

## Study Effect of F-75 Diet on Weight of Severe Acute Malnourished Children in Western Rajasthan

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### Abstract:

**Background:** Malnutrition is rampant in paediatric age group globally. Over the last two decades, severe acute malnutrition (SAM) has been increasing in India despite of favourable national – level economic growth. Prevalence of SAM has increased from 6.6% in 2005 – 2006 as per NFHS-3 to 7.5% in 2015 – 2016 as per NFHS-4, and as per NFHS-5 prevalence continues to be 7.7%. Children with SAM are at 9-11 times higher risk of mortality and morbidity than well-nourished children. This is an unprecedented public health emergency requiring policy attention, critical care, nutritional therapy as well as nutritional rehabilitation.

**Aims and Objective:** To study effect of F-75 diet on weight of SAM children admitted in malnutrition treatment centre.

**Material and Methods:** This is Prospective observational study done on SAM Children (without bilateral pedal oedema) aged 6months to 60 months hospitalized in Malnutrition Treatment Center, in Government Medical College Pali and attached Bangur hospital, during study period from April 2022 to April 2024. F-75 diet was given to 387 SAM children that were enrolled in study for initial 3days according to MTC guidelines. Daily weight gain is recorded. Average daily weight gain (gm/kg/day) calculated on day fourth as well as on discharge.

**Results:** Out of 387 children average daily weight gain on day fourth was following: <5gm/kg/day in 35(9%), 5-10 gm/kg/day in 83(21.5%), >10 gm/kg /day in 269(69.5%). This suggests good weight gain on F-75 diet in maximum children due to availability of food in adequate quantity & quality.

**Conclusion:** Although F-75 is not intended for weight gain, still children gained good weight on starter diet. High quality infant and young child feeding counselling is needed to prevent severe acute malnutrition as introduction of complementary feeding at 6 months age can lessen burden of malnutrition.

**Keywords:** Severe Acute Malnutrition, F-75 diet.

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### Introduction

Malnutrition is one of the major public health problems throughout the developing world and is an underlying factor in over 50% of children's death under 5 years who die each year of preventable causes [6-9]. Severe Acute Malnutrition is defined as severe wasting and/or bilateral oedema. Severe wasting is extreme thinness diagnosed by weight for length/height < -3SD of WHO Child Growth Standards, or mid upper arm circumference < 115mm (measured by Shakir's tape). Bilateral oedema is diagnosed by grasping both feet, placing a thumb on top of each, and gently pressing for 10 seconds. A pit (dent)

remaining under each thumb indicates bilateral oedema [10].

It is estimated that approximately 16% of births worldwide in 2013 were low birth weight (LBW). Rates of LBW are highest (28%) in southern Asia, which are twice those of Sub-Saharan Africa [5]. Approximately 9% of sub-Saharan African and 16% South Asian children suffer from moderate acute malnutrition and approximately 2% of children living in developing countries suffer from severe acute malnutrition [11,12].

Asia carries most of global burden because of combination of large population size and high prevalence [10]. In India approximately 20% of children under five years, are severely wasted [13]. Estimates from most recent nationally representative survey indicate that 6.4% of children below 60 months of age have weight-for-height below third standard deviation. At present, Indian population of 1.2 billion, there are about 132 million children under five years (12% of population), of which 6.4% or roughly 8 million are assumed to be suffering from severe acute malnutrition. To prevent deaths among severely malnourished children, the Government of India have started the Nutrition Rehabilitation Centers (NRCs) with support of UNICEF. The objectives of the programme are to control malnutrition among the children aged 1–5 years in the country and to bring down the percent of severely malnourished children to less than 1% [14].

### Materials and Methods

This was a prospective observational study done from April 2022 to April 2024 in 10 bedded Malnutrition Treatment Center in Government medical college Pali, Rajasthan, and attached Bangur Hospital.

The study participants were 387 children who met criteria of severe acute malnutrition, but without bilateral oedema, between 6 and 60 months of age. WHO criteria for severe acute malnutrition, which

included children with weight-for-height (W/H) or length (W/L) with Z score less than 3 standard deviation from mean, and/or mid-upper arm circumference (MUAC) <115 mm, and/or presence of bilateral pitting pedal oedema. These children admitted in MTC were given special therapeutic diet including F 75 and F 100 as per WHO/UNICEF protocol for management of severe acute malnutrition (WHO 1999). F 75 diet were given for initial 3 days and then shifted to F 100 diet.

These children were observed for daily weight gain. After ruling out the acute complications and their initial stabilization, these children were subjected to the actual MTC protocol. Children were given diet as per WHO/UNICEF protocol daily along with other supplements. WHO weight for height reference charts were used for their assessment. Daily weight measurements were done at fixed time using a single standardized weighing scale. Average daily weight gain was calculated on day fourth and on discharge.

### Results

Among 387 children, 205 (52.9%) were males while 182 (47.1%) children were females. This pie chart suggests that female children are less affected as compared to male children, probably due to more awareness of Female education & health by government of India.

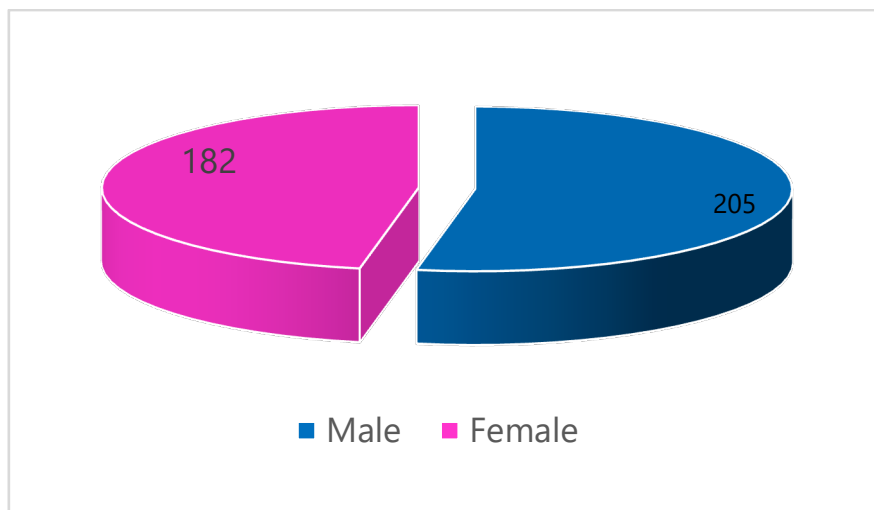


Figure 1:

According to age distribution, most of the children 251 (64.85%) belonged to 6-18 months of age, 89 (22.99%) children were of 19 -36 months of age and 47 (12.16%) children were of 37-60 months of age. This bar chart suggests maximum children

being affected at 6 – 18 months, which is the time for introduction of complementary feeds.

Hence, awareness and education regarding complementary feeding are required to tackle this.

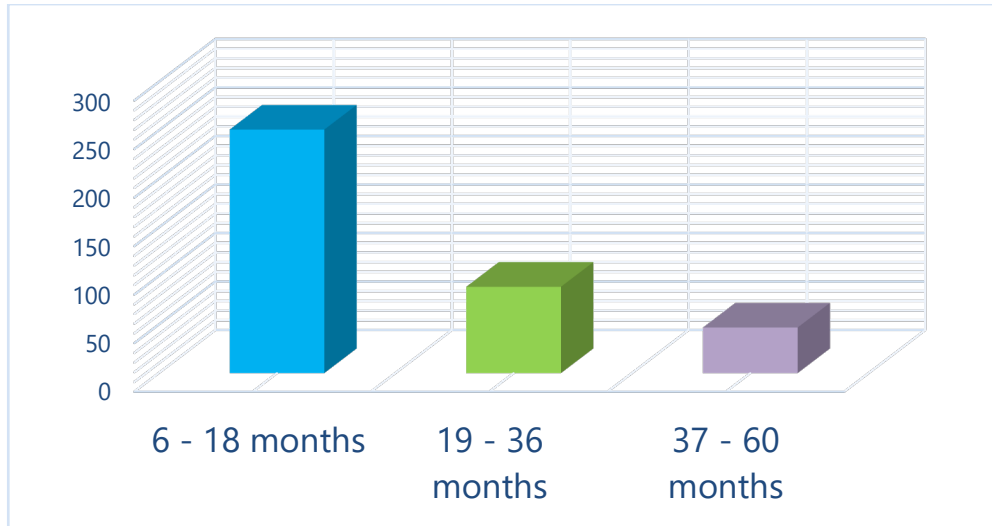


Figure 2:

Among 387 children, 22 (5.7%) belong to General category, 175 (45.2%) belong to OBC category, 92 (23.7%) belong to Scheduled Caste category and 98(25.4%) belong to Scheduled Tribe category. This doughnut pie chart suggests children belonging to Scheduled caste & Scheduled tribe category are less affected, probably due to intensive government policies for educating backward classes.

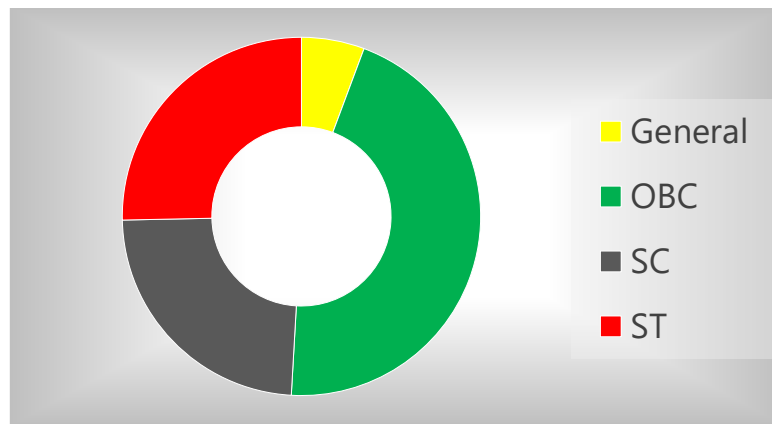


Figure 3:

On day fourth average daily weight gain was <5gm/kg/day in 35 (9%) children, 5-10 gm/kg/day in 83 (21.5%), >10 gm/kg /day in 269 (69.5%).

Table 1:

Weight gain on 4 <sup>th</sup> day of admission	No. of children	Percentage
< 5 g/kg/day	35	9%
5 – 10 g/kg/day	83	21.5%
> 10 g/kg/day	269	69.5%
Total	387	

On discharge average daily weight gain rate was <5gm/kg/day in 95 (26.61%), 5-10 gm/kg/day in 81(22.68%), >10gm/kg/day in 181 (50.70%) children.

Table 2:

Weight gain on Discharge	No. of children	Percentage
< 5 g/kg/day	41	10.6%
5 – 10 g/kg/day	109	28.2%
> 10 g/kg/day	237	61.2%
Total	387	

## Discussion

As it is well known fact that F-75 is used only for biochemical and metabolic, we do not expect any weight gain in child.

In fact, due to loss of oedema, weight loss can be seen in such children. But in present study we clearly saw that children gained good weight on starter diet.

So, this gives an inference that children who are malnourished, can recover very well in initial days of treatment also if they are eating the right foods in right quantity & right quality and are not suffering from diseases or infections.

To prevent severe acute malnutrition there is need of

- Promoting Exclusive Breastfeeding till 6 months
- Successful introduction of Complementary feeding
- High quality infant and young child feeding counselling
- Awareness regarding various diseases
- Adequate health care facilities for disease management

As in present study, most affected age group was 6months to 18 months, there is need for counselling regarding Complementary feeding so as to decrease magnitude of malnutrition.

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