Original Research Article

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Role of mother's knowledge and feeding practices in improvement of children from severe acute malnutrition

Prashant K. Jaiswal, Shubhra A. Gupta*, Nirmal Verma

Department of Community Medicine, Pt. JNM Medical College, Raipur, Chhattisgarh, India

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*Correspondence:

E-mail: shubhraagrawalgupta@gmail.com

Dr. Shubhra A Gupta,

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ABSTRACT

Background: Under nutrition is significant health problem in India as well as in Chhattisgarh, recent NFHS 4 data shows that there is increase in number of children who are severely wasted from 5.6% in NFHS 3 to 8.4% in Chhattisgarh. Literature shows appropriate feeding practices and break in malnutrition infection cycle help malnourished child to recover, so present study was planned with the objective to find out the role of mother knowledge regarding feeding practices and management of minor ailments related to improvement of severe acute malnourished children discharged cured from nutritional rehabilitation centres in Chhattisgarh.

Methods: A community based study was planned among children discharged as cured from NRC between March to December 2017. They were followed in community to find out socio-demographic factor, feeding practice after discharge, mother knowledge score, household dietary diversity using 24 hour recall method & anthropometric measurements.

Results: Out of 156 children discharged as cured from March to December 2017, total 132 children were covered during the survey from January to June 2018. It was observed that improvement in nutritional status after discharge was significantly associated with increasing knowledge score for mother regarding nutrition and children who were separately feed after discharge from NRC.

Conclusions: Mother knowledge regarding nutrition and management of minor ailments and feeding practice to child after discharge are important factors associated with the improvement of children from SAM.

Keywords: Nutritional rehabilitation centers, Severe acute malnutrition, Household dietary diversity

INTRODUCTION

The health status of children represents the health status of the people of country. Thus proper nutrition of children is major determinant of health and wellbeing of children and nation. It is well recognized that the period from birth to two years of age is a critical window for promotion of optimal growth, health and behavioral development. Proper nutrition of children leading to adequate growth and good health is the essential foundation of human development.¹

Out of total 667 million under five year age children worldwide, 159 million are stunted and 50 million are wasted.² Malnutrition in children is widely prevalent in developing countries including India. National Family Health Survey (NFHS) 4 during 2015-16 shows, 35.7% children under five years of age were underweight, 38.4% children were stunted, 21% children were wasted and 7.5% children were severely wasted.³ When compared with earlier 2005-06 NFHS 3 data, 42.5% children were underweight, 48% were stunted, 19.8% were wasted and 6.4% children were severely wasted.4 Thus, there is marked decrease in proportion of underweight and stunted children between NFHS 3 to NFHS 4 but there is slight increase in proportion of wasted and severely wasted children. In Chhattisgarh 2015-16 NFHS 4 report shows that 37.7% children under five years of age were underweight, 37.6% children were stunted, 23.1% children were wasted and 8.4% children were severely wasted. When compared with earlier 2005 NFHS 3 data it shows 47.1% children were underweight, 52.9% were stunted, 19.5% were wasted and 5.6% children were severely wasted. So similar to India, in Chhattisgarh also, there is a marked decrease in proportion of underweight and stunted children but also there is increase in proportion of wasted and severely wasted children.

Objectives

To find out the role of mother's knowledge & feeding practices in improvement of children from severe acute malnutrition according to weight for height of WHO growth standard.

METHODS

The present study was community based observational study were all the children discharged as "cured" from Nutritional Rehabilitation Center (NRC) District Hospital Raipur and Koriya from March 2017 to December 2017 were covered as study subjects. The present study was carried out from July 2016 to October 2018. Minimum sample size to be covered was 130.

The questionnaire was divided into four parts consisting pre designed pretested semi-structured questionnaire for socio demographic information of study subjects, feeding habit of study participants after discharge. Pretested structured questionnaire related to knowledge of mother regarding nutrition & management minor ailments.⁶ Structured questionnaire to study household dietary diversity approved from FAO (Food and Agriculture Organization). 7 Socio demographic information of study subjects as place of residence, socioeconomic status of family according to updated modified Prasad's classification, feeding history of child after discharge from NRC. In assessment of knowledge of mother about child's nutrition and minor ailments management, knowledge of mothers regarding nutrition and management of minor ailments was evaluated. Each mother was asked a set of four questions about nutrition. The aspects of nutrition knowledge studied were: age for introducing weaning foods into a child's diet; diet during diarrhoea; preparation of oral rehydration solution (ORS); & growth-chart interpretation. A score of 2 was given for each correct answer. A mother's overall knowledge of nutrition and management of minor ailments was rated on a scale of 0 to 8 by calculating the total of all the correct responses. Mother's responses were considered correct if she provided the following information: Soft and semisolid foods (weaning food) should be introduced to children after completion age six months or less, a child

should be given as same or more food during diarrhoeal episodes as when the child is not ill, diarrhoea should be managed by giving ORS or fluids to the affected child, ORS should be made with three standard tablespoons of sugar and one-half standard teaspoon of salt per liter of water or by dissolve one ORS packet in one liter of boiled and cooled water. Then three growth charts were shown to the mothers. One chart showed weight gain every month (normal growth); the second showed no weight gain for six months (growth faltering); and the third showed continuous loss of weight (grade IV malnutrition). A mother's response was considered correct if she could interpret three charts correctly. Dietary diversity questions were taken from FAO for study of household dietary diversity (HDDS). It described the food (meals and snacks) that one ate or drank during the whole day and night, whether at home or outside the home on the previous day. Starting with the first food or drink of the morning all food and drinks mentioned by the family member present during the interview were noted. When composite dishes were mentioned, list of ingredients were noted. After respondent answer to asked questions had finished, she was probed for meals and snacks not mentioned in the list. It includes food eaten by any member of the household, and exclude food purchased and eaten outside the home, after the respondent had completed her answer, the food groups based on the given information was noted. For any food groups not mentioned, respondent was asked if a food item from this group was consumed. The food groups used to calculate HDDS are listed. For scores certain food groups in the questionnaire were aggregated. Dietary diversity scores are calculated by summing the number of food groups consumed in the household or by the individual respondent over the 24-hour recall period. Anthropometric measurement as weight, Height & MUAC were taken and nutritional status of children according to weight for height Z score was calculated using WHO anthro software (v3.2.2)http://www.who.int/childgrowth/en.

Criteria to analyze change in nutritional status of study participants

For analysis children were divided into two groups improved and deteriorated. Children who were above - 2SD (Z score) for weight for height during survey according to WHO growth standards were considered improved. Children who were below – 2SD (Z score) during survey but whose difference in weight for height Z score between survey to discharge was positive were considered improved. Children who had negative change in difference of Z score value for their weight for height between survey to discharge were considered as deteriorated, except those children who were above -2SD, irrespective of difference in z score values between survey to discharge, since they were maintaining normal grade of nutrition according to study criteria.

RESULTS

Out of total 132 children surveyed, 43.9% were males & 56.1% were females. Majority 49.2% were between 13 to 24 months age group followed by 34.8% between 25 to 36 months, 10.6% between 37 to 48 months. 5.3% children were less than 12 months & greater than 48 months. Majority 59.1% children were belonging to rural areas and 40.9% were from urban areas. Maximum 45.5% of children were belonging to lower middle class family i.e. Class IV of modified Prasad's classification followed by 33.3% to Class V (Lower class), 16.7% to Class III (middle class) and 4.5% to Class II (upper middle class). Out of 132 study subjects, majority 34.1% had spent 10 to 12 months in community after discharge from NRC to time of survey, followed by 25% study subjects who had spent 6 to 8 months in community, 22.7% participants who had spent more than 4 months to six months and 18.2% participants who had spent eight to ten months in community after discharge from NRC. Mean duration of stay for study participants was 8.75±2.49 months from discharge to survey. Out of total score 8 of mother knowledge score regarding nutrition and management of minor ailments, majority 53.8% of mother/caregiver scored only between 0-2, followed by 27.3% with 3-4 scores and only 25 mothers 18.9% have scored higher than five. Majority 96.2% of families have mixed food habit, and only 3.8% were pure vegetarian families. It was observed that 79.5% study children were separately feed but 20.5% children were still sharing their food with their family members. Out of 12 food groups

suggested by FAO (Food and Agricultural Organization) for dietary diversity in present study it was found that majority of families 63.6% had 6 food groups in last 24 hour diet, followed by 28 families (21.2%) had 5 food groups and 19 families (14.4%) had seven or more food groups in their last 24 hour of dietary history. It was found that only one family (0.8%) had less than or equal to 4 food groups in their diet. The mean diversity score found in study was 5.92±0.61 (49.3% of the 12 food groups) which was a good score. It also showed that Indian food contains variety of spices, cereals, fruits and vegetables added diversity to food. Table 3 presented the association between feeding of study subject after discharge from NRC, knowledge of mother regarding nutrition & minor ailments and their relationship with change in W/H nutritional status from discharge to survey. It showed that children who were feed in separate thali had significantly higher improvement (p=0.011) than those who shared thali with their siblings and was found to be 74 (70.5%). Improvement of children between discharge and survey was seen higher in those children whose family had higher dietary diversity score 70 (68%), than those who had poor scores. Similarly, significant improvement was seen with mother who had higher knowledge regarding nutrition & management of minor ailments was 47 (77%, p=0.008). When correlation was assessed an insignificant but positive correlation (r=0.111, p=0.205) was found in dietary diversity, but mothers' knowledge (r=0.223, p=0.010) showed significant positive correlation with change in Z score from discharge to survey.

Table 1: Age and sex wise distribution of study participants.

Age group (in months)	Male	%	Female	%	Total	%	
≤12 months	00	00	01	00.8	01	00.8	
13 to 24 months	31	23.5	34	25.8	65	49.2	
25 to 36 months	20	15.1	26	19.7	46	34.8	
37 to 48 months	04	03.0	10	07.6	14	10.6	
>48 months	03	02.3	03	02.3	06	04.6	
Total	58	43.9	74	56.1	132	100.0	
Mean age in months	27.39±10	27.39±10.24		27.37±9.60		27.4±9.92	

Table 2. Distribution of study variables.

Variables		Frequency	Percentage (%)
Locality	Rural	78	59.1
Locality	Urban	54	40.9
Socioeconomic status (modified Prasad classification)	SES class I	00	00
	SES class II	06	04.5
	SES class III	22	16.7
	SES class IV	60	45.5
	SES class V	44	33.3
Duration of stay in community from discharge to survey	4–6 months	30	22.7
	>6–8 months	33	25.0
	>8–10 months	24	18.2
	>10–12 months	45	34.1
	Mean duration of stay=8.75±2.49 months		

Continued.

Variables		Frequency	Percentage (%)
Household dietary diversity score (HDDS)	4	01	0.8
	5	28	21.2
	6	84	63.6
	7	19	14.4
	Mean HDDS score- 5.92±0.61		
Feeding habit after discharge.	Separate thali	105	79.5
	Shared thali	27	20.5
	Total	132	100.0

Table 3: Association between study variables and change in nutritional status.

<mean th="" ≥mean<=""><th>86 42 44</th><th>65.15 60.9</th><th>46 27</th><th>34.85 39.1</th><th>132</th></mean>	86 42 44	65.15 60.9	46 27	34.85 39.1	132		
≥mean		60.9	27	20.1			
	11		-	37.1	69		
2 1 1 60 0 200 16 1	44	69.8	19	30.2	63		
χ^2 =1.168, p=0.280, df=1, (>0.05)							
Mixed	81	63.8	46	36.2	127		
Vegetarian	5	100.0	0	0.0	5		
Separate	74	70.5	31	29.5	105		
Shared	12	44.4	15	55.6	27		
Good	70	68.0	33	32.0	103		
Average	16	55.2	13	44.8	29		
r(130)=0.111, p=0.205 (>0.05)							
Good & Fair	47	77.0	14	23.0	61		
Poor	39	54.9	32	45.1	71		
χ^2 =7.071, p=0.008, df=1, (<0.05)			r(130)=0.223, p=0.010 (<0.05)				
	Mixed Vegetarian Separate Shared Good Average Good & Fair	Mixed 81 Vegetarian 5 Separate 74 Shared 12 Good 70 Average 16 r(130)=0. Good & Fair 47 Poor 39	Mixed 81 63.8 Vegetarian 5 100.0 Separate 74 70.5 Shared 12 44.4 Good 70 68.0 Average 16 55.2 r(130)=0.111, p=0 Good & Fair 47 77.0 Poor 39 54.9	Mixed 81 63.8 46 Vegetarian 5 100.0 0 Separate 74 70.5 31 Shared 12 44.4 15 Good 70 68.0 33 Average 16 55.2 13 r(130)=0.111, p=0.205 (>0.0 Good & Fair 47 77.0 14 Poor 39 54.9 32	Mixed 81 63.8 46 36.2 Vegetarian 5 100.0 0 0.0 Separate 74 70.5 31 29.5 Shared 12 44.4 15 55.6 Good 70 68.0 33 32.0 Average 16 55.2 13 44.8 r(130)=0.111, p=0.205 (>0.05) Good & Fair 47 77.0 14 23.0 Poor 39 54.9 32 45.1		

I=Improved, D=Deteriorated, T=Total.

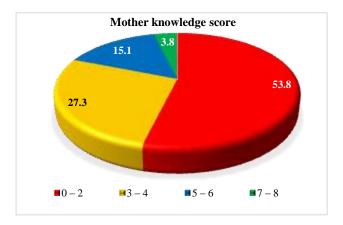


Figure 1: Distribution of mother knowledge score.

DISCUSSION

The findings of present study were discussed in relation to the objectives, in present study children who were already diagnosed with severe acute malnutrition and got cured in nutritional rehabilitation centers were study subjects as study objective is to find out factors related with change in their nutritional status among these children, the findings in present study were discussed with other factors that are proved to be associated with

malnutrition to observe weather these factors are related with the recovery of children from malnutrition.

In present study mean household dietary diversity score was 5.92 with a standard deviation of 0.61, which covers 49.3% of the 12 food groups suggested by HDDS based on the food groups proposed by FANTA Swindale & Bilinsky, 2006. In present study although insignificant but a positive correlation was observed between HDDS and improvement of children. Similarly it was observed by Bain LE et al. that decreasing food purchasing ability and dietary changes might have a role in the nutritional status of children.8 Kristjansson et al shown that good supplementary nutrition to the children under two years of age had a positive impact. Lamberti et al established that poor dietary intake which aggravated under-nutrition in children under five years of age. 10 Evidences from study done by Imdad et al showed that proper and timely complementary feeding of the children, by educating mothers, had an effect on length gain and weight gain in children.11

In present study significant association (p=0.011) found between change in nutritional status of children between discharge and survey and feeding practice of study participants after discharge, it was found in study that

children who were separately fed i.e. not sharing their food with siblings or parents had high significant improvement rate as compared to children who were sharing their food with siblings and other family members. It was surprise finding in present study that 20.5% study participants were still sharing food with their siblings after discharge from NRC even when their mothers were well educated regarding child feeding practices during their stay at NRC. Sharghi et al, Mishra et al had shown an association between maternal knowledge and occurrence of SAM. ^{12,13}

In present study significant association (p=0.008) between knowledge score of mother/caregiver regarding nutrition, nutritional practices & management of minor ailments and change in nutritional status after discharge to survey was present. It was observed that children of mothers with good or fair knowledge score had higher improvement rate as compared to low knowledge score. A positive correlation (r=0.223, p=0.010) also existed between knowledge score of mother/caregiver and change in nutritional status after discharge to survey. Similar finding were observed by Nale T et.al where significant association was seen between mother's knowledge about child's nutrition.⁶

CONCLUSION

It was observed in present study that children who were feed in separate thali and families with higher dietary diversity are better in improving from severe acute malnutrition, so along with type of food it is diversity and feeding practices that are also important in dealing undernutrition. It was observed in present study that mother's knowledge regarding nutrition, community nutritional practices and management of minor ailments was very low and was significantly associated with the improvement of children from under-nutrition so it is vital to educate them through community workers and health workers regarding correct nutritional practices & management minor ailments to prevent child from trap of under-nutrition and infection during their home visits and Village Health and Nutrition Days sessions (VHNDs).

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Ethical approval: The study was approved by the Institutional Ethics Committee Pt. JNM Medical College,

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