DOI: https://doi.org/10.53350/pjmhs2023174355

ORIGINAL ARTICLE

Various Risk Factors of Severe Acute Malnutrition in Children Under 5 Years of Age Presenting at a Secondary Care Hospital

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ABSTRACT

Aim: To assess the various risk factors of severe acute malnutrition in children under 5 years of age presenting at a secondary care hospital

Study design: A cross-sectional study

Place and duration: Nutritional stabilization centre, Pediatric department, civil hospital Mirpur Khas from January to June 2022

Methodology: A total of 321 children (both males and females) below the age of 5 years were enrolled in this study. Severe acute malnutrition was diagnosed on the basis of weight for height/length Z score criteria. (ie < - 3 SD). Children were managed at a nutritional stabilization centre according to WHO management criteria. History was taken regarding breastfeeding, age of complementary feeding, immunization, maternal education level and repeated diarrhea. Counts with percentages were reported on age group, sex, mother education, lack of breastfeeding, delayed weaning, lack of immunization, and diarrhea. Association was tested with sex and mother education status using the Pearson Chi-Square test. P-values less than 0.05 were considered statistically significant. The bar chart also reported the study outcomes with gender.

Results: In the present study, there were three hundred twenty children with mean age 17.9 of (SD=±10.3) months, 30.6% were aged 9 – 12 months, 55.9% were male gender, and 65.6% of mothers were uneducated. Lack of breastfeeding was observed in 10.3% of children, delayed weaning was 12.5%, lack of immunization was 14.1%, and diarrhea was found in 20.6% of children. Children with uneducated mothers 11% were found to have a lack of breastfeeding, 84.2% with delayed complementary feeding, 81% with a lack of immunization and 26.2% with diarrhea.

Conclusion: According to our study lack of breast feeding, delayed weaning, lack of immunization, recurrent diarrhea and maternal education are strongly associated with severe acute malnutrition in children. Uneducated women breastfeed their children more, but they start complementary feeding late and their children are more unvaccinated and had more frequent diarrhea which leads to severe acute malnutrition.

Keywords: severe acute malnutrition, breastfeeding, diarrhea, complementary feeding

INTRODUCTION

Malnutrition is a significant public health issue in the poor world and is the primary cause of more than 50% of the 10–11 million fatalities that occur each year, among young children under the age of five [1]. There are just 36 countries responsible for 90% of all stunted children [2].

Children in South Asia and sub-Saharan Africa are moderately acutely malnourished at a rate of 19% and 9%, respectively and roughly 2% of children in developing nations are severely acutely malnourished [3]. In Pakistan, stunting affects 42% of children, wasting affects 14%, and malnutrition affects 50–60% of children [4].

In addition to direct causes like inadequate dietary intake, not exclusively breastfeeding, respiratory and gastrointestinal infections, indirect factors like food insecurity, the presence of morbidity among parents, and poor environmental conditions, especially overcrowding, lack of sanitation, and low purchasing power are harmful to the healthy growth of the child and predispose them to chronic morbidity, which can occasionally result in mortality [5].

According to a regional study maternal illiteracy, daily family income of less than Rs. 200, large family size, lack of exclusive breastfeeding for the first six months, bottle feeding, administration of pre-lacteals, colostrum deprivation, and incomplete immunization were the 14 factors that were compared were found to be significant risk factors for SAM [6]. While in a local study 180 cases (66.7%) of paternal illiteracy and 216 (80%) of maternal illiteracy were found [7]. While 180 cases (66.7%) involved families with four or more children or more. Only 70 (24.9%) of infants were exclusively breastfed, 170 (62.9%) were mixed-feeding, and only one bottle was used in 30 (11.1%) instances. In 150 children (55.6%), late weaning was initiated. A total of 120 (44.4%) children experienced recurrent diarrhoea [8].

The current study is planned to assess the various risk factors of severe acute malnutrition in children under 5 years of age presenting at the nutritional stabilization centre of civil hospital Mirpur Khas.

METHODOLOGY

This cross-sectional study was conducted at the nutritional stabilization centre, Pediatric department, civil hospital Mirpur Khas from January to June 2022. A total of 321 children (both males and females) below the age of 5 years were enrolled in this study. Severe acute malnutrition was diagnosed on the basis of weight for height/length Z score criteria. (ie < - 3 SD). Data was entered for each patient on a proforma after obtaining parental approval. Children were managed at a nutritional stabilization centre according to WHO management criteria. History was taken regarding breastfeeding, age of complementary feeding, immunization, maternal education level and repeated diarrhea.

Data were stored and analyzed using IBM-SPSS version 23.0, Counts with percentages were reported on age group, sex, mother education, lack of breastfeeding, delayed weaning, lack of immunization, and diarrhea. Association was tested with sex and mother education status using the Pearson Chi-Square test. P-values less than 0.05 were considered statistically significant. Bar Chart was also reported the study outcomes with gender.

RESULTS

Table 1 reports that in the present study there were three hundred twenty children with mean age 17.9 (SD=±10.3) months, 30.6% were aged 9 – 12 months, 55.9% were male gender, and 65.6% of mothers were uneducated.

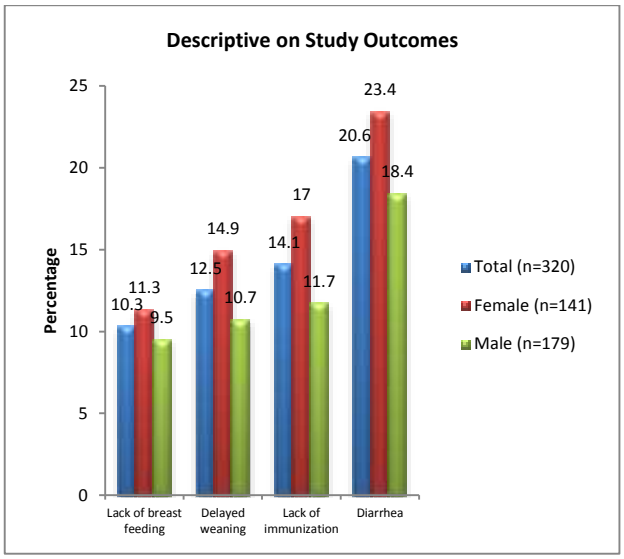
Bar diagram 1 showed that a lack of breastfeeding was observed in 10.3% of children, delayed weaning was 12.5%, lack of immunization was 14.1%, and diarrhea was found in 20.6% of children. In the female sex lack of breastfeeding was observed in 11.3% of children, delayed weaning was 14.9%, lack of immunization was 17%, and diarrhea was found in 23.4% of children whereas among the male sex lack of breastfeeding was observed in 9.5% of children, delayed weaning was 10.7%, lack of immunization was 11.7%, and diarrhea was found in 18.4% children. Pearson Chi-Square test did not give any significant association of lack of breastfeeding, delayed weaning, lack of immunization and diarrhea with sex of the child. (P>0.05)

Table 2 report the association of studied factors with age group results showed in children with age 6 – 8 months old none was found with lack of breastfeeding, 57.4% with delayed weaning, 40.7% with lack of immunization and 29.6% with diarrhea. Children with age 9 – 12 months 9.4% were found to lack breastfeeding, 5.2% with delayed weaning, 11.5% with lack of immunization and 19.8% with diarrhea, for children with age 13 – 18 months 30.3% were found to lack breastfeeding, 4.6% with delayed weaning, 15.2% with lack of immunization and 30.3% with diarrhea, children with age 18 – 30 months 3.5% was found with lack of breastfeeding, none with delayed weaning, 1.8% with lack of immunization and 10.5% with diarrhea, whereas among children with age more than 30 months 4.3% was found with lack of breastfeeding, 2.1% with delayed weaning, 2.1% with lack of immunization and 10.6% with diarrhea. Pearson Chi-Square test did give a significant association of lack of breastfeeding, delayed weaning, lack of immunization and diarrhea with the age group of children (p<0.05).

Table 3 reports the association of studied factors with mother education status, results showed in children with an uneducated mother 11% were found to lack breastfeeding, 84.2% with delayed weaning, 81% with lack of immunization and 26.2% with diarrhea. Pearson Chi-Square test did give a significant association of delayed weaning, lack of immunization and diarrhea with the education of mother (p<0.05).

Table 1: Baseline Characteristics of Studied Samples (n=320)

Characteristics		n	%
Age Group	6 - 8 months	54	16.9
	9 - 12 months	96	30.0
	13 - 18 months	66	20.6
	18 - 30 months	57	17.8
	>30 months	47	14.7
	Mean ±SD	17.9	±10.3
Sex	Female	141	44.1
	Male	179	55.9
Uneducated Mother	No	110	34.4
	Yes	210	65.6



Bar Chart 1:

Table 2: Association of Studied Parameters with Age Group

Variables		Age Group										p-value
		6 - 8 months (n=54)		9 - 12 months (n=96)		13 - 18 months (n=66)		18 - 30 months (n=57)		>30 months (n=47)		
		n	%	n	%	n	%	n	%	n	%	
Lack of breast feeding	No	54	100.0	87	90.6	46	69.7	55	96.5	45	95.7	<0.01*
	Yes	0	0.0	9	9.4	20	30.3	2	3.5	2	4.3	
Delayed weaning	No	23	42.6	91	94.8	62	95.4	57	100.0	46	97.9	<0.01*
	Yes	31	57.4	5	5.2	3	4.6	0	0.0	1	2.1	
Lack of immunization	No	32	59.3	85	88.5	56	84.8	56	98.2	46	97.9	<0.01*
	Yes	22	40.7	11	11.5	10	15.2	1	1.8	1	2.1	
Diarrhea	No	38	70.4	77	80.2	46	69.7	51	89.5	42	89.4	0.01*
	Yes	16	29.6	19	19.8	20	30.3	6	10.5	5	10.6	
*p<0.05 was considered statistically significant using Pearson Chi Square test												

Table 3: Association of Studied Parameters with Mother Education

Variables		Uneducated Mother				p-value
		No (n=110)		Yes (n=210)		
		n	%	n	%	
Lack of breast feeding	No	100	90.9	187	89.0	0.60
	Yes	10	9.1	23	11.0	
Delayed weaning	No	103	93.6	176	84.2	0.01*
	Yes	7	6.4	33	15.8	
Lack of immunization	No	105	95.5	170	81.0	<0.01*
	Yes	5	4.5	40	19.0	
Diarrhea	No	99	90.0	155	73.8	<0.01*
	Yes	11	10.0	55	26.2	
*p<0.05 was considered statistically significant using Pearson Chi Square test						

DISCUSSION

In the present study, there were three hundred twenty children having mean age 17.9 (SD=±10.3) months, 30.6% were aged 9 – 12 months, 55.9% were male gender, and 65.6% of mothers were uneducated. In a similar local study Males were more likely to be malnourished (55%) than females (45%) [9]. We observed lack of breastfeeding was observed in 10.3% of children, delayed weaning was 12.5%, lack of immunization was 14.1%, and diarrhea was

found in 20.6% of children. Sam M. David et al. found that underweight mothers, birth weights below 2.499 kg, and not exclusively breastfeeding for the first six months were all related to severe acute malnutrition [10]. In a different local study, SAM was found to be more significant in children who were born underweight (2500 grams), had a history of persistent or recurrent diarrhoea, had quit nursing before 6 months, or had begun supplemental feeding before 6 months [11].

Our results showed a significant association between lack of breastfeeding, delayed weaning, lack of immunization and diarrhea in various age groups of children having severe acute malnutrition. A comparable study revealed that younger age groups had higher probabilities of SAM [12]. Ahmed Hossain came to the conclusion that children with a history of diarrhoea and those aged 6 to 24 months had significantly increased rates of SAM (AOR = 2.57, 95% CI = 1.30–5.22) [13].

We observed that maternal education status, results showed in children with uneducated mothers 11% were found to lack breastfeeding, 84.2% with delayed weaning, 81% with lack of immunization and 26.2% with diarrhea. In Niger, there were 86.1% of children whose mothers did not have a high school diploma, compared to 0.1% in Armenia and the Kyrgyz Republic. The overall prevalence of SAM varied by country but was 5.8% in the group of children whose mothers had no education and 4.2% in the group of children whose mothers had some education [14]. According to research from Quetta, Pakistan, 295 out of 500 mothers were found to be illiterate, making up around 59% of the population. The percentage of mothers with primary, middle, and high school degrees was 26, 12, and 2.4%, respectively. Similarly, in primary, secondary, and upper secondary schools, 28.8%, 39.8%, 19.6%, and 11.8% of fathers were illiterate, respectively [15].

CONCLUSION

According to our study lack of breastfeeding, delayed weaning, lack of immunization, recurrent diarrhea and maternal education are strongly associated with severe acute malnutrition in children. Uneducated women breastfeed their children more, but they start complementary feeding late and their children are more unvaccinated and had more frequent diarrhea which leads to severe acute malnutrition

Conflict of interest: None
Funding: No funding source
Ethical Approval: Taken from the departmental board

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