ORIGINAL ARTICLE

Determine the Outcomes of F100 Therapeutic Feed in Children with Severe Acute Malnutrition

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ABSTRACT

Aim: To examine the outcomes of WHO recommended F100 therapeutic feed in children presented with severe acute malnutrition.
Study Design: Retrospective/Observational
Place and duration: Department of Pediatrics Capital Hospital, Islamabad during from 1-01-2017 to 31-12-2018
Methods: One hundred and thirty two male/female children with ages up to 5 years presented with severe acute malnutrition were enrolled in this study. Detailed demographics including, age, sex, residence, socioeconomic status and clinical presentation were recorded after taking written consent from parents/attendants. F75-F100 formula (WHO recommended) as therapeutic feed were given to all the patients. Outcomes such as weight gain, complete recovery and mortality were examined.
Results: Majority of patients 88(66.67%) were males. 65(49.24%) patients were ages less than 1 years, 48 (36.36%) patients were ages 1 to 2 years. 75(56.82%) patients belongs to rural areas. 42(31.82%) patients had low-socioeconomic status, 68(51.52%) patients had middle socio-economic status. Mean weight at admission was 4.62±1.45 kg and after 1 week it was 6.02±1.17kg, a significant improvement was observed with p-value <0.001. 8(6.06%) were died during hospitalization, 120(90.91%) patients were fully recovered and discharge and 4 (3.03%) patients were LAMA.
Conclusion It is concluded that F100 formula (WHO recommended) as therapeutic feed is very effective for the treatment of severe acute malnutrition with majority of children got recovered and discharged.
Keywords: Sever Acute Malnutrition, F75-F100 Therapeutic Formula, Recovered, Died

INTRODUCTION

During the last century wonderful achievements are observed in the nutritional management. Now by the help of advanced nutrition, severe malnutrition can be treated easily. The term malnutrition encompasses both end soft he nutrition spectrum, from under-nutrition to overweight[1]. Globally under-nutrition is commonly observed in children and it results short as well as long term health problems in which stunted growth, development delay, weight loss and wasting of muscles is important. According to World Health Organization (WHO) 54% of childhood mortality is due to malnutrition[2,3]. In another observation by WHO, weight below average causes about 35% deaths in children less than five years of age.[4]

Structural damage to the brain and impairment of motor development and exploratory behavior in children may be due to malnutrition[5]. There is high risk of chronic diseases in children who are malnourished before two years of age and they gained weight rapidly after two years of age and it may be relate to the nutrition[6].

Current guidelines for the nutritional management of SAM in the hospital define 3 phases of treatment[7]: 1) the" stabilization phase," during which children are fed a liquid diet (standard F75 [F75]) with a relatively low-protein (approximately 9g/l) and relatively low-energy content (75kcal/100ml). F75 was designed to meet the estimated nutritional requirements to restore physiological and

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metabolic functions and to prevent refeeding syndrome while medical conditions stabilize. Now eight gain is expected during this phase of treatment; 2) the "transition phase," during which higher protein and energy through either F100 formula or ready-to-use therapeutic foods (RUTFs) are started with supplemental F75 formula; and 3) the" rehabilitation phase," with an increased daily in take of F100 or RUTF sinorder to achieve catch-up growth. Once a child has stabilized and tolerates RUTFs, WHO guidelines recommend discharge from hospital care, with continuation of the rehabilitation phase continued in the community[8-10]. The present study was conducted aimed to examine the outcomes of F75-F100 therapeutic feed in children presented with severe acute malnutrition.

MATERIALS AND METHODS

This retrospective/observational study was conducted at Department of Pediatrics Capital Hospital G-6/2 Islamabad during from 1-01-2017 to 31-12-2018. Total 132 children of either gender with ages up to 5 years presented with severe acute malnutrition were enrolled. Detailed demographics including, age, sex, residence, socioeconomic status and clinical presentation were recorded after taking written consent from parents/ attendants. Children already on therapeutic supplementation, children with surgical interventions, and children with severe abdominal problems and those with no consent from parents were excluded.

Complete examination of malnutrition was done at admission. After acute management F-75 was started. When patient started gaining weight at 0.5g/kg/day at least

for 3 days then patient was started F-100.F-75and F-100 was given 6-10times/day. Alternate mother feed was given to children on mother feeding. One sachet F-75 or F-100 was put in 500 ml water to make 75 or 100calories/ 100ml solution respectively. On F-100 therapy if the patient maintained gaining weight at 0.5g/kg/day for one week. Outcomes such as weight gain, complete recovery and mortality were examined at the time of discharge. Data was analyzed by SPSS 24. Chi-square test was done to compare the weight between at admission and at discharge. P-value <0.05 was taken as significant.

RESULTS

Out of 132 children 88(66.67%) were males while 44(33.33%) were females. 65(49.24%) patients were ages less than 1 year, 48(36.36%) patients were ages 1 to 2 years and 19(14.39%) patients were ages above 2 years. 75(56.82%) patients belongs to rural areas while 57(43.18%) had urban residence. 42 (31.82%) patients had low-socioeconomic status, 68(51.52%) patients had middle socio-economic status, and 22(16.67%) had high socioeconomic status. 120(90.91%) patients were marasmus while 12 (9.09%) were khwashikor (Table 1).

Table 1: Demographic of all the patients

Variable	No.	%
Age (years)		
<1	65	49.24
1 – 2	48	36.36
>2	19	14.39
Gender		
Male	88	66.67
Female	44	33.33
Residence		
Urban	57	43.18
Rural	75	56.82
Socioeconomic status		
Low	42	31.82
Middle	68	51.52
High	22	16.67
Types of SAM		
Khwashikor	12	9.09
Marasmus	120	90.91

Table 2: Clinical presentation at admission

Variable	No.	%
Appetite		
Poor	105	79.55
Good	27	20.45
Co-morbidities		
Diarrhea	60	45.45
Pneumonia	42	31.82
Vomitting	20	15.15
Hypoglycemia	16	12.12
UTI	10	7.58

Table 3: Comparison of weight gain

| Weight (Kg)	Mean±SD	P value
At Admission	4.62±1.45	0.001
At Discharge	6.02±1.17	

According to appetite at admission, 105 (79.55%) patients had poor appetite while 27 (20.45%) had good appetite. Diarrhea was the most common medical comorbidity found in 60 (45.45%) patients followed by pneumonia in 42 (31.82%), vomiting in 20 (15.15%), hypoglycemia in 16 (12.12%) patients and urinary tract infection found in 10 (7.58%) patients respectively (Table 2).

Mean weight at admission was 4.62±1.45 kg and after 1 week it was 6.02±1.17 kg, a significant improvement was observed with p-value <0.001 (Table 3). According to the therapeutic outcomes, 8 (6.06%) were died during hospitalization, 120 (90.91%) patients were fully recovered and discharge and 4 (3.03%) patients were leave against medical advice (LAMA) (Fig. 1).

Fig. 1: Final outcomes of F100 therapeutic feed
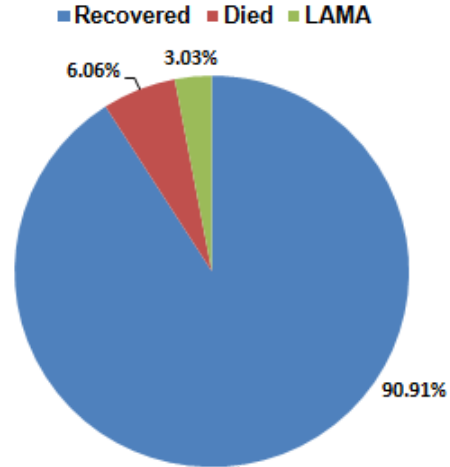
DISCUSSION

Severe acute malnutrition in children under 5 years is one of the most common life threatening disorders in low-income countries with high rate of mortality and morbidity. According to the WHO reports 5 to 50% children were died due to severe acute malnutrition in developing countries.[11,12] In Pakistan severe acute malnutrition is commonly found disorder in pediatric population. Pakistan is developing country and majority of population had low and middle socioeconomic status, also majority of mother in rural areas are illiterate and these two important risk factors are the leading causes of severe acute malnutrition in pediatric population.[13] The present study was conducted aimed to examine the outcomes of WHO recommended F75-F100 therapeutic feed for the treatment of severe acute malnutrition. In this regard 132 patients were enrolled. Majority of patients 66.67% were males and 85.6% children were less than 2 years of age. A study conducted by Khan et al[14] regarding treatment outcomes of severe acute malnutrition in pediatric in 2017 and they reported that 56.2% patients were males and 44.57% patients were ages less than 6 months while 55.43% were ages above 6 months.

In present study we found that 75 (56.82%) patients belongs to rural areas while 57 (43.18%) had urban residence. 42 (31.82%) patients had low-socioeconomic status, 68 (51.52%) patients had middle socio-economic status, and 22 (16.67%) had high socioeconomic status. 120 (90.91%) patients were marasmus while 12(9.09%)

were khwashikor. A study conducted by Muluken et al[15] reported that 78% patients were belongs to rural areas and 43.4% patients were admitted because of marasmus and 17.3% were because of kwashiorkor while 32.2% were both marasmus and kwashiorkor. A study conducted in Nepal by Pravanaet al[16] regarding determinant of severe acute malnutrition in children and they reported that low socio-economic status was thye independent risk factor of severe acute malnutrition.

In our study, 105 (79.55%) patients had poor appetite at admission while 27 (20.45%) had good appetite. These results were similar to the study by Muluken et al.[15] Diarrhea was the most common medical comorbidity found in 60 (45.45%) patients followed by pneumonia in 42 (31.82%), vomiting in 20 (15.15%), hypoglycemia in 16 (12.12%) patients and urinary tract infection found in 10 (7.58%) patients respectively. These results were comparable to many of previous studies in which diarrhea and pneumonia were the commonest clinical comorbidities found in severe acute malnutrition children.[17,18]

We found a significant improvement regarding weight gain with p-value <0.05, mean weight at admission was 4.62±1.45 kg and after 1 week it was 6.02±1.17 kg. A study Qasimet al[19] reported that F75 and F100 therapeutic feed was very effective for the treatment of severe acute malnutrition in children. In their study mean weight at the start of F-100 was 4.85±1.69 kg. Mean weight at the time of discharge was 5.72±1.67 kg.

According to the therapeutic outcomes we found that 8 (6.06%) were died during hospitalization, 120 (90.91%) patients were fully recovered and discharge and 4 (3.03%) patients were leave against medical advice (LAMA). Khan et al[14] reported that 6.16% patients were died while 89.86% were recovered and discharge. A study by Versloot et al[20] reported that the mortality rate was 8% and 92% children were recovered whom were undergoing F100 therapeutic feed for the treatment of severe acute malnutrition.

CONCLUSION

Early and proper management is very essential to reduce the morbidity and mortality among children presented with severe acute malnutrition. We concluded that F100 formula (WHO recommended) as therapeutic feed is very effective for the treatment of severe acute malnutrition with majority of children got recovered and discharged.

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