

# Nutritional Status Assessment of Internally Displaced Children in “Dream City”- Iraq

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**Abstract:** Malnutrition is one of the major public health challenges in developing countries especially those experiencing security instability. Not much is known of the nutritional status of displaced children in Iraq. The objective of this study was to assess the nutritional status of internally displaced children in Dream city-Salaheddin-Iraq to provide a validated baseline information for further humanitarian responses to help those children. The “Dream city” in Salaheddin governorate was chosen for it represents a large collection of displaced families. A total of 788 children (less than 5 years) was surveyed. Height, weight and mid-upper arm circumference were measured. Under-nutrition was found in 19.2% of them according to body mass index, and 19.5% when using mid-upper arm circumference index. The prevalence of wasting was 14.6% and severe wasting 6.9%. There was a significant association between under-nutrition and number of the children in the family, age of the child, and father’s and mother’s education. A noticeable percentage of children were hardly consuming meat, eggs or fruits (only once or none per week). About one child in every five displaced children is undernourished. The percentiles of different anthropometric measurements for height, weight, body mass index, and mid upper arm circumference for those children were below the standard measurements reported by WHO and NCHS growth charts for the corresponding age.

**Keywords:** Nutrition, Assessment, Children, Internally Displaced, Dream City, Iraq

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## 1. Introduction

Conflict will inevitably cause loss of lives, physical injuries, widespread mental distress, a worsening of existent malnutrition (particularly among children) and outbreaks of communicable diseases, especially among internally displaced and refugee populations. It also reduces people’s personal security and restrict their access to food, medicines and medical supplies, clean water, sanitation, shelter and health services. [1]

Iraq currently has about four million internally displaced persons (IDPs), 10.8% of its population and 10% of IDPs

worldwide. [2] The Islamic State in Iraq and Syria (ISIS) assault into Iraq displaced an estimated 480,000 persons from Al Anbar governorate in the first half of 2014. [3, 4] During June and July of 2014, a further 505,482 persons were displaced, mostly from Mosul, Iraq’s second city, [5, 6] and further numbers from military attacks in Salaheddin area. Some of the displaced live in rented houses or are staying with host families while others live in “critical shelters”, [7, 8] those are among the most vulnerable of the displaced. Only 8% of IDPs are housed in organized camps, with an estimated 2.5 million living outside of camps. [9, 10]

In response to the massive displacements from the ISIS assaults; the Inter Agency Standing Committee (IASC)

declared Iraq a level 3 (L3) emergency, setting out a “Whole of Iraq” assistance strategy with the escalating crisis in 2014. [6] The people of Iraq face a mixture of health hazards associated with poverty and insufficient food intake. Internally displaced or refugee populations face additional risks to their security and health: they are more vulnerable to disease. Those involved in conflict, as well as organizations responsible for humanitarian assistance, need to liaise with local authorities to manage the additional risks faced by such populations. [1]

Malnutrition is one of the major public health challenges in developing countries especially those experiencing civil wars, security instability and unrest conditions. Unfortunately, not much is known of the nutritional status of displaced children in Iraq. While international agencies may have less presence, local civil society organizations have come together spontaneously to provide assistance to IDPs.

The number of the undernourished people in the world in 2014 was 795 million, [11] despite the fact that the world already produces enough food to feed everyone-7 billion people- and could feed more than that-12 billion people. [12] Hunger and inadequate nutrition can cause impaired physical and brain development of young children and contributes to early deaths (about one third of all child deaths). [13]

The rationale of this study was to assess the impact of the National disaster of ISIS occupation on the nutritional status of the internally displaced children through measuring the mid-upper arm circumference of those children (<5 years), height and weight, and calculating the body mass index (BMI). This will help make recommendations to achieve certain types of interventions in order to improve the nutritional status, and to decrease morbidity (susceptibility to infectious diseases, wasting, stunting, and other nutritional diseases like marasmus and kwashiorkor) that may lead to increase disability adjusted life years (DALY). While displacement is the leading cause of nutritional problems, its consequences (insufficient supplies of food, infectious diseases, and inaccessibility to health services) can also contribute to worsen the condition.

This has created new challenges the relief community has yet to address. Digging for the needs of this vulnerable group could result in agencies being better able to assist them. If found to be effective, the nutritional assessment maintained on widespread sustainable basis in emergency settings to improve the nutritional status of the displaced children in the whole country, which would represent a major contribution to the humanitarian health evidence base in conflict-affected countries.

Objective: To assess the nutritional status of internally displaced children in Dream city-Salaheddin to provide a validated baseline information for further humanitarian responses that open the door for more interventional projects to help improve the health condition of this vulnerable group.

## 2. Methods

### 2.1. Settings

This cross-sectional study (with an analytic element) was

conducted in January 2017.

The “Dream city” is a residential compound built in 2012 with 312 houses that shelter 1100 displaced families with a total population of 8100 person. In most of the houses three or four families live together using simple partitions. All the households that have a less than five year child were included in the sample. We chose this settlement for that all its inhabitants were internally displaced families.

### 2.2. Sample

Salaheddin was chosen for it is one of the governorates that suffered repeated aggressive attacks of violence during the last years, besides, it was the first governorate to set free from ISIS, so that thousands of families fled to it from other governorates like Anbar and Mosul seeking a safe shelter.

All children under five years of age were surveyed excluding those who were diagnosed to have mal-absorption diseases and those less than one month of age for they are too young to show the effect of malnutrition, they may, rather, indicate malnutrition of the mothers.

### 2.3. Research Instruments

A questionnaire form has been developed depending on previous works in this field. It enquired about some demographic information of the family and the child including: age, gender, education and employment of the parents, date and times of displacements, source of income, source of water, attacks of diarrhea or upper respiratory tract infections, and food items available (and consumed) by the family-and the child- for the last week (meat, milk and milk products, eggs, fruits, and cereals).

Height was measured (using the UNICEF sliding caliber) to the nearest 0.5 cm, by asking the child to stand straight next to the wall and barefooted. For children less than two years of age; length was measured. Weight was recorded to the nearest 0.1 kg (with the child wearing light clothing) using a mechanical beam balance scale. For those less than two years; the weight was measured by “mother lifting the child” method (UNICEF weight scale). Mid-upper arm circumference was measured using a non-stretchable measuring tape, at the point halfway between the shoulder and the elbow. The results of the readings were compared to the standard WHO child scales of BMI, weight for height, and weight for age, for both males and females. IMCI growth curves for under five children were used to match Z-score according to WHO reference standard taking -2SD as a cutoff point for underweight and wasting. A team of well-trained interviewers performed the data collection. The time needed for filling the questionnaire and doing the measurements for each child was 7-10 minutes.

#### 2.3.1. Ethical Issue

The principal data giver was the senior women in the family after taking their consent and assuring them that all the information will be kept strictly confidential, and will not be used for any purposes other than research work.

### 2.3.2. Data Computing and Analysis

The data were treated using the statistical package for social sciences (SPSS version 20) and (Anthro and Anthro + programs) to calculate the prevalence of malnourishment in different categories of the sample according to the WHO standard growth scales. Cross tabulations with some of the surveyed variables were constructed.

## 3. Results

The current study included 469 households with a total of 788 under five year children. The families fled mainly from the peripheries of Anbar, Salaheddin and Ninawa

governorates.

Table 1 shows the demographic characteristics of the surveyed families including the distribution of children by age (in months), gender, number of children in each family and parental characteristics. The majority of families had one to two under five children (87%), with an almost equal percentages of males and females (48.1 and 51.9%). Most of the children have both parents alive (96.6%). Most of the families (83.1%) reported two years or more of displacement, frequent displacements (two times or more) was seen in 46.4%. Under five children of the IDP families experienced repeated attacks of diarrhea and upper respiratory tract infection in large proportion (63.3% and 94.2% respectively).

*Table 1. Demographic and displacement characteristics of the surveyed under five children.*

		No	%
Number of families with (one, two or three) under 5 years children	1	225	48.0
	2	183	39.0
	3 or 4	61	13.0
	<6	42	5.3
	6---	61	7.7
Age (months)	12---	104	13.2
	24---	171	21.7
	36---	192	24.4
	>48	218	27.7
Gender	Male	379	48.1
	Female	409	51.9
Parental status	Both father & mother alive	761	96.6
	Either Father/Mother dead	27	3.4
Father education	Illiterate	250	31.7
	Read & write	180	22.8
	Primary	264	33.5
	Secondary & Higher	94	11.9
Mother education	Illiterate	398	50.5
	Read & write	95	12.1
	Primary	256	32.5
Father employment	Secondary & Higher	39	4.9
	Governmental	45	5.8
	Non-governmental/ Private	277	35.2
	No work	466	59.1
Duration of displacement (months)	<12	86	11.0
	12- <24	39	4.9
	24- <36	392	49.7
Number of Displacements	>36	271	34.4
	1	93	11.8
	2	329	41.8
	3	195	24.7
Source of income	>4	171	21.8
	Salary	53	6.7
	Govern assist	32	4.1
	NGO	97	12.3
Repeated attacks of diarrhea	Saved	5	0.6
	Others (not declared)	601	76.3
	Yes	499	63.3
Repeated attacks of URTI	No	289	36.7
	Yes	742	94.2
Source of water supply	No	46	5.8
	Pipes	597	75.8
	Tankers	191	24.2

Table 2 demonstrates the food items consumed by the children; meat, eggs, and fruits were the least consumed and in many families those items were not available (at least for the last week) as 52.8%, 34.6% and 65.1% of the families reported that they did not have meat, eggs or fruits respectively) in their meals during the last week.

Table 2. Food items consumed by under five children per week.

Serving number/week	Food items available (consumed)											
	Meat		Eggs		Fruits		Vegetables		Milk products		Cereals	
	No	%	No	%	No	%	No	%	No	%	No	%
0	416	52.8	273	34.6	513	65.1	36	4.6	184	23.4	21	2.7
1	222	28.2	104	13.2	119	15.1	43	5.5	42	5.3	43	5.5
2	95	12.1	116	14.7	73	9.3	53	6.7	60	7.6	72	9.1
3	32	4.1	79	10.0	35	4.4	89	11.3	109	13.8	116	14.7
4	19	2.4	36	4.6	12	1.5	76	9.6	34	4.3	70	8.9
5	3	0.4	16	2.0	1	0.1	52	6.6	42	5.3	64	8.1
6	-	-	14	1.8	1	0.1	36	4.6	19	2.4	46	5.8
7	1	0.1	150	19.0	34	4.3	403	51.1	298	37.8	356	45.2
0---1	638	81.0	377	47.8	632	80.2	79	10.0	226	28.7	64	8.1
2---3	127	16.1	195	24.7	108	13.7	142	18.0	169	21.4	188	23.9
=>4	23	2.9	216	27.4	48	6.1	567	72.0	393	49.9	536	68.0

Figure 1 shows the overall nutritional status according to body mass index (BMI) and middle upper arm circumference (MAC), 19.2% of them were malnourished according to BMI and about the same proportion when using MAC index (19.5%). Weight for height measurements revealed that the percentage of wasting was 14.6%, and of severe wasting was 6.9%.

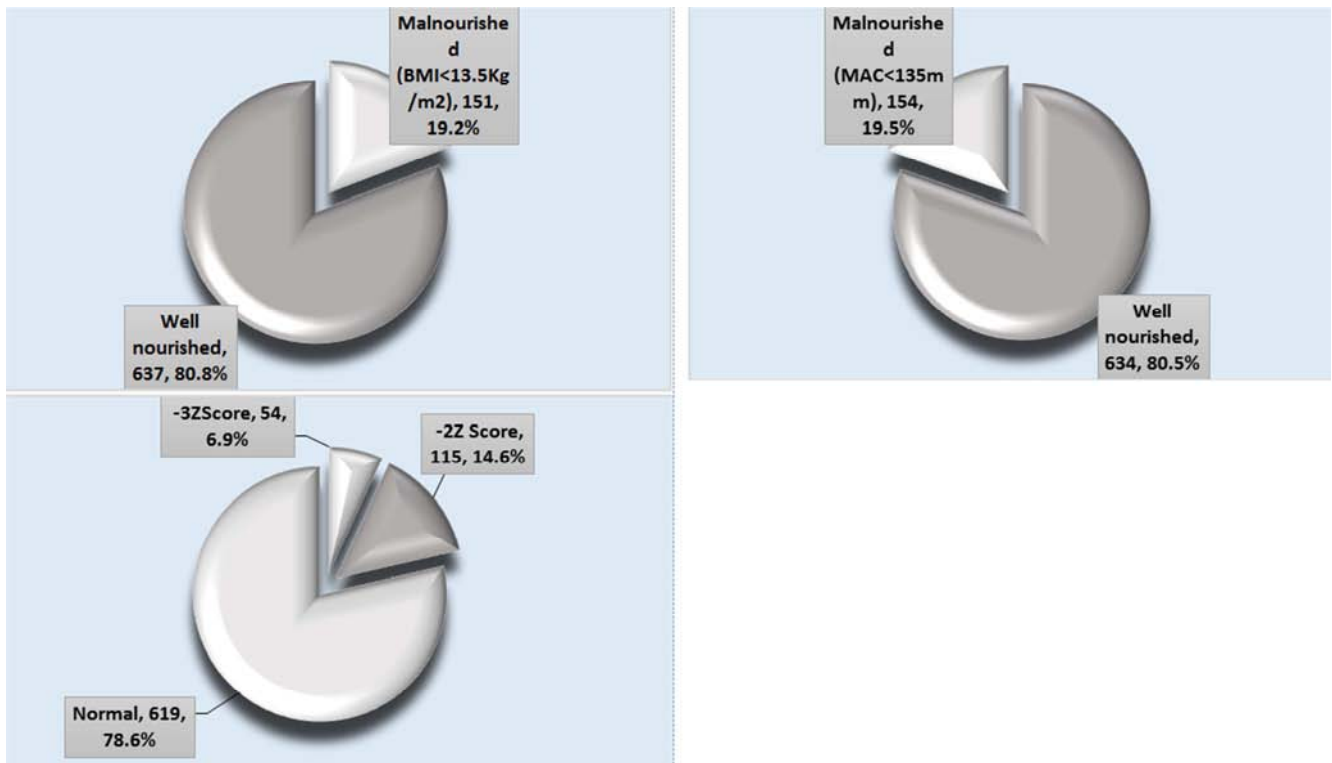


Figure 1. Nutritional status by BMI, MAC and weight for age (wasting).

A significant association was found between under-nutrition (using BMI) and the number of children in the family, the higher the number of children the more the probability of having an undernourished child (or more). Children less than six months of age were the most vulnerable group for malnutrition. A significant association was also found between under-nutrition and father's education, the less educated the father the more possibility of having malnutrition among his children, while the significant association with mother's education revealed that the categories that showed more child under-nutrition were the

illiterate and those with secondary or higher education. The same significant association was seen when analyzing the relation between wasting and the mentioned variables (number of children, age of the child, father's and mother's education), while using the MAC index revealed a significant association only with age. No significant association was found between under-nutrition and gender of the child, number and duration of displacements, parental death, or frequency of attacks of diarrhea or upper respiratory tract infections as shown in tables 3, 4 and 5.

**Table 3.** Association of nutritional status by BMI with demographic characteristics of IDP children.

		Nutritional status (BMI>13.5)				P value
		Malnourished (<13.5)		Well nourished (≥13.5)		
		No	%	No	%	
Number of children under 5	1	41	18.2	184	81.8	0.023*
	2	26	14.2	157	85.8	
	3 or 4	18	36.0	43	64.0	
	<6	12	28.6	30	71.4	
Age (months)	6---	10	16.4	51	83.6	0.036*
	12---	21	20.2	83	79.8	
	24---	23	13.5	148	86.5	
	36---	31	16.1	161	83.9	
	>48	54	24.8	164	75.2	
	Gender	Male	72	19.0	307	
	Female	79	19.3	330	80.7	
Parental status	Both alive	142	18.7	619	81.3	0.057
	Either dead	9	33.3	18	66.7	
Father education	Illiterate	62	24.8	188	75.2	0.001*
	Read & write	43	23.9	137	76.1	
	Primary	34	12.9	230	87.1	
	Secondary & Higher	12	12.8	82	87.2	
Mother education	Illiterate	93	23.4	305	76.6	0.010*
	Read & write	15	15.8	80	84.2	
	Primary	34	13.3	222	86.7	
	Secondary & Higher	9	23.1	30	76.9	
Father employment	Governmental	7	15.6	38	84.4	0.743
	Non-governmental	49	17.6	228	82.4	
	No work	95	20.4	371	79.6	
Duration of displacement (months)	<24	17	13.6	108	86.4	0.085
	≥24	134	20.2	529	79.8	
Number of displacements	1	15	16.1	78	83.9	0.720
	2	68	20.7	261	79.3	
	3	38	19.5	157	80.5	
	≥4	30	17.5	141	82.5	
Source of income	Salary	9	17.0	44	83.0	0.659
	Govern assist	5	15.6	27	84.4	
	NGO	16	16.5	81	83.5	
	Saved	-	-	5	100	
Repeated attacks of diarrhea	Others	121	20.1	480	79.9	0.796
	Yes	97	19.4	402	80.6	
	No	54	18.7	235	81.3	
Repeated attacks of URTI	Yes	142	19.1	600	80.9	0.943
	No	9	19.6	37	80.4	
Source of water	Pipes	110	18.4	487	81.6	0.353
	Tankers	41	21.5	150	78.5	

\*Significant difference between proportions using Pearson Chi-square test at 0.05 level

**Table 4.** Association of nutritional status by MAC with different demographic characteristics.

		Nutritional status (MAC>135)				P value
		Malnourished (<135mm)		Malnourished (≥135mm)		
		No	%	No	%	
Number of children under 5	1	41	18.2	184	81.8	0.823
	2	27	14.8	156	85.2	
	3 or 4	10	17.1	51	82.9	
	<6	37	88.1	5	11.9	
Age (months)	6---	33	54.1	28	45.9	0.0001*
	12---	33	31.7	71	68.3	
	24---	29	17.0	142	83.0	
	36---	14	7.3	178	92.7	
	≥48	8	3.7	210	96.3	
	Gender	Male	65	17.2	314	
	Female	89	21.8	320	78.2	
Parental status	Both alive	152	20.0	609	80.0	0.106
	Either dead	2	7.4	25	92.6	
Father education	Illiterate	50	20.0	200	80.0	0.530
	Read & write	40	22.2	140	77.8	

		Nutritional status (MAC>135)				P value
		Malnourished (<135mm)		Malnourished (≥135mm)		
		No	%	No	%	
Mother education	Primary	50	18.9	214	81.1	0.007*
	Secondary & Higher	14	14.9	80	85.1	
	Illiterate	92	23.1	306	76.9	
	Read & write	23	24.2	72	75.8	
Father employment	Primary	34	13.3	222	86.7	0.071
	Secondary & Higher	5	12.8	34	87.2	
	Governmental	4	8.9	41	91.1	
Duration of displacement (months)	No work	60	20.4	217	79.6	0.276
	<24	90	19.3	376	80.7	
Number of displacements	<24	20	16.0	105	84.0	0.507
	≥24	134	20.2	529	79.8	
	1	16	17.2	77	82.8	
	2	72	21.9	257	78.1	
Source of income	3	33	16.9	162	83.1	0.033*
	≥4	33	19.3	138	80.7	
	Salary	2	3.8	51	96.2	
	Govern assist	6	18.8	26	81.3	
Repeated attacks of diarrhea	NGO	21	21.6	76	78.4	0.112
	Saved	-	-	5	100	
	Others	125	20.8	476	79.2	
Repeated attacks of URTI	Yes	89	17.8	410	82.2	0.446
	No	65	22.5	224	77.5	
Source of water	Yes	147	19.8	595	80.2	0.626
	No	7	15.2	39	84.8	
	Pipes	119	19.9	478	80.1	
	Tankers	35	18.3	156	81.7	

\*Significant difference between proportions using Pearson Chi-square test at 0.05 level

*Table 5. Relation between wasting and demographic characteristics of IDP children.*

		Nutritional status				P value
		Wasting		No wasting		
		No	%	No	%	
Number of children <5	1	55	24.4	170	75.6	0.018*
	2	24	13.1	159	86.9	
	3 or 4	14	28.2	47	71.8	
Age (months)	<12	51	50.0	51	50.0	0.0001*
	12--	32	30.8	72	69.2	
	24--	34	19.9	137	80.1	
	36--	21	10.9	171	89.1	
	≥48	31	14.2	187	85.8	
Gender	Male	86	22.7	293	77.3	0.413
	Female	83	20.3	326	79.7	
Parental status	Father & mother alive	160	21.0	601	79.0	0.126
	Father or Mother dead	9	33.3	18	66.7	
Father education	Illiterate	65	26.0	185	74.0	0.011*
	Read & write	46	25.6	134	74.4	
	Primary	45	17.0	219	83.0	
Mother education	Secondary & Higher	13	13.8	81	86.2	0.008*
	Illiterate	102	25.6	296	74.4	
	Read & write	22	23.2	73	76.8	
	Primary	37	14.5	219	85.5	
Father employment	Secondary & Higher	8	20.5	31	79.5	0.260
	Governmental	9	20.0	36	80.0	
	Non-governmental	50	17.5	227	82.5	
Duration of displacement (months)	No work	110	23.6	356	76.4	0.168
	<24	21	16.8	104	83.2	
Number of displacements	≥24	148	22.3	515	77.7	0.638
	1	19	20.4	74	79.6	
	2	74	22.5	255	77.5	
	3	45	23.1	150	76.9	
Repeated attacks of diarrhoea	≥4	31	18.1	140	81.9	0.072
	Yes	117	23.4	382	76.6	
Repeated attacks of URTI	No	52	18.0	237	82.0	0.960
	Yes	159	21.4	583	78.6	

		Nutritional status				P value
		Wasting		No wasting		
		No	%	No	%	
Source of water supply	No	10	21.7	36	78.3	0.548
	Pipes	131	21.9	466	78.1	
	Tankers	38	19.9	153	80.1	

\*Significant difference between proportions using Pearson Chi-square test at 0.05 level

Table 6 showed that the association of under nutrition with food items was significant only with milk and milk products.

**Table 6.** Association of nutritional status (by BMI) with food items serving per week.

		Nutritional status (BMI $\geq$ 13.5)				P value
		Malnourished (<13.5)		Well nourished ( $\geq$ 13.5)		
		No	%	No	%	
Meat	0---1	123	19.3	515	80.7	0.747
	2---3	25	19.7	102	80.3	
	$\geq$ 4	3	13.0	20	87.0	
Eggs	0---1	73	19.4	304	80.6	0.318
	2---3	31	15.9	164	84.1	
	$\geq$ 4	47	21.8	169	78.2	
Fruits	0---1	117	18.5	515	81.5	0.192
	2---3	20	18.5	88	81.5	
	$\geq$ 4	14	29.2	34	70.8	
Vegetables	0---1	10	12.7	69	87.3	0.100
	2---3	22	15.5	120	84.5	
	$\geq$ 4	119	21.0	448	79.0	
Milk products	0---1	32	14.2	194	85.8	0.027*
	2---3	42	24.9	127	75.1	
	$\geq$ 4	77	19.6	316	80.4	
Cereals	0---1	16	25.0	48	75.0	0.264
	2---3	40	21.3	148	78.7	
	$\geq$ 4	95	17.7	441	82.3	

\*Significant difference between proportions using Pearson Chi-square test at 0.05 level

Table 7 demonstrates the percentile distribution of different anthropometric measurements of the IDP under five children for height (meter), weight (kilogram), BMI (kilogram/square meter), and MAC (centimeter) in which all

percentiles were below the standard measurements reported by WHO and NCHS growth charts for the corresponding age for both males and females.

**Table 7.** Percentile distribution of different anthropometric measurements of IDP under five children (weight for height, BMI, and MAC).

Age (months)	Height (m)				
	Percentile 03 <sup>rd</sup>	Percentile 25 <sup>th</sup>	Median 50 <sup>th</sup>	Percentile 75 <sup>th</sup>	Percentile 97 <sup>th</sup>
<6	0.53	0.55	0.60	0.64	0.73
6---	0.57	0.65	0.68	0.71	0.87
12---	0.64	0.71	0.76	0.80	0.90
24---	0.73	0.80	0.84	0.88	1.02
36---	0.82	0.87	0.91	0.95	1.04
$\geq$ 48	0.88	0.95	1.00	1.03	1.13
	Weight (Kg)				
<6	3.40	5.00	6.00	6.50	8.30
6---	6.00	7.00	7.50	8.50	11.00
12---	7.00	8.50	10.00	11.50	14.20
24---	8.00	10.50	11.70	13.20	15.80
36---	10.00	12.60	13.70	15.00	18.50
$\geq$ 48	11.00	14.20	15.55	17.20	20.20
	BMI (Kg/m <sup>2</sup> )				
<6	10.68	14.20	16.03	17.82	22.29
6---	13.09	15.11	16.07	18.37	29.59
12---	12.63	15.31	16.84	19.14	23.41
24---	12.69	15.39	16.64	17.99	26.01
36---	12.59	15.22	16.64	18.10	29.73
$\geq$ 48	12.04	14.51	15.89	17.00	20.82
	MAC (cm)				
<6	8.00	11.50	12.25	13.00	16.50
6---	12.00	13.00	14.00	15.00	18.00

Age (months)	Height (m)				
	Percentile 03 <sup>rd</sup>	Percentile 25 <sup>th</sup>	Median 50 <sup>th</sup>	Percentile 75 <sup>th</sup>	Percentile 97 <sup>th</sup>
12---	13.00	14.00	15.00	16.00	19.00
24---	13.50	15.00	15.50	16.00	20.00
36---	14.00	15.00	16.00	17.00	21.00
≥48	14.50	15.70	16.00	17.00	23.00

## 4. Discussion

Forced displacement is now occurring more commonly in conflict-affected countries especially in the middle-income settings of the East Mediterranean Region where most displaced populations live outside camps, and can become “out-of-sight” and not readily visible. Children, on account of their young age, are more exposed to the difficulties and risks associated with displacement. Their health needs are not fully addressed particularly in perspectives of malnutrition and immunization. [14] World Health Organization (WHO) reported that 54% of all childhood mortality is attributed directly or indirectly to malnutrition. [15]

The WHO food survey in Iraq (launched in 2008) revealed that an estimated 930 000 people (3% of the total population) were food insecure. An additional 6.4 million people (22% of the population) were extremely dependent on food rations, without which they could become food insecure. [16] Iraq Multiple Indicator Cluster Survey (MICS-4) in 2011 found that 8% of under-five children were moderately or severely underweight, and 4% of them were severely underweight. [17]

The results of the current study showed that the prevalence of under-nutrition was 19.2% measured by BMI and 19.5% measured by MAC. This prevalence is considered high when compared to the regional communities like Iran in which the prevalence of malnutrition was found to be 11.1% and of wasting was 7.2%, [18] or other countries like Nepal where the prevalence of malnutrition was 18.9% and 7% wasting. [19] It is higher even than previous studies in Iraq, like the study in Kurdistan Region where the prevalence of malnutrition and wasting was found to be 7% and 3.7% respectively, [20] and a study about nutritional status among less than five year Syrian refugees in Al-Anbar governorate-Iraq where the prevalence of malnutrition and wasting was shown to be 7.6% and 4.8% respectively. [21]

No gender difference was found, and this is consistent with other previous studies in Iraq. [22]

Wasting or thinness (Low weight-for-height) indicates a recent and severe process of weight loss, which is often associated with acute starvation and/or severe disease. However, wasting may also be the result of a chronic unfavorable condition. Provided there is no severe food shortage, the prevalence of wasting is usually below 5%, even in poor countries. It is well known that a prevalence exceeding 5% is alarming given a parallel increase in mortality that soon becomes apparent. [23, 24] On the severity index, prevalence between 10-14% is regarded as serious, and above or equal to 15% as critical. [25]

The prevalence of wasting in the current study was 14.6%,

(and severe wasting 6.9%), this is a disastrous finding that approaching the critical level. Iraq multiple indicator cluster survey (MICS) 2011 revealed that the prevalence of underweight was found to be 7.1%, of wasting 5.8%, and of severe wasting it was 2.7%. [26].

## 5. Conclusion

It can be concluded from this study that under nutrition (including wasting) is overwhelmed among the internally displaced children. About one child in every five displaced children is undernourished. The percentiles of different anthropometric measurements for weight for height, BMI, and MAC for those children were below the standard measurements reported by WHO and NCHS growth charts for the corresponding age and for both males and females. This is a human crisis that needs a rapid and effective intervention to help improve the health status of those children and save their lives.

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