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ORIGINAL ARTICLE

Nutritional Status of Child of Well-Nourished Mother Vs Malnourished Mother

FATIMA MASOOD[1], AYMEN MASOOD[2], HAFIZ UMER FAROOQ[3], MUHAMMAD AKHTAR MASOOD[4], SUMERA EHSAN[5], HATF RANA[6]
[1,2]House Officer, Mayo Hospital, Lahore.
[3]Associate Professor, Department of Community Medicine, Sheikh Zayed Medical College/Hospital, Rahim Yar Khan.
[4]Consultant Paediatrician Assistant professor, RYK Medical COLLEGE, Rahim Yar Khan.
[5]Faisalabad Medical University, Faisalabad.
[6]AMS RYK Hospital Rahim Yar Khan
Correspondence to: Hafiz Umer Farooq, Email: dromer112233@gmail.com, Cell: 03009489071

ABSTRACT

Background: The nutritional status of children is a good predictor of the community's overall nutritional profile. The nutritional requirements of women before conception, during pregnancy, and during breastfeeding are referred to as maternal nutrition. Globally, 165 million children under the five years are malnourished. It accounts for at least half of all the childhood deaths worldwide.

Objective: To find the nutritional status of child of well-nourished mother vs. malnourished mothers

Methodology: This comparative1observational study was conducted at Pediatrics Department, Masood Hospital & The Children Complex, Rahim Yar Khan. The study included 294 mothers of children aged 6 to 59 months who were both well-nourished and malnourished. Both mothers of children who were well-nourished when they were admitted to the ward and mothers of children who were malnourished when they were admitted to the NSC were included. Mothers' Body Mass Index (BMI) was assessed, and children's MUAC was obtained. The information was gathered using a designed questionnaire that asked about the mother's age, BMI, the children's age and gender, MUAC.Data was entered in SPSS V 25.

Result: Total 294 children were included. Among1them 158(53.7%) mothers malnourished children & 136(46.3%) mothers of well-nourished children. The mean age of children was 2.50 + 0.98. There were 129(43.9%) male children and 165(56.1%) female children. Out of malnourished children, there were 31(19.6%) mildly under-weight, 9(5.7%) moderately under weight & 3(1.9%) were severely underweight. Furthermore, 134 mothers1of well-nourished children, 55(40.4%) mildly1underweight, 40(30.9%) moderately1underweight & 27(19.9%) were severely1underweight. There were 145 mothers had normal Hb and 149 mother's anemic.

Practical Implication: The purpose of this research was to determine if there is a correlation between children malnutrition and the health of their mothers. The findings of this study may aid in bringing the attention of the entire family, and notably the mothers, to the treatment of children suffering from severe acute malnutrition. Children can be protected from developing malnutrition through early diagnosis and treatment.

Conclusion: Findings of our study showed that many children having history of mother malnutrition were undernourished. Study concluded that malnutrition was not problem of only mothers; it was also a big problem for children as well as whole family. In addition to caring for the malnourished child who has been admitted, the underlying causes of malnutrition must be identified and addressed if the problem is to be resolved for the entire family.

Keywords: Body Mass Index, Nutritional Assessment, Malnutrition, Well-nourished

INTRODUCTION

The nutritional status of children is a good predictor of the community's overall nutritional profile. The nutritional requirements of women before conception, during pregnancy, and during breastfeeding are referred to as maternal nutrition. The burden of disease is borne by children under the age of five, who account for 35% of all maternal and child deaths worldwide and 11% of the total global Disability Adjusted Life Years (DALYs).[1,2]

Globally, 165 million children under the five years are malnourished. It accounts for at least half of all the childhood deaths worldwide.[3] Developing & underdeveloped countries are usually the only places where child malnutrition is a problem. Pakistan have been reported to have one of the1highest levels of frequency of child malnutrition compared to other developing counties. According to National Nutrition Survey, approximately 44.0% of children were stunted, 15.0% were wasted & 3.0% of all children were underweight. Comparing Pakistan to other countries, there has been a decrease in the prevalence of child malnutrition during the past two decades.[4]

Numerous children were born with Low Birth Weight (LBW) as a result of their mothers' poor diets. Stunting occurs in about 50% of cases worldwide.[5,6] Dietary conditions regarding moms are negotiated through the use of various supplemental rich foods by mothers overall.[5] Underweight individuals with a BMI of less than 18.5 kg/m2 have deficiency of chronic energy. Stunted mothers are at a lower risk of giving birth to large children than underweight mothers. According to the Pakistan Panel Household Survey, 30% of mothers are underweight.[7]

In developing countries marriage commonly occurs in the adolescent period and conception soon after marriage. As one-third of these adolescent girls have undernutrition, the risk of intrauterine growth retardation and subsequent childhood undernutrition develops a vicious cycle of intergenerational transfer of malnutrition.[8] This vicious cycle can be broken by strategies improving women's nutrition, literacy and empowerment.[1] Several studies have been done on malnourished children but very few studies on maternal malnutrition[18,19], so in this study to find the nutritional Status of child of well-nourished mother vs malnourished mother.

METHODOLOGY

Study Setting: This comparative1observational study was conducted at Pediatrics Department Masood Hospital & The Children Complex, Rahim Yar Khan.

Study Design: A Comparative observational study design.

Study Duration: 6 months duration from January 2022 to June 2022.

Sample Size: The study included 294 mothers of children who were both well-nourished and malnourished.

Methodology: The study included 294 mothers of children aged 6 to 59 months who were both well-nourished and malnourished. Also malnourished children (whose MUAC is equal to 12.5 cm) were taken in this study. Both mothers of children who were well-nourished when they were admitted to the ward and mothers of children who were malnourished when they were admitted to the NSC were included. The mothers of children who were admitted to nurseries as well as those whose children had any type of congenital deformity, including cleft palate and congenital heart issues, were not included in the study. Mothers' Body Mass Index (BMI) was assessed, and children's MUAC was obtained. The

information was gathered using a designed questionnaire that asked about the mother's age, BMI, the children's age and gender, MUAC.

Data Analysis: Data was entered in SPSS V 21. Mothers age & infant's age was presented as means and standard deviations. Chi square test was used to compare two groups of mothers, P value <0.05 was considered as significant.

RESULT

Nutritional status of 294 mothers was assessed in which 53.7% mothers' were malnourished children & 46.3% mothers were of well-nourished children having age of 6 to 5 years. Total 294 children were included. The mean age of children was 2.50±0.98. There were 43.9% male children and 56.1% female children. The age distribution of well-nourished and malnourished children was given in Table 1. According to education level, total 72.2% malnourished mother was non-educated, 20.9% were primary pass and only 1.9% was pass secondary or higher education. As compare to well-nourished mother, 37.5% were non educated, 48.5%) were primary pass and 14% were getting high education as shown in table 2. There were 68.4% malnourished mother belongs to poor family, 29.7% were middle family and only 1.9% belong to rich family shown in table 2.

According to their BMI, a total of 136 mothers with malnourished children were assessed 72.8% mothers had a normal BMI, 19.6% mildly under-weight, 5.7% moderately under-weight & 1.9% were severely underweight. A fewer than 3.61 percent of them had low MUAC, 66.66% had normal MUAC, and 40.47% had high MUAC. Furthermore, 134 mothers1of well-nourished children, among them 8.8% had normal BMI, 40.4% mildly1underweight, 30.9% moderately1underweight & 19.9% were severely1underweight. According to Hb levels measured in all mothers, 145 mothers had normal Hb and 149 mothers anemic. And 62.4% mothers of1malnourished children 37.6% mothers of1well-nourished children had anemia which was significant (p=0.002) as shown in table 3.

Table 1: Descriptive of nutritional status, age and gender

Nutritional Status	Malnourished	158(54.1%)	P-value
	Well-Nourished	136(45.8%)	
< 1 year	90(73.8%)	32 (26.2%)	0.001
1-3 years	50(45.9%)	59(54.1%)	
3-5 years	18(28.6%)	45(71.4%)	
Mean Age	Mean ±SD	2.50±0.98	
MUAC	Low	9 (3.61%)	0.431
	Medium	166(66.66%)	
	High	119(40.47%)	

Table 2: Comparison of level of education, economic status & family type

Parameters	Characterstics	Malnourished Mother	Well-nourished Mother	P value
Education level	No education	122 (72.2%)	51(37.5%)	0.001
	Primary	33 (20.9%)	66(48.5%)	
	Secondary to higher	3(1.9%)	19(14%)	
House hold economic status	Poor	108(68.4%)	44(32.4%)	0.002
	Middle	47(29.7%)	75(55.1%)	
	Rich	3(1.9%)	17(12.5%)	
Type of family	Nuclear	85(46.4%)	98(53.6%)	0.001
	Joint	73(65.8%)	38(34.2%)	

Table 3: Descriptive of BMI status with malnourished and well-nourished mother

Parameters	Characterstics	Malnourished Mother	Well-nourished Mother	P value
BMI	Normal	115(72.8%)	14(8.8%)	0.008
	Mildly underweight	31(19.6%)	55(40.4%)	
	Moderately underweight	9(5.7%)	40(30.9%)	
	Severely underweight	3(1.9%)	27(19.9%)	
Hemoglobin	Normal	65(44.8%)	80(55.2%)	
	Anemia	93(62.4%)	54(37.6%)	0.002

In order to determine the participants' haemoglobin levels, we analysed their blood samples (see Table 3 and Figure 1). Among children studied, 72 were slightly anaemic (48.0%), 14 were moderately anaemic (9.3%), and 64 were normal (42.7%). There was a statistically significant (P 0.001) correlation between the Hemoglobin level and malnutrition.

Table 4: The study participants' distribution according to their haemoglobin levels

Hemoglobin level	Frequency	Percentage	P value
Mild Anemia (10-11.5 gm/dl)	144	48.63%	0.002
Moderate Anemia (7 to 10 gm/dl)	35	11.9%	
Anemia not present (Normal)	115	39.11%	
Total	294	100.0%	

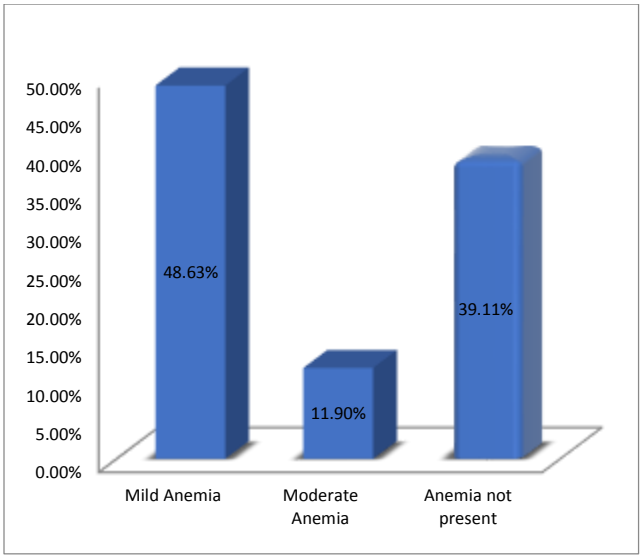

Figure 1: Distribution of Hemoglobin level

DISCUSSION

Child development and growth are both directly and indirectly impacted by a child's nutritional state. As a result, inadequate nutrition can worsen the symptoms of a number of conditions, reduce the body's natural defense against illness and increase the risk of serious illness and death.[18]

Nutritional status of 294 mothers was assessed in which 53.7% mothers' were malnourished children & 46.3% mothers were of well-nourished children having age of 6 to 5 years. This findings of our study is comparable with Dessie et al. (2019)[8].

In the past, the prevalence of undernutrition has been determined using the growth reference developed by the WHO, CDC & the National Center for1Health Statistics (NCHS). The prevalence of undernutrition of under five years' children in field practice area of the medical college was 65.2%. According to the WHO classification, the severity of undernutrition was very high (32%) indicating a critical situation. In one study found that the prevalence of severe undernutrition was more by using WHO growth standards as compared to NCHS National (Centre for Health Statistics standards). This affects the cost of international programs to treat undernutrition as more children will be found to be undernourished when WHO standards are used although they are logical.[9] Asim et al. in a meta-analysis found similar results that economic status of mothers is highly linked with malnutrition.[3]

Nutrition is an important determinant of good health, which is also essential for survival, a high quality of life & wellbeing.[10] Early nutrition is important for a child's healthy development, organ formation & function, immune system strength & neurological or cognitive progress. Child malnutrition affects cognitive function and causes poverty by preventing people from leading productive lives.[11]

The nutritional status of the mother and child are directly correlated. An undernourished mother gives birth to a low birth weight baby who develops into an underweight child or adolescent with poor nutrition and infections, continuing the vicious life cycle method. Even while malnutrition is present in the high income

group, it is only found in milder forms. Undernutrition is common in lower income groups. Appropriate child feeding1behavior goes a long1way in preventing & overcoming malnutrition or determining a child's growth.[12,13]

In this study, there was a substantial correlation between maternal illiteracy and body mass index with child malnutrition with a higher prevalence of illiteracy among mothers of malnourished children. According to maternal demographic characteristics, 72.2% mothers of malnourished children were illiterate compared to 37.5 % mothers of well-nourished children. Similarly, maternal illiteracy was found in 14% in the study by Tette EMA, et al in (2013)[14], 49.3% in the study by Rai R, et al in (2015)[15] and 52.2% in the study by Purohit, L et al in (2017).[12]

In one study, 33 underweight mothers, 28 (37.3%) were mothers of malnourished children and 5 (6.7%) were mothers of well-nourished children. Among the 22 overweight mothers, 6 (8%) were mothers of malnourished1children & 16 (21.3%) mothers of1well-nourished children. Among 95 mothers who had normal BMI 41 (54.7%) were mothers of1malnourished children & 54 (72%) were mothers of well-nourished1children. There were statistically significant difference.[1] As compare to our study, 134 mothers with healthy children had their body mass index (BMI) assessed. Of these, 12 (8.8%) had a normal BMI, 55 (40.4%) were mildly underweight, 40 (31%) were substantially underweight, and 27 (19.9%) were severely underweight.

Illiteracy was found more in mothers of malnourished children and higher education was found higher in mothers of well-nourished children. Thus, education of mother significantly influences the nutritional status of their children.[1,16,17]

Due to the fact that the current study was a facility-based study carried out in NRC, results could not be extrapolated to the population. Mothers who are underweight should be given a proper diet, and mothers' health education should be emphasized in counselling. We advise applying strategies like iron and folic acid supplementation to anemic women during a hospital stay in NRC and monitoring Hb status at follow-up appointments.

CONCLUSION

Findings of our study showed that many children having history of mother malnutrition were undernourished. Study concluded that malnutrition was not problem of only mothers; it was also a big problem for children as well as whole family. In addition to caring for the malnourished child who has been admitted, the underlying causes of malnutrition must be identified and addressed if the problem is to be resolved for the entire family.

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