8.46% were un testable, delayed social personal domain noted in maximum children (66.92%) and delayed fine motor in minimum children (64.62).

Table 3: Developmental assessment in different developmental fields at admission and discharge.

Denver Developmental Scale	Admission	Discharge	Total	Chi-square	P-value
Fine motor					
Normal	46(35.38%)	50(38.46%)	96(36.90%)	11.48	0.002
Suspect	73(56.15%)	80(61.53%)	153(58.80%)		
Untestable	11(8.46%)	0(0%)	11(4.20%)		
Gross motor					
Normal	44(33.84%)	48(36.92%)	92(35.40%)	11.48	0.002
Suspect	75(57.69%)	82(63.07%)	157(60.40%)		
Untestable	11(8.46%)	0(0%)	11(4.20%)		
Language					
Normal	45(34.61%)	49(37.69%)	94(36.20%)	11.48	0.002
Suspect	74(56.92%)	81(62.30%)	155(59.60%)		
Untestable	11(8.46%)	0(0%)	11(4.20%)		
Social and Personal Care					
Normal	43(33.07%)	50(38.46%)	93(35.80%)	14.84	<0.001
Suspect	73(56.15%)	80(61.53%)	153(58.80%)		
Untestable	14(10.76%)	0(0%)	14(5.40%)		

*P-value<0.05, Statistically significant at 5% level of significance.

Table 4: Developmental assessment in different developmental fields, on follow up

Denver Developmental Scale	At 3 Month	At 6 Months	Total	Chi-square	P-value
Fine motor					
Normal	96(73.84%)	111(85.38%)	207(79.60%)	5.33*	0.031
Suspect	34(26.15)	19(14.61%)	53(20.40%)		
Untestable	0(0%)	0(0%)	0(0%)		
Gross motor					
Normal	85(65.38%)	104(80.00%)	189(72.70%)	6.99**	0.008
Suspect	45(34.61%)	26(20.00%)	71(27.30%)		
Untestable	0(0%)	0(0%)	0(0%)		
Language					
Normal	60(46.15%)	80(61.53%)	140(53.80%)	6.19*	0.018
Suspect	70(53.84%)	50(38.46%)	120(46.20%)		
Untestable	0(0%)	0(0%)	0(0%)		
Social and Personal Care					
Normal	59(45.38%)	80(61.53%)	139(53.50%)	6.81*	0.013
Suspect	71(54.61%)	50(38.46%)	121(46.50%)		
Untestable	0(0%)	0(0%)	0(0%)		

*P-value<0.05, Statistically significant at 5% level of significance

At the time of admission and discharge among all the parameter of Denver Developmental Scale majority of the observation found to be delayed (suspect or untestable). Few children showed improvement from admission to discharge with maximum (5%) SAM children showed improvement in social personal care and similar numbers (3%) of SAM children showed improvement in gross motor, fine motor and language. At 3 months and 6 months follow up maximum improvement found in fine motor followed by gross motor.

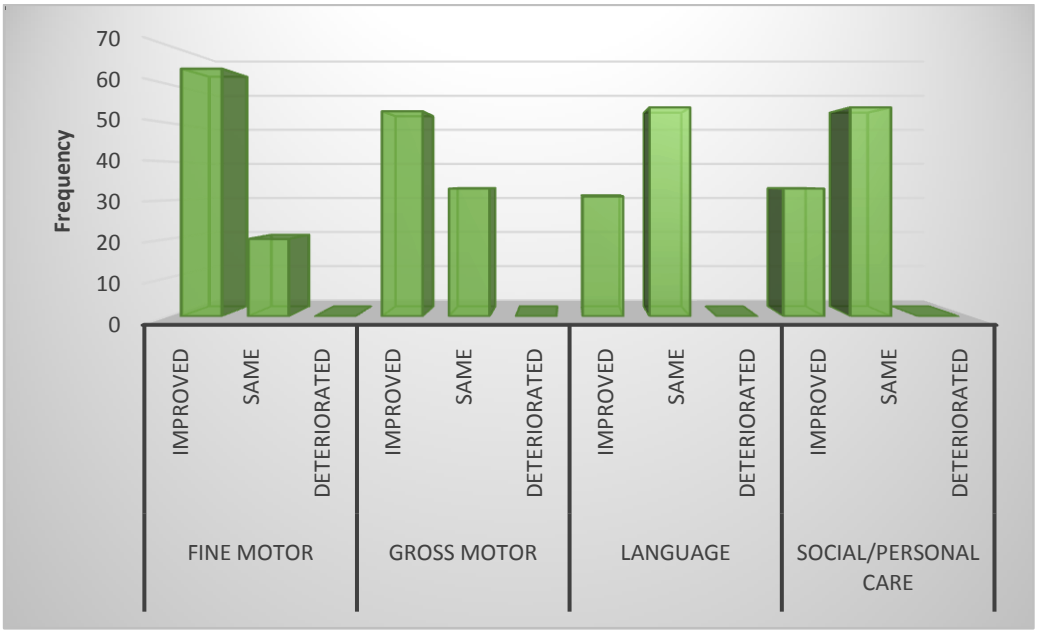
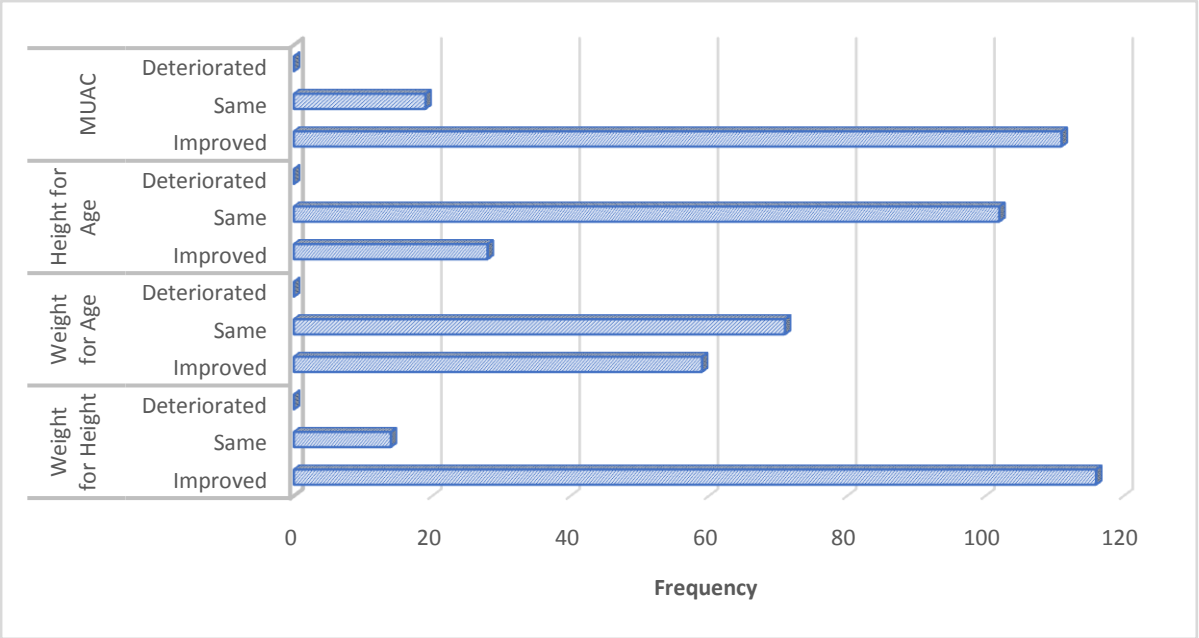


Fig2: Developmental outcome

In our study at 6 months follow up maximum improvement seen in fine motor domain with out of 84 delayed children 64 (76.19%) showed improvement, followed by gross motor domain with 61.62% children showing improvement. Least improvement was seen in language domain with 36.47% children showing improvement followed by Social/ personal care domain with 37.93% children showing improvement. No children with normal milestone at admission showed deterioration at 6 months follow up.

Fig 3: Linear growth outcome



After follow up of 6 months maximum number of cases showed the improvement for all the parameters of Denver Developmental Scale and very few of the observation remained same but no observation found deteriorated among all the parameters of Denver Developmental Scale.

DISCUSSION

- This study on "To study the effect of Play based Psycho-Motor and Psycho-Social stimulation on development of children with Severe Acute Malnutrition (SAM)**"** is conducted at Severe Malnutrition Treatment Unit (SMTU), Department of Pediatrics, Kamla Raja Children Hospital, Gwalior (M.P.) over a study period of two years. There are very few studies which assessed the effect of play-based therapy on developmental outcome in SAM children. Data from India is very scarce.
- Majority of the children are males with ratio of male to female is 3:2. Similar observations are found in study by Hossain A et al with majority of SAM children in age group less than 5 years were male (54.69%) and 45.71% were female. Sahoo DP et al, also found similar observations in their study with majority of male (53%).
- In our study at 6 months follow up significant improvement found in developmental milestones in all domain with maximum improvement in fine motor (in 76.19% children) followed by gross motor. Nahar B et al conducted study in children aged 6-24 months and found similar results. Abessa TG et al found maximum improvement in gross motor during hospital stay and in fine motor during follow up.
- In our study social personal care was most prevalent delayed milestone (66.9%) followed by gross motor (66.15%). In study by Saleem J et al most prevalent delayed milestone was social (62.1%) followed by fine motor (36.2%). In van den Heuvel M et al study it was found that all children with SAM had profound delays in the gross and fine motor, language and social domains. Khandelwal N et al study found that 75 %, 75 % and 63 % of children with SAM exhibited delay in motor, language, and cognitive domains, respectively.

CONCLUSION

This study concludes that

1. Developmental delay is associated with SAM(91.5%) in atleast one domain.
2. Most affected domains are social and gross motor.
3. Family centered Structured play based psychosocial and psychomotor stimulation along with the standard nutrition treatment of SAM children improves developmental delay along with linear growth.
4. Structured play based therapy can be provided by family members at home as it is simple, feasible and cost effective.

IMPLICATION

1. Strucured play based therapy should be implemented as a part of Community based SAM management.
2. It should be family centered.
3. It should be integrated in the follow-up programs, carried out by frontline health workers.

KEY MESSAGE

WHAT IS ALREADY KNOWN?

Play based psychosocial and psychomotor stimulation was integrated in tertiary health centers and results in improvement in developmental milestones.

WHAT THIS STUDY ADDS?

Play based psychosocial and psychomotor stimulation can be family centered and results in improvement in developmental as well as linear growth.

REFERENCES

1. Black RE, Allen LH, Bhutta ZA, Caulfield LE, De Onis M, Ezzati M, Mathers C, Rivera J(2008). Maternal and Child Undernutrition Study Group. Maternal and child under nutrition: global and regional exposures and health consequences. The lancet; 371(9608):243-60.
2. World Health Organization. WHO child growth standards and the identification of severe acute malnutrition in infants and children: joint statement by the World Health Organization and the United Nations Children's Fund.
3. Narayan J, John D, Ramadas N(2019). Malnutrition in India: status and government initiatives. Journal of public health policy; 40(1):126-41.
4. Abessa, T.G., Worku, B.N., Wondafrash et al (2019). Effect of play-based family- centered psychomotor/psychosocial stimulation on the development of severely acutely malnourished children under six in a low-income setting: a randomized controlled trial. BMC pediatrics, 19(1), p.336.