Malnutrition among Children under Five Years of Age Our Experience: A Cross-Sectional Study

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Abstract

Aim: To determine the prevalence of malnutrition among children under five years of age.

Study design: A cross-sectional study

Place and Duration: This study was conducted at Khairpur Medical College Khairpur Mirs Pakistan from January 2019 to January 2020.

Methodology: A total of 500 children aged less than 5 years were evaluated for malnutrition by measuring the child's Mid Upper Arm Circumference (MUAC). Structured questionnaires were used to conduct interviews in order to collect data regarding the status of malnutrition and socio-economical conditions. SPSS software version 22 was utilized for analyzing data. Religion, socioeconomic status, and caste, which are categorical variables, were studied by using frequency distribution. Middle Upper Arm Circumference and age, which are continuous variables, were evaluated using descriptive statistics as well as frequency distribution.

Results: Out of 500 children, 340 children (68%) were suffering from malnutrition. Out of these 340 children, 248 children were male while 252 were female. There was no significant difference in the occurrence of moderate and mild malnutrition between the female and male

children. However, females (13.7%) were observed to get severe malnutrition more than males (6.7%). Malnutrition was most common in children, aged 6 to 11 months.

Conclusion: Our study shows that malnutrition is very common in our area . It also shows that malnutrition and its severity are higher in female children as compared to male children.

Keywords: Malnutrition, children, prevalence

Introduction

In early childhood, proper nutrition is extremely important in order to make sure that the child has a strong immune system as well as good mental and physical development (1). The problem of malnutrition amongst children is prevalent in developing countries, especially in Sub-Saharan Africa and South-East Asia (2). Evidence supports that malnutrition is a global problem. Once the baby is six months old, it requires a weaning diet in order to satisfy its nutritional requirements (3). In most cases, the diet of children living in poor households does not satisfy the criteria set by WHO for diet (4). For children that are less than five years of age, illiteracy and poverty are one of the major factors that play a role in malnutrition (5). The cases of malnutrition increase in areas that are affected by emergency conditions such as floods. Severe acute malnutrition affects around 20 million children that are less than five years of age globally and about one million children died due to malnutrition (6). Mortality rates due to malnutrition are high in developing countries because the food intake is less due to factors such as poverty and infectious diseases that occur due to the weak immune system of malnourished children (7). Malnutrition in Pakistan is linked with both illiteracy and poverty. Studies on the topic of malnutrition in children living in Pakistan support that malnutrition is prevalent in the country (8). This is generally linked with high mortality rates as well as stunted growth (9). One study suggested that 49.3% of children that were less than five years of age suffered from malnutrition. Whereas other studies tested that 30.12% of children that were less than five years of age suffered from malnutrition. The province of Sindh Pakistan has a higher prevalence of malnutrition as compared to other areas of Pakistan. A total of 61% of children that were less than five years of age suffered from malnutrition in the Khairpur district in Sindh. Malnutrition is closely linked to stunted growth, and it is affecting a lot of children in the province of Sindh. This particular province suffers greatly due to malnutrition. Different types of anthropometric indicators, such as wasting (weight for height), underweight (weight for age), and stunting (height for age) are used to find out the nutritional status of children (10). The MUAC method, which is Mid Upper Arm Circumference, has proven to be a quick, precise, and easy method that can be used in order to check children under the age of five for malnutrition (11). Also, MUAC is a better choice to check the nutritional status of children in emergency situations (12). The purpose of this study was to evaluate patients from Khairpur Pakistan, for malnutrition in children whose age was less than five years while using MUAC as the anthropometric indicator.

Methodology

This cross-sectional study was conducted at Khairpur Medical College Khairpur Mirs Pakistan from January 2019 to January. A total of 500 children from 6 months to 5 years of age were evaluated for malnutrition by measuring the child's Mid Upper Arm Circumference

(MUAC). It was held from June 2020 to June 2021. Permission was taken from the ethical review committee of the institute. The children observed in the study were from a rural areas with low socio-economic backgrounds. Out of the 500 children that were observed, 240 were female and 260 were male. The exclusion criteria were a chronic illness. The first step was to select areas that were affected by floods in the district of Sanghar in order to collect data. Parents of children that could be involved in the study were taken in confidence by the research assistants. Then, the age of the child was determined either by asking for the child's date of birth, checking the birth certificate, or looking at the child's vaccination certificate. Afterward, screening was done using MUAC because it is very effective in checking for malnutrition in an emergency situation. Shakir's tape, which is a measuring tape, was used to measure the Mid Upper Arm Circumference to the nearest 1 mm. This tape is very common for examining the nutritional status of children under the age of five. The assurance of confidentiality of data was given to them. SPSS software version 22 was utilized for analyzing data. An odds ratio with a confidence interval of 95% was used to calculate the link between MUAC and malnutrition. Religion, socioeconomic status, and caste, which are categorical variables, were studied by using frequency distribution. Mid Upper Arm Circumference and age, which are continuous variables, were evaluated using descriptive statistics as well as frequency distribution (13, 14).

Results

Table 1 shows the mean (SD) of Mid Upper Arm Circumference of gender and age. It shows that MUAC of boys was higher than girls in every age. Table 2 represents all the different types of malnutrition. A total of 500 children from the age of months to five years were studied. Total 340 children (68%) were suffering from malnutrition. Out of these 340 children, 248 children were male while 252 were female. There was no significant difference in the occurrence of moderate and mild nutrition between the female and male children. Females (13.7%), however, were observed to get severe malnutrition more than males (6.7%). Malnutrition was most common in the younger group of children that is 6 to 11 months. As age increased, the overall malnutrition decreased. Although older children had a higher percentage of severe malnutrition. There was no significant difference in the overall malnutrition prevalence between female and male children. Females were, however, more at risk than males. The odds ratio and p-value in male and female children are given in Table 3. Age and gender-wise difference in malnutrition among children is given in Table 4

Table 1: The mean MUAC of male and female children.

	Boys MUAC (cm)			Girls MUAC (cm)		
Age (Months)	Mean (SD)	Min	Max	Mean (SD)	Min	Max
6 to 11	12.63(1.09)	9.9	14.9	12.69 (1.55)	8.7	14.8
12 to 23	13.62(1.04)	12.0	15.2	13.01(1.45)	9.1	16.7
24 to 35	13.28(1.25)	10.1	16.5	12.90(1.91)	8.8	15.4
36 to 47	13.40(1.47)	9.5	16.6	12.99(1.89)	8.8	16.6
48 to 60	14.67(1.55)	11.9	16.6	14.25(1.51)	12.0	16.5

Table 2: Age and gender-wise prevalence of malnutrition in children.

	Malnutrition					
	Normal	**Mild**	**Moderate**	**Severe**	**Overall**	**Total**
Gender						
Male	84(34.5)	115(46.2)	36(14.4)	17(6.7)	165(66.9)	248(49.6)
Female	94(35.1)	110(41.3)	32(12.1)	37(13.8)	175(66.0)	252(50.4)
Age (Months)						
6 to 11	15(14.7)	60(64.5)	12(13.1)	9(10)	79(86.1)	89(17.5)
12 to 23	24(24.2)	49(48)	23(23.1)	6(6.3)	76(77)	100(19.5)
24 to 35	43(33.5)	60(47.4)	11(8.2)	17(12.8)	86(67.2)	130(25.0)
36 to 47	59(43.05)	45(32.04)	18(13.11)	20(13.77)	83(58.3)	139(28.6)
48 to 60	37(63.1)	16(27)	6(9.1)	2(3.7)	23(38.5)	57(11)
Total	175(34.0)	222(43.6)	670(13.0)	54(11.1)	340(68.0)	499(99)

Table 3: The odds ratio and p-value in male and female children.

Gender*	Malnutrition					
	Mild		**Moderate**		**Severe**	
	OR (95% CI)	**P-value**	**OR (95% CI)**	**P-value**	**OR (95% CI)**	**P-value**
Male*	1–		1–		1–	
Female	0.80 (0.66-1.10)	P-00.22	0.78(0.48-1.30)	P-0.31	2.27(1.19-4.20)	P-0.0011

Table 4: Age and gender-wise difference in malnutrition among children.

Variable	Odd Ratio (95%) CI	P-value
Gender		
Male	1	
Female	1.05(0.71-1.50)	0.82
Age (Months)		
6 to 11	1	—
12 to 23	0.6(0.28-1.20)	0.14
23 to 35	0.37(0.21-0.70)	0.003
36 to 47	0.20(0.10-0.45)	0.00010
48 to 60	0.9(0.05-0.24)	0.00010

Discussion

Our study evaluates the malnutrition in children whose age was less than five years. The present study used MUAC in assessing malnutrition. The vulnerability of children that are less than five years of age towards malnutrition is high in conditions of emergency because of the unavailability of proper food (15). In the study, 500 children from ages less than 5 years, belonging to both male and female gender, from low socioeconomic backgrounds were studied. Therefore, the current study is a good reflection of the malnutrition in areas affected by floods. Other studies regarding malnutrition in emergency conditions in other areas of the world are also already present (16) (17). One of the reasons that malnutrition was prevailing so highly in the current study, may have been because the studied area was very severely affected by floods. Another reason may have been the poverty of the people living in these regions. There was no significant difference between the malnutrition found in males and females. Also, there was no significant difference, that is $p>0.05$, in the occurrence of mild malnutrition as compared to moderate malnutrition. However, it was observed that severe malnutrition occurs more in female children as compared to male children. The reason behind such a significant difference is that this area of Pakistan is gender-biased (18). Other studies support our study's findings (19) (20). Also, the risk of malnutrition was higher in females than males. The mean of MUAC increased with an increase in age. The mean MUAC of female children was lower than males.

Conclusion:

Our study shows that malnutrition is very common in the District of Khairpur Pakistan. It also shows that malnutrition and its severity are higher in female children as compared to male children.

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