

# Incidence of Malnutrition in Karbala Teaching Hospital Inpatient and Associated Some Sociodemographic Factors

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## Abstract

**Background:** Malnutrition is a major health problem in pediatrics age group contribute to increase mortality and morbidity of admitted patients.

**Patients and Methods:** A descriptive randomized cross sectional study of 2965 cases between 6-60 months from which 500 cases had malnutrition from 15th of November 2019 to 31st of January 2020 hospital based data to evaluate incidence of severe acute malnutrition and moderate acute malnutrition and mild malnutrition and its relation to some sociodemographic factors (paternal job, birth weight, type of feeding, age, sex).

**Results:** The incidence of severe acute Malnutrition is 1%, the incidence of moderate acute malnutrition is 10% and mild malnutrition is 27% from the sample of patients taken 469 patients and this is a strong relationship of all degree of malnutrition to paternal age and low birth weight with some relation to type of feeding.

**Conclusions:** While the incidence of severe acute malnutrition has been decreased last years In Karbala teaching hospital, there is marked increase in incidence of moderate acute malnutrition and mild malnutrition with their impact on general pediatric health regarding morbidity and mortality efforts should be taken to manage the moderate acute malnutrition and mild malnutrition by offering nutritional advice and support especially in people who are not governmental Employers.

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## Introduction

The term malnutrition encompasses both overnutritions associated with overweight and obesity and undernutrition referring to multiple conditions including acute and chronic undernutrition and micro nutrient deficiency [1].

Sever acute malnutrition (SAM) defined by world health organization (WHO) as:

z score below -3 or mid upper arm circumference (MUAC) below 115 mm or presence of bilateral pitting edema or both [2].

Moderate acute malnutrition is defined as moderate wasting i.e. (weight for height between -3 and -2, z score) of WHO child growth standard or mid upper arm circumference (MUAC) greater or equal to 115 mm and less than 125mm [2].

About 47 million children under five years of age are wasted and 14.3 million are severely wasted. 14.4 million are stunted [3].

Around 45% of death among children under five years of age are linked to undernutrition. These mostly occur in Low- and middle-income Countries [3].

Degrees of Malnutrition are associated with increased risk of all causes of mortality and increased risk of death like diarrhea pneumonia

and measles [4].

Moderate acute Malnutrition affect many children in poor countries and have increase the risk of mortality. Moderate acute malnutrition Is associated with high number of nutritional deaths. If some of these moderate acute malnutrition children Don't receive adequate support They may progress toward severe acute malnutrition or severe stunting (height for age) Below - 3 z score. Both of These conditions are Life-threatening conditions so the management of moderate acute malnutrition (MAM) should be a public health priority [5].

Global acute malnutrition (GAM) refers to MAM and SAM together its used as measurement of nutritional status at a population level and as an indicator of severity of an emergency status (G.N.C 2014) [6].

## Patients and methods

Descriptive randomized cross sectional hospital basal study has been done on sample of 500 patients between the age of 6-60 months admitted to Karbala teaching hospital of pediatrics between 15-11-2019 to 30-1-2020.

Weight of every child was measured by means of uniscale with an accuracy of  $\pm 100$  gm tacked weighing used in children below 2 years. while height of patients measured by measuring tools for a child above



2 years and length was measured for children below 2 years.

A questioner to parent about sociodemographic factors like paternal job, type of feeding, birth weight, sex.

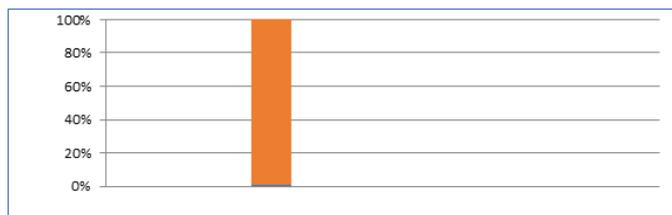
Z score used to differentiate between normal weight and height and malnutrition whether -1, -2, -3 or more categorize the patients accordingly to mild, moderate or severe malnutrition [7-9].

## Results

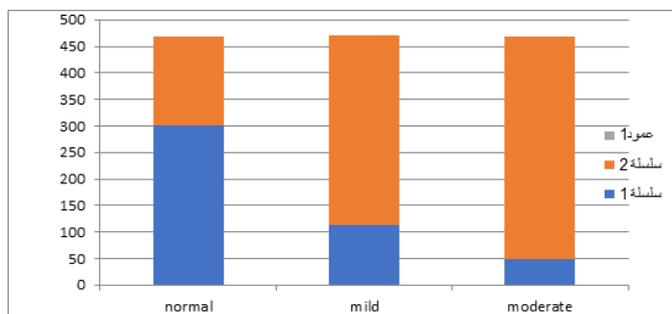
From 2,965 patients have been admitted to Kerbala teaching hospital of pediatric between 15<sup>th</sup> November 2019 and 30th of January 2020.

31 patients were labelled as Sever acute malnutrition that means 1% and those patients need admission to malnutrition wards shown in Figure 1.

Another sample of 469 patients taken to assess the incidence of moderate acute malnutrition and mild malnutrition of them 300 patients were normal that means 64%. while moderate acute malnutrition were 49 Patients with incidence of 10% and 112 patients were mild malnutrition that mean incidence of 23% as shown in Figure 2.



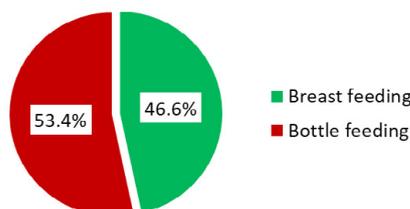
**Figure 1:** Incidence of S. A. M 1% of patients.



**Figure 2:** Incidence of mild to moderate malnutrition.

There is marked Association of paternal job with malnutrition in all degrees (both prevalence and severity were more in free jobs that mean nongovernmental employers P value 0.0001 in which 81.3%, 81.6% and 90.3% of mild, moderate and Sever malnutrition are non-employment fathers.

Incidence of malnutrition in in bottle feeding patients was 53.4% and in breast feeding was 46.6% from 500 patients in this study 282 about 56.4% male and 218 which is about 43.6% were females.



From 282 male moderate acute malnutrition where 27 and severe acute malnutrition were 18 so total which is 45 is equal to 15.9 per cent of total number of male while 22 of female have moderate and 13 have severe acute malnutrition which is equal to 16 percent of total number of female while the percentile in severe acute malnutrition in males 10% and in female about 10% also so percentage regarding malnutrition (M.A.M and S.A.M) were equal in both sexes. but if we take mild malnutrition there is slight increase in incidence in males than females in which 61 males and 51 females which is equivalent to 54.5% in males and 45.3% in females respectively.

Regarding the mean birth weight in this study was  $2.91 \pm 0.7$  with a range from 0.7 to 5 of whom the birth weight of malnutrition was range from 2.61 to 2.82 which is less than overall mean birth weight which is 2.9.

Mean age of study was  $18.8 \pm 12.58$  with average of 6 to 60 months mean age of moderate acute malnutrition and Sever acute malnutrition was 18.43 and 19.68 respectively with standard deviation 14.25 and 14.23 respectively (Table 1).

The analysis of data revealed that there were significant statistical association between the degree of malnutrition and father work i.e. the prevalence and severity of malnutrition were more in free work category in relation to employee. The analysis also concluded that there was significant association of mean weight at birth and the degree of malnutrition as illustrated in table 2.

**Table 1:** Socio-demographic characteristics of the participants of the study sample.

Variable	Category	No. (%)
Gender	Male	282 (56.4)
	Female	218 (43.6)
Age (in months)	Mean±SD	18.82 ± 12.58
	Range	2- 60
Weight at birth (in kg)	Mean±SD	2.91 ± 0.70
	Range	0.7-5
Father work	Employee	112 (22.4)
	Free work	370 (74)
	Had no work	18 (3.6)

**Table 2:** Association of the degree of malnutrition with some socio-demographic characteristics and related factors.

Demographic Characteristics	Degree of Malnutrition								P value	
	Normal		Mild		Moderate		Severe			
	n	%	n	%	n	%	n	%		
Gender	Male	175	56.8	61	54.5	27	55.1	18	58.1	0.978
	Female	132	42.9	51	45.5	22	44.9	13	41.9	
Type of Nutrition	Breast feeding	144	46.8	51	45.5	25	51	13	41.9	0.733
	Bottle feeding	126	40.9	53	47.3	19	38.8	15	48.4	
	Mixed	38	12.3	8	7.1	5	10.2	3	9.7	
Father work	Employee	90	29.2	14	12.5	6	12.2	2	6.5	0.001
	Free work	211	68.5	91	81.3	40	81.6	28	90.3	
	No work	7	2.3	7	6.3	3	6.1	1	3.2	

## Discussion

from total number of patients 5640 admitted to Karbala teaching hospital of pediatrics in the period between 15th November 2019 and 31st January 2020 (2965) patients were between 6-60 months which means 52%. Severe acute malnutrition prevalence in this study was 1% (31) patients admitted to malnutrition ward from total no. of patients 2965 between 6-60 months. This result is much less in comparable to study in Lawanda teaching hospital in Aden [10], in which incidence



was 5.2% and Mozambique in which 6% [11]. There were much patients with moderate acute malnutrition (48) patients 10% and mild malnutrition (112) patients 23% of patients sample (469) patients. The total incidence of both S.A.M and M.A.M is 11% which near the study done at the same hospital (Karbala teaching hospital of pediatrics) at 2008 in which incidence of moderate and severe malnutrition was 10.8% with difference in that study incidence of severe acute malnutrition was more 4.34% [11].

In this study there was no sex difference in incidence of moderate acute malnutrition and Sever acute malnutrition about 16% of each sex has M. A. M and S. A. M. and 10% of each sex has S.A.M Which is near to Pakistan study [10].

There is increased incidence of malnutrition in bottle feeding patients 53.4% while in breast feeding 46.6% with P value 0.871 In other study done in Pakistan marked increase in malnutrition cases in bottle feeding patients in which 105 patients taken 44 patients were on exclusive breast feeding from those only 4 patients have S. A. M. with P value 0.001.

There is marked increase in incidence of malnutrition in all degrees in families with non-employment caregiver reflected by paternal job in which 81.3%, 81.6% and 90.3% of mild, moderate and Sever malnutrition are non-employment fathers with P value 0.001 and this result is near that of Pakistan study that involved 22 patients with high income families only one of them was S. A. M. with P value < 0.001 which indicate strong Association of malnutrition and family income. Employment in Iraq is associated with good educational status because most of employers had been graduated from institutions and colleges.

Regarding age of patients, the Mean age of malnourished patients between 18.43-19.83 months which is not differs from the mean age of sample which mean There is no significant age predilection (P value 0.75 and this is comparable to Pakistan study that found that there is no role for age and sex of children in association with severe acute malnutrition.

Regarding birth weight, the mean weight of malnourished patient varies between 2.7 and 2.82 which represent significant deviation from the mean of normal which is 3.0+-0.64 overall mean of Wight is 2.9 +-0.7. So, p value is 0.0001 and this result is near the result of Bangladesh study, in which the prevalence of malnutrition was markedly higher and children with low birth infants in this study wasting in low birth weight infants was 25% vs 14% in average birth weight infant. While the underweight percent was 52% in low birth weight infants vs 33% in average birth weight infants.

## Recommendations

While the incidence of severe acute malnutrition markedly decreases there is increased incidence of moderate acute malnutrition which need detection and interference by nutritional support to avoid progression to S.A.M.

Improvement of maternal health during pregnancy is so important because the impact of low birth weight on incidence of malnutrition in all degrees.

We recommend to support non-governmental employer's families which have high incidence of malnutrition because mainly of limited resources and because of less psychological support by caregiver to his family because of outdoor business.

Support of breast feeding specially first 6 months is so important as this supply good source of nutrition to infants and give good psychological support to them.

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