

Table 4: Socioeconomic status wise distribution (kuppuswamy classification 2012)

	Group A	Group B	Total
Upper (I)*	0	0	0
Upper middle (II) *	0	0	0
Lower middle (III)*	4(5.8%)	5(7.2%)	9(6.5%)
Upper lower (IV)	27(39.7%)	20(28.9%)	47(34.3%)
Lower (V)	37(54.4%)	44(63.7%)	81(59.1%)
Total	68	69	137

* - for statistical evaluation, these groups have been merged together

Maximum number of SAM children in both groups were from lower class(V) of society. No significant difference was present between two groups. (P=0.41)

Table 6: Initial Nutritional status (WHO Standard)

'Z' score	Group A	Group B	Total
-3 to -4	46(67.6%)	42(60.8%)	88(64.2%)

Table 8: IYCF Practices in Mother of SAM Children

	Gp A	Gp B	TOTAL	P value
initiation of breast feeding at birth	45/68 (66.1%)	52/69(75.3%)	97/137(70.8%)	0.477
Exclusive breast feeding upto 6 month	35/68(51.4%)	42/69(60.8%)	77/137(56.2%)	0.468
Continuation of breast feeding upto 1 year	57/68(83.8%)	52/69(75.3%)	109/137(79.5%)	0.632
Continuation of breast feeding upto 2 yr	32/68(47%)	40/69(57.9%)	72/137(52.5%)	0.345

Out of 137 patients 97 started breast feeding at the time of birth. In group A 66.1% and in group B 75.3% patients started breast feeding at the time of birth. In group A 51.4% and in group B 60.8% patients were on exclusive breast feeding upto 6 month. In group A 83.3% and in group B 75.3% patients continued breast feeding upto 1 year. There was no significant difference.

Table10: Comorbid Condition Associated With SAM

	Gp A	Gp B	Total
G. I. infection	36(52.9%)	33(47%)	69(50.3%)
R.T.I.	4(5.8%)	5(7.2%)	9(6.5%)
U.T.I.	3(4.4%)	4(5.7%)	7(5.1%)
Skin infection	5(7.3%)	2(2.8%)	7(5.1%)

50.3% SAM children presented with acute diarrheal disease. 6.5% SAM children had respiratory tract infections, 5.1% had urinary tract infections and skin infections.

Mean rate of weight gain in group A was 7.20 gram/kg/day, while mean rate of weight gain in group B was 8.2gram/kg/day. Rate of weight gain was significantly high in group receiving home based therapeutic food.(P<0.0001).

Table 11: Assessment of Outcome

Parameters	GroupA (WHO recommended Therapeutic food)	GroupB (HOME based therapeutic food)	'p' value
Mean rate of weight gain (gm/kg/day)	7.2±0.8	8.9 ± 2.4	<0.0001
Mean rate of weight gain(gm/day)	58.6 ±22	68.6 ±16	0.0028
Mean duration of treatment (days)	20 ± 2.1	14.7± 1.67	<0.0001
Rate of height/length gain (cms/week)	0.15±0.01	0.17±0.02	<0.0001
Rate of increase in MUAC	0.1±0.014	0.1±0.015	<0.0016

≤ -4	22(32.3%)	27(39.1%)	49(35.7%)
Total	68	69	137

Among 137 children 64.2% are between z score -3 to -4 and 35.7% are below -4. Out of these 35.7% (≤ -4), 22(32.3%) are in group A while 27(39.1%) in group B. There was no statistical difference (P=0.40).

Table 7: SAM children presented with bilateral pedal oedema

Oedema	Group A	Group B	Total
Present	18(26.4%)	13(18.8%)	31(22.6%)
Absent	50(73.5%)	56(81.1%)	106(77.3%)
Total	68	69	137

Out of 137 subjects, 31(22.6%) had oedema. Group A had 26.4% and group B had 18.8% children with oedema. No statistically significant difference (P=0.28).

(cms/week)			
Non-responders	2	1	0.619
Mortality	0	0	

Mean rate of weight gain in gram per day in group A was 58.6 gram/day, while mean rate of weight gain in group B was 68.6gram/day. Rate of weight gain was significantly high in group receiving home based therapeutic food.(P<0.0028). Mean rate of height gain in group A was 0.15 cm/week, while mean rate of height gain in group B was 0.17cm/week. Rate of height gain was significantly high in group receiving home based therapeutic food(P<0.0001). Mean rate of MUAC gain in group A was 0.12cm/week, while in group B was 0.13cm/wk . Rate of MUAC was significantly high in group receiving home based therapeutic food(P<0.0016).

6. Discussion

Maximum number of children in group A and B were between 13 to 36 months of age (77.93% and 62.31% respectively). NFHS 06 shows that the proportion of children who are stunted or underweight increases rapidly with the child's age from birth to age 20-23 months; peaking at age 20 months.¹²

Maximum number of children in group A and B were between 5 - 8 kg body weight (67.64% and 72.4% respectively). Mean weight is 7.6 and 7.9 in group A and group B respectively.

A total of 137 children were enrolled in the study, of which 85(62%) were male and 52(37.9%) females. The percentage of population of undernourished boys is higher than the girls. While according to NFHS 05-06 overall, girls and boys are about equally to be undernourished.⁴¹

Out of 137 subjects, 31(22.6%) had oedema. Group A had 26.4% and group B had 18.8% children with oedema. Kumar et al¹³ shown 27% children are edematous in his study.

Out of 137 patients 70% patients started breast feeding at the time of birth which is higher than then NFHS 06 data⁴⁰ A study by Khan M. E. in Gujarat revealed that 31.6% infants were breast fed within first 12 hours of life.⁴³ Increased number of children started breast feeding at the time of birth in this study is because of awareness about the breast feeding. In group A, 51.4% and in B, 60.8% SAM children received exclusive breast-feeding upto 6 months.

Gopujkar et al¹⁴ showed that the practice of not putting the infant to breast within first 24 hours widely prevalent in cities like Kolkata (47.6%) & Chennai (23.8%) but less in Mumbai (3.4%)

Out of 137 patients 56% patients were on exclusive breast feeding upto 6 month which is slightly higher than the NFHS-06 data.¹²

The comorbid conditions amongst study patients are diarrhoea (50.3%), respiratory tract infections (6.5%), UTI (5.1%) and skin infections (5.1%) patients. Kumar et al¹³ studied diarrhoea to be the most common.

Outcome of the study population is given in terms of weight gain. It was found that mean weight gain at 10 weeks was higher in the group b (n=69): 8.9 gm/kg/day as compare to control group (n=68) 7.2 gm/kg/day (p < 0.001) which is highly significant.

Increase in height/length is also greater among the children receiving home based TF. It again shows that home based TF has better outcome than WHO-TF. MUAC increases more rapidly among children receiving home based TF. Home based TF has better outcome in every grade of malnutrition. Cliberto et al¹⁰ shows children who received home based therapy with RUTF were more likely to achieve weight gain than those who received standard therapy. It supports our study.

Manary et al⁷ studied home based therapy for severe malnutrition with ready-to-use food shows the average weight gain was 5.2 gm/kg/d in RUTF group compared to 3.1 gm/kg/d for the maize soy & RUTF supplement groups. Sandiege H et al²⁴ shows the rate of weight gain was greater among children receiving locally produced RUTF.

Amphor et al⁹ studied mean weight gain 2.7 gm/kg/day, mean height gain 0.3 mm/d, MUAC gain is 0.2 mm/day with use of RUTF which is lower than the weight gain found in our study.

Vinod R wasnik et al⁴ studied effect of locally made RUTF for treatment of malnutrition on children aged 6 to 72 months. In this study the mean weight gain was higher in intervention group 1.7 gm/kg/d as compared to 0.9 gm/kg/d. It supports the finding of our study that locally made food is superior than RUTF.

Thakur et al⁵ compared the efficacy of locally made RUTF and locally made F-100 diet in promoting weight gain in hospitalised children showing weight gain of 9.59 gm/kg/d and 5.41 gm/kg/d respectively. This also support that locally made food is superior in terms of weight gain.

7. Conclusion

After comparing both groups we found that both kinds of therapeutic food are effective for management of SAM, but home based therapeutic food found to be more effective. As it has shown higher weight gain and lesser duration to achieve target weight. It is liked by carers, teach mothers about child feeding. Family foods for rehabilitation also form the basis for good complementary foods. It has potential to prevent malnutrition in the long term by learning to make good food mixtures, feed frequently and responsively. But families must have food resources, carer must be at home full-time. Need clinic nearby or community health worker to monitor progress and provide timely treatment when ill. We also studied the contributory factors for SAM children. It shows illiteracy among mothers, low socioeconomic status, poor hygiene, sanitation, faulty feeding habits and lack of knowledge about complimentary feeding are most important contributory factors. To combat all these factors is the only way to prevent malnutrition. Besides treatment prevention is must.

8. Research Needs

- Comparative trials are needed of the cost-effectiveness of home foods vs. RUTF.
- Operational research is needed to determine the effectiveness of scaling-up community-based rehabilitation in routine health services in non-emergency settings and barriers.

In home-based rehabilitation, the optimum frequency of visits to achieve low mortality and rapid recovery needs to be determined. Some children fail to achieve rapid weight gain with home-based rehabilitation. Research is needed to determine if these children or their families share certain characteristics that could be used to identify them as high risk and in need of additional care.

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