

**DOMICILIARY TREATMENT FOR CHILDREN WITH SEVERE ACUTE MALNUTRITION: A PROSPECTIVE STUDY**Sharmila Ramteke<sup>1</sup>, Satish K. Ramteke<sup>2</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: OBJECTIVE:** To study the effectiveness of Domiciliary Treatment in severely malnourished children. **METHOD:** This is a prospective study conducted on 25 severely malnourished children, carried out in the Department of Pediatrics, Shyam Shah Medical College and Sanjay Gandhi Memorial Hospital, Rewa (M.P), during the period of one year from July 2007 to June 2008. **INTERVENTION:** Treatment was carried out at home by parents under adequate supervision. They were educated about the nutrition need of the child and how to prepare energy and nutrient dense food. They were also educated to provide sensory stimulation, emotional support, and structured play therapy. Regular follow-up was done for 16 week. **RESULTS:** Domiciliary treatment of severe uncomplicated malnutrition appears to be satisfactory. Moderate weight gain was observed (Mean rate of weight gain 8.36+2.42gms/kg/day). 40% children could achieve their target weight for length. **CONCLUSION:** Domiciliary treatment with adequate supervision can be recommended for children with uncomplicated SAM.

**KEYWORDS:** SAM, Domiciliary treatment, severe malnutrition, PEM.

**INTRODUCTION:** The WHO guidelines on the management of severe malnutrition, requires that malnourished children to be admitted for 6 weeks which is not feasible, particularly in rural communities where situation is more worse<sup>1</sup>. Home based care of a substantial portion of children with severe acute malnutrition is an unavoidable alternative and recent experience has shown that it could be acceptable, effective and economical. So this study was conducted to observe the effect of Domiciliary Treatment of severely malnourished children.

**MATERIAL AND METHODS:** The present study is a prospective study conducted on 25 severely malnourished children, carried out in the Department of Pediatrics, Shyam Shah Medical College and associated SGM hospital Rewa (M.P), during the period of one year from July 2007 to June 2008.

**INCLUSION CRITERIA:** (1) Children below five years of age were selected from outdoor and indoor. (2) Children fulfilling WHO criteria for severe malnutrition. Severe acute malnutrition was defined as the presence of severe wasting (<70% weight-for-height or  $\geq 3SD$ ) (WHO standards),<sup>3</sup> bipedal pitting edema of nutritional origin or mid upper arm circumference (MUAC) of <11.5cm in children between 6-60 months of age<sup>4</sup>. Patient was labeled as uncomplicated if he was alert, with preserved appetite, i.e. appetite test<sup>5</sup> passed, clinically assessed to be well (absence of danger sign, severe anemia, cough, fast breathing, cold to touch and severe dehydration), and living in conducive home environment. All uncomplicated patients were treated at home while others were hospitalized.

**EXCLUSION CRITERIA:** (1) Children with life threatening illness like septicemia, meningitis and encephalopathy congenital malformations and organic lesions. Anthropometric assessment like weight, length, weight for length of all children, who attended outdoor, was done and those who

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fulfilled WHO criteria for severe malnutrition were enrolled. Severely malnourished children of indoor whose parents requested for early discharge from hospital were also enrolled. History, clinical examination, appropriate investigations were done.

**NUTRITIONAL ADVICE:** Mothers were educated about the requirements of her child and how to prepare energy and nutrient dense food like add more sugar in milk, adding more edible oil in cooked pulse or in rice, adding coconut oil in food . They were told to feed their child every 4 hourly to total 5-6 feeds in 24 hours. Parents were told to offer their child, food in such amount so that some food is left in pot. They were educated about how to maintain hygiene. Dietary advice was within the reach of parent's economic capacity.

Parents were also educated about danger signs i.e. convulsions, lethargy, vomiting and high fever, when they have to bring the child immediately to the hospital. FOLLOW UP: Initially weekly follow up was performed for up to 8 weeks and then monthly for next two months. During each follow-up parent were asked for any fresh complaint and patient examined for pallor, edema, and vitamin A deficiency. Anthropometric examination was done. Then they were asked how they prepare food and feed their child.

Correction was done, if required and they were counseled again about various aspects of domiciliary care. When the child starts gaining weight, oral Iron was started and parents were also educated to provide sensory stimulation and emotional support. They were told to give their child tender and loving care and provide cheerful stimulating environment. Parents were also educated for structured play therapy e.g. Ring on string, Rattle and Drum, Posting bottle, Dolls Books with pictures of animals. Outcome was defined as Good, when weight gain was >10 grams/kg/day, Moderate between 5 to 10 grams/kg/day and Poor <5 grams/kg/day.

Recovery defined as, achievement of weight for length >90% of the expected. In statistical analysis all proportions were compared by Chi-square test. The level of significance for all tests was 0.05. Analysis was conducted using the SPSS version 10.0 software.

### RESULTS:

Age Group. (In years)	Total	At 4 weeks			At 8 weeks		At 12 weeks			At 16 weeks			
		<5	5-10	>10	<5	5-10	>10	<5	5-10	>10	<5	5-10	>10
0-1	9	5 (56)	3 (33)	1 (11)	4 (44)	3 (33)	2 (22)	2 (22)	5 (56)	2 (22)	1 (11)	5 (56)	3 (33)
1-5	16	9 (56)	7 (44)	-	5 (31)	10 (63)	1 (6)	3 (19)	11 (69)	2 (13)	3 (19)	11 (69)	2 (13)
<b>Total</b>	<b>25</b>	<b>14 (56)</b>	<b>10 (40)</b>	<b>1 (4)</b>	<b>9 (36)</b>	<b>13 (52)</b>	<b>3 (12)</b>	<b>5 (20)</b>	<b>16 (64)</b>	<b>4 (16)</b>	<b>4 (16)</b>	<b>16 (64)</b>	<b>5 (20)</b>

Table 1: Weight Gain During Follow-Up (In Grams/Kg/Day)

(Percentage in parenthesis)

\*At 4, 8, 12, 16 week only 4%, 12%, 16%, 20% of cases gained weight more than 10grams/kg/day.

Most of the children gained weight 5-10grams/kg/day during follow up.

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H/O Previous Hospitalization for observational care	Weight gain in grams/kg/day No of cases			Total
	<5	5-10	>10	
Present	2(29)	2(29)	3(43)	7(28)
Absent	2(11)	14(78)	2(11)	18(72)

**Table 2: Distribution of Cases according to Weight Gain and History of previous Hospitalization**

$$\chi^2 = 5.14$$

P=0.067 Insignificant

(Percentage in parenthesis)

Above table shows that there is no significant positive correlation between history of previous hospitalization for observation care and weight gain.

Parameter	Age Group. In years	On Admission Wt. for Age				At 16 week Wt. for age			Total
		>60	>50	>40	>30	>70	>60	>50	
Weight for age	0-1	-	2(22)	5(56)	2(22)	2(22)	2(22)	5(56)	9
	1-3	1(6)	5(31)	8(50)	2(13)	7(44)	9(56)	-	16
<b>Total</b>		<b>1(4)</b>	<b>7(28)</b>	<b>13(52)</b>	<b>4(16)</b>	<b>9(36)</b>	<b>11(44)</b>	<b>5(20)</b>	<b>25</b>

**Table 3: Distribution of Cases According to Weight for Age**

(Percentage in parenthesis)

At 16 week only 36%, 44% and 20% reach weight for age >70%, >60% and >50% respectively.

Age Group (in years)			Weight for Length on Admission					Total
			<80	<70	<60	<50	<40	
0-1	Wt for Lt. after 16 wk.	>90	1 (25)	3 (75)	-	-	-	4 (16)
		>80	-	2 (67)	1 (33)	-	-	3 (12)
		>70	-	-	1(50)	1(50)	-	2(8)
		>60	-	-	-	-	-	-
		>50	-	-	-	-	-	-
	<b>Total</b>		<b>1(4)</b>	<b>5(20)</b>	<b>2(8)</b>	<b>1(4)</b>	<b>9(36)</b>	
1-3	Wt for Lt. after 16 wk.	>90	-	5(83)	1(17)	-	-	6(24)
		>80	-	1(33)	2(67)	-	-	3(12)
		>70	-	-	3(50)	3(50)	-	6(24)
		>60	-	-	-	-	-	-
		>50	-	-	-	-	1(100)	1(4)
	<b>Total</b>		<b>-</b>	<b>6(24)</b>	<b>6(24)</b>	<b>3(12)</b>	<b>1(4)</b>	<b>16(64)</b>

**Table 4: Distribution of Cases according to Gain in Weight for Length**

(Percentage in parenthesis)

§ 10 (40) children reached >90% weight for length at the end of 16 week.

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**DISCUSSION:** In the present study 43% children gained weight >10grams/kg/day and 57% children gained moderate weight e.g. 5-10 gram/kg/day, during their hospital stay. At 4 week half of the patients, i.e. 14(56%) had poor weight gain, 10(40%) patient gained moderate weight. Only 1(4%) children gained good weight. At 8 week 9(36%) children had poor weight gain and 13(52%) children gained moderate weight and only 3(12%) children gained good weight. At 12 week, 5(20%) children had poor weight gain and 16(64%) children moderate weight and only 4(10%) children gained good weight. At 16 week only 4 (16%) children had poor weight gain and 16 (64%) gained moderate weight and only 5(20%) gained good weight. During follow-up 8 week onwards, more than half of the children gained moderate weight. (TableNo.1)

Jamal A., Billoo AG., Hussain T, and Khanani R<sup>5</sup>. conducted a study on rehabilitation of grade III protein energy malnutrition on outpatient basis showed that 89% children had satisfactory recovery. The mainstay of this study was simple health messages adapted according to local cultural practice in native language. This simple strategy can go a long way in prevention and treatment of PEM in all developing countries. In present study recovery rate was 40% and 64% children gained moderate weight (Table no 1&4).

M.K. Chapko, A. Prual, Y Gamatie, and A.A. Moazou<sup>6</sup> compared hospital to ambulatory nutritional rehabilitation outcomes and costs. Following a hospital stay to resolve initial acute medical conditions 100 malnourished children in Niger were randomly assigned to either hospital or ambulatory nutritional rehabilitation. No significant differences between the two study groups in mortality rate or weight were found. The mean cost of hospital rehabilitation was 120% higher than ambulatory rehabilitation. According to Gupta, Dheeraj Shah, H.P.S. Sachdev, Umesh Kapil<sup>2</sup>, Indian experience is limited to management of severe acute malnutrition at nutritional rehabilitation clinic/home following initial stabilization in the hospital. In our study 7(28%) children had history of initial hospitalization for observational care. Out of these, 3(43%) children gained good weight during domiciliary treatment and 2(29%) children gained moderate weight and 2(29%) children gained poor weight during domiciliary treatment following hospitalization.

There is no significant positive correlation between history of previous hospitalization for observational care and subsequent weight gain during domiciliary treatment. (Table no.2). Ashworth and Khanum S<sup>7</sup>, In urban Bangladesh they observed that domiciliary care was 1.6 times more cost effective than day care and 4.1 times more cost effective than inpatient care. Mortality was <5% in all three groups. In our study 10 (40%) children reached > 90% weight for length, 6(24%) children reached >80% weight for length, 8(32%) children reached>70% weight for length, only 1(4%) child reached >50% weight for length at the end of study (Table no.4).

Twenty one community based therapeutic care programme were implemented in Malawi, Ethiopia, and North and South Sudan between 2000 and 2005. These programme had recovery rates of 79.4% and mortality rates of 4.1%<sup>1</sup>. Govind, et al<sup>8</sup> conducted a study to compare the efficacy of locally-prepared ready-to- use therapeutic food (LRUTF) and locally-prepared F 100 diet in promoting weight-gain in children with severe acute malnutrition during rehabilitation phase in hospital. They found the rate of weight-gain was 9.59±3.39g/kg/day in LRUTF group and 5.41±1.05g/kg/day in locally preparedF100 group. Ciliberto,<sup>9</sup> et al conducted a study to test efficacy of LRUTF and standard WHO treatment (F100) in promoting weight-gain in children with severe acute malnutrition. Their study was done in uncomplicated SAM children and on outpatient basis.

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The rate of weight-gain in the study was 3.5g/kg/day in LRUTF group and 2g/kg/day in other group. A systemic review also suggested that use of therapeutic nutrition product like LRUTF for home-based management of uncomplicated SAM appears to be safe and efficacious.<sup>10</sup>

**SUMMARY:** During follow-up at 4 week half of the patients, i.e. [14 (56%)] gained poor weight, 10 (40%) patient gained moderate weight. Only 1 (4%) children gained good weight. At 8 week 9 (36%), children gained poor weight and 13 (52%) children gained moderate weight and only 3 (12%) children gained good weight. At 12 week, 5 (20%) children gained poor weight and 16 (64%) Children gained moderate weight and only 4 (10%) children gained good weight. At 16 week only 4 (16%) children gained poor weight and 16 (64%) gained moderate weight and only 5 (20%) gained good weight. During follow-up, 8 weeks onwards, more than half of the children gained moderate weight. 43% of children who were enrolled from indoor had good weight gain compared to 11% from outdoor. There is no significant positive correlation was observed between history of previous hospitalization for observation care and weight gain. At 16 week only 36%, 44% and 20% reach weight for age >70%, >60% and >50% respectively. 10(40%) children reached >90% weight for length at the end of 16 week. Mean rate of weight gain was 8.36+2.42 grams/kg/day. Recovery was 40%.

Sample size in this study was small but many studies with larger sample size have revealed similar result. LRUTF was not used in this study instead immediately prepared energy and nutrient dense food was used. With studies it is now known that LRUTF is better than F100 and immediately prepared energy and nutrient dense food.

**CONCLUSION:** Domiciliary treatment of severe uncomplicated malnutrition appears to be satisfactory as (1) Moderate weight gain was observed (Mean rate of weight gain 8.36+2.42gms/kg/day). 40% children could achieve their target weight for length. (2) Parents were able to take care of their other responsibilities. (3) It is comparable to institutional treatment, but there is need for adequate supervision.

**RECOMMENDATION:** Domiciliary Treatment with adequate supervision can be recommended for children with uncomplicated SAM.

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