

Original Research Article

Determinants of severe acute malnutrition in children between six months to five year of age enrolled in nutritional rehabilitation centre at a tertiary care level

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Received: 11 August 2019

Revised: 29 September 2019

Accepted: 03 October 2019

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ABSTRACT

Background: Indicators showing levels of nutritional status in children are often regarded as representative of the health and general well-being of a society at large. Malnutrition stands as a consequence of several key social and economic factors such as lack of education, inadequate health care services and ill-informed cultural behaviors. In order to holistically address the issues surrounding malnutrition, a comprehensive understanding of the multi-dimensional complexities at play in society is crucial. Objective was to identify determinants of severe acute malnutrition among children with severe acute malnutrition under 5 years (between 6 months to 60 months) of age.

Methods: A cross sectional study design involving 64 patients with severe acute malnutrition between 6 to 60 month of age was employed to identify the risk factors of severe acute malnutrition among children admitted in pediatric wards and nutritional rehabilitation centers, Civil hospital Ahmedabad, from April 2018 to march 2019. A detailed history of all the patients were taken and data collected using structured interviewer-administered questionnaire.

Results: Thus, from the above study, it is clear that age of the child <2 years, female gender, bigger family size, poverty, illiteracy in mother, poor feeding practices, improper complementary feed introduction, poor nutritional status of mother whose child were breastfed, acute or chronic illness in child and narrow birth spacing were the chief determinants of SAM in under five children.

Conclusions: Socio demographic characters, nutrition and child caring practices, infection and other childhood illness as well as obstetric history of mother are important determinants of severe acute malnutrition in children under five years of age. As a result, collaborative efforts should be organized to improve promotion of better child caring practices through appropriate age specific child and maternal feeding practices, prevention and early treatment of acute childhood illnesses and promotion of family planning.

Keywords: Characteristics Determinants, Nutritional, Rehabilitation, Severe acute malnutrition, Socio-demographic, Tertiary care centre

INTRODUCTION

Malnutrition, as a major public health and nutrition challenge faced by many developing countries, stands as a consequence of several key social and economic factors such as lack of education, inadequate health care services and ill-informed cultural behaviors. Underpinning all

these is the fact that poverty, by and large, is the principal cause of poor feeding habits.¹ In order to holistically address the issues surrounding malnutrition, a comprehensive understanding of the multi-dimensional complexities at play in society is crucial. Indicators showing levels of nutritional status in children are often regarded as representative of the health and general well-

being of a society at large. High levels of malnutrition in children, particularly in those under the age of five, tend to prevail in areas where levels of socio-economic development are also low.² It is estimated that improved feeding habits aimed to prevent or treat malnutrition could prevent 11 million child deaths globally per year.³ Thus, efforts to address this issue are of paramount importance. Aim and objectives are to identify determinants of severe acute malnutrition among children with severe acute malnutrition under 5 years (between 6 months to 60 months) of age.

METHODS

Pediatric wards and nutritional rehabilitation centers, Civil hospital Ahmedabad, from April 2018 to March 2019. Study design was a cross sectional study design involving 64 patients with severe acute malnutrition from 6 to 60 month of age was employed to identify the risk factors of severe acute malnutrition among children.

Inclusion criteria

Children between 6 and 60month of age admitted in civil hospital Ahmedabad for severe acute malnutrition with any of the following.^{4,5}

- MUAC <11.5mm with or without any grade of edema
- WFH (weight for height) <-3 SD with or without any grade of edema
- Bilateral pitting edema +/++

A detailed history of all the patients were taken with special emphasis on following variables:

- Socio demographic characteristics; age of child, child sex, parental education, parental occupation, marital status of the mother, household economic status, maternal autonomy in decision making and family size.⁶
- Nutrition and Child caring practices; Exclusive breast feeding (EBF), Sub optimal EBF, late initiation of breast feeding, improper complementary feeding practices.⁷
- Infection and childhood illness: Fever, Human immune deficiency virus (HIV), diarrhea, other medical and surgical problems.^{8,9}
- Obstetric History: Antenatal care (ANC) visits, number of ANC visit, birth order, birth interval, use of extra food during pregnancy and lactation, number of children ever born.¹⁰

Informed written consent was obtained from the mothers.

RESULTS

Thus, from the below table, it is clear that children less than 2 years, female gender, children living in larger family size and with low family income are more prone to severe acute malnutrition. Education status of mother and the support she gets from the family also plays a pivot role in the nutritional status of the child (Table 1).

Healthy nutritional practices in early growing periods of the child, which includes exclusive breastfeeding till 6 months and proper introduction of complementary feeds at 6 months, prevents the risk of malnutrition. Nutritional status of the mother also plays important role (especially in breastfeeding infants) in the nutrition of the child. Late initiation of complementary feeding has higher risk of malnutrition (Table 2).

Table 1: Sociodemographic characteristics of mother/caregiver.

Variables	Total (n=64)	Percentage	
Age of the child	7 months to 24 months	46	71.9%
	25 months to 5 year	18	28.1%
Sex of the child	Male	24	37.5%
	Female	40	62.5%
Family size	≤5 Members	22	34.4%
	≥6 Members	44	65.6%
The authority of decision making in the family	Mother	4	6.25%
	Father	22	34.37%
	Both mother and father	38	59.37%
Family income	<Rs 5,000/ month	44	65.6%
	Rs5,000 to 15,000/month	16	25%
	>Rs15,000/ month	8	12.5%
Education status of mother	Uneducated	38	59.37%
	Up to 5 th standard	21	32.8%
	5 th to 12 th standard	4	6.25%
	Graduate or higher	1	1.5%
Marital status	Married and lives with husband	60	93.75%
	Lives alone without husband	4	6.25%

Table 2: Nutritional and child caring practices.

Variables		Total (n=64)	Percentage
Exclusively breastfed for the first 6 months	Yes	50	78.12%
	No	14	21.87%
Age of starting of complementary feeding	Before 6 months	4	6.25%
	At 6 months of age	20	31.25%
	Between 7 months to 1year	35	54.6%
	>1year of age	5	7.80%
Calorie deficit of intake per day (percentage of total requirement)	<20%	1	1.5%
	20-60%	12	18.75%
	>60%	51	79.68%
Nutritional status of mother in those who are breastfed(n=36)	Under weight (BMI 18.5)	28	77.77%
	Adequate (18.5-25)	5	13.89%
	Overweight (>25)	3	8.33%

Table 3: Infection and childhood illness.

Variables		Total (n =64)	Percentage
Diarrhoea in the preceding 2 weeks before developing SAM	Yes	14	21.87%
	No	50	78.12%
Febrile illness in the preceding 2 weeks before developing SAM	Yes	23	35.93%
	No	41	64.06%
Other chronic medical and surgical problems (TB, HIV AIDS, vesicourethral reflux disease, stoma in situ and others)	Yes	7	10.9%
	No	57	89.06%

Table 4: Obstetric history of mother.

Variables		Total (n=64)	Percentage
Number of children ever borne	≥4 Children	34	53.12%
	1-3 children	40	62.5%
Number of ANC follow up	≥4 times	10	15.62%
	1-3 times	18	28.12%
	None	36	56.25%
Feeding status during pregnancy and lactating	extra meal/day	7	10.93%
	No difference/reduced my meal	57	89.06%
Birth interval	Less than 2 years	24	37.5%
	2 and above years	40	62.5%

Of the total enrolled children with SAM, 22% children had diarrhea and 34% had febrile illness in preceding 2 weeks. 10% had other chronic medical or surgical problems. Malnutrition and infection form a vicious cycle; infection precipitates the acute bouts of malnutrition and malnutrition predisposes the children to infection (Table 3). A good obstetric history with appropriate antenatal care, proper birth spacing, 3 or less than 3 pregnancies and adequate nutrition during pregnancy and lactation decreases the burden of malnutrition by reducing incidence of low birth weight babies and ensuring good care of the children by mother (Table 4).

DISCUSSION

Thus, from the above study, it is clear that sociodemographic characters, nutrition and child caring

practices, infection & other childhood illness as well as obstetric history of mother are important determinants of severe acute malnutrition in children under five years of age. Of the total severe acute malnourished children (n=64) included in this study, 72% were under 2 years and 62% were female indicating a higher incidence of malnourishment among younger children and female gender. 65% of the children live in a family with family size of more than 5 members, and 66% with the family income of less than Rs 5000/month.² 59% of the mothers of these children are uneducated, with 32% having studied up to 5th standard and only 7% having received higher education.²

Healthy nutritional practices in the early growing periods of the child prevent the risk of malnutrition. Of all the children who were included in the study, 22% didn't receive

exclusive breastfeeding till 6 months and 62% children had delayed introduction of complementary feeding (54% between 7 month and 1 yr, and 8% after 1 year of age).¹ A large lot (80%) had calorie intake deficit of more than 60%.¹ Incidence of SAM in children who were currently breastfed (n=36) was higher among those whose mothers were undernourished (78% having BMI<18.5). 22% children had diarrhea and 34% had febrile illness in preceding 2 weeks among the total enrolled children with SAM. 10% had other chronic medical or surgical problems. Malnutrition and infection form a vicious cycle; infection precipitates the acute bouts of malnutrition and malnutrition predisposes the children to infection.

CONCLUSION

Age of the child <2 years, female gender, bigger family size, poverty, illiteracy in mother, poor feeding practices, improper complementary feed introduction, poor nutritional status of mother whose child were breastfed, acute or chronic illness in child and narrow birth spacing were the chief determinants of SAM in under five children. As a result, collaborative efforts should be organized to improve promotion of better child caring practices through appropriate age specific child and maternal feeding practices, prevention and early treatment of acute childhood illnesses and promotion of family planning.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Pathak GH, Chauhan AV, Beniwal SO. Determinants of severe acute malnutrition in children between six months to five year of age enrolled in nutritional rehabilitation centre at a tertiary care level. Int J Contemp Pediatr 2019;6:2489-92.