

Nutritional Assessment, and Food Consumption Analysis for IDP Households in a Sample of well-defined Baghdad Camps During the period (6th to 14th of April 2016) using SMART Methodology

NUTRITION RESEARCH INSTITUTE



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LIST OF ACRONYMS

ARI	Acute Respiratory Infection
CI	Confidence Interval
ENA	Emergency Nutrition Assessment
FCGs	Food Consumption Groups
FCS	Food Consumption Score
GAM	Global Acute Malnutrition
HAZ	Height-for-Age Z-scores
IOM	International Organization for Migration
MAM	Moderate Acute Malnutrition
MUAC	Mid-Upper Arm Circumference
NGO	Non-Governmental Organization
NCHS	National Center for Health Statistics
RCs	Reserve Clusters
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardized Monitoring and Assessment of Relief and Transitions
SPSS	Statistical Package for the Social Sciences
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WAZ	Weight-for-Age Z-scores
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight-for-Height Z-scores

EXECUTIVE SUMMARY

The aims of this survey were to assess the nutritional status of children under five years of age in displaced families in Baghdad and to determine the prevalence of child illness (diarrhoea and acute respiratory infection); and to provide information on infant and young child feeding practices. The Ministry of Health / Public Health Directorate/ Nutrition Research Institute carried out the survey in collaboration with the Directorate of Health of Baghdad / Al-Karkh with the support of United Nations Children's Fund and World Food Programme.

A cross-sectional cluster sample with two stage sampling design was employed to undertake the survey using a Standardized Monitoring and Assessment of Relief and Transitions (SMART) methodology. The sample size was calculated to be representative of displaced families living in 18 randomly selected well-defined camps in Baghdad on both sides; Al-Karkh and Al-Rusafa. A total of 650 households in 65 randomly selected clusters were surveyed for the period from the 6th to the 14th of April 2016 and 664 children 0-59 months old were included in the survey. Data related to socioeconomic status, food security and mortality rate were collected through direct interviews using a pre-prepared questionnaire form, and anthropometric measurements (weight, length/height and mid-upper arm circumference) were obtained for all children enrolled in the survey.

The nutritional status of children was analysed using World Health Organization (WHO) Child Growth Standards. SMART flags excluded children whose measurements exceeded ± 6 Standard Deviations (SD) from the observed survey mean. The cut-off point of below minus two standard deviation (<-2 SD) was used to determine global acute malnutrition (GAM), stunting and underweight using weight-for-length/height, length/height-for-age and weight-for-age indicators, respectively. Mid-upper arm circumference (MUAC) was also used to assess acute malnutrition among children 6-59 months, at a cut-off point of 125 mm.

The survey results revealed that the prevalence of global acute malnutrition rate based on weight-for-length/height was 4.0% with 1.8% of children suffering from severe acute malnutrition, while 2.8% of the children were suffering from global acute malnutrition based on measurement of mid-upper-arm circumference. Stunting, which means chronic malnutrition (low length/height-for-age) was shown in 15.8% of the children, and only 3.5% of children were found to be underweight.

For children (0-23 months), approximately 83.4% were breastfed with 30.9% of them were put to the breast within less than an hour after birth.

Unfortunately, in this survey no valid data were available for mortality rate.

INTRODUCTION

The latest International Organization for Migration (IOM) Iraq Displacement Tracking Matrix (DTM) identified 3,418,332 internally displaced Iraqis (IDPs) (569,722 families) from the 1st of January 2014 to the 31st of March 2016.

There were three distinct displacement waves; 1) those displaced from the Al-Anbar conflict starting in early January 2014, 2) the Mosul conflict, which began in early June 2014 and 3) the Sinjar crisis which began on the 4th of August 2014. While many Iraqis found their way to displacement camps, many others lived in schools, mosques, churches and in unfinished buildings (rented flats, collective towns, makeshift camps and public buildings or tents). Many thousands occupied public buildings, which had not been designed for residential usage and lacked basic services, such as running water and sanitation facilities. Furthermore, IDPs living in public buildings are at risk of eviction, if and when such buildings are needed for public use.

Between the 2nd and 31st of March 2016, an increase in displacement was recorded in the governorates of Al-Anbar (48,378 individuals) and Salah Al-Din (23,718 individuals) due to ongoing military operations.

A total of 553,104 individuals were reported to have returned to their location of origin across Iraq. Salah Al-Din governorate has experienced the highest number of returnees, with 262,074 individuals. Ninewa and Diyala also reported a high number of returnees (131,766 and 118,404 respectively), mainly due to improved security conditions (*IOM-Iraq Mission*).

Many efforts have been spent to ensure their humanitarian needs and different relief programs and food aids are currently undergoing with the support of many organizations and agencies like United Nations High Commissioner for Refugees (UNHCR), World Food Programme (WFP), United Nations Children's Fund (UNICEF), United States Agency for International Development (USAID), WHO and many more in form of food aids or rising public awareness in many fields.

SMART is an inter-agency initiative, which was launched in 2002 by a network of organizations and humanitarian practitioners. SMART advocates a multi-partner, systematized approach to provide critical, reliable information for decision-making, and to establish shared systems and resources for host government partners and humanitarian organizations.

The SMART Methodology is an improved survey method that balances simplicity (for rapid assessment of acute emergencies) and technical soundness. It draws from the core elements of several methodologies with continuous upgrading, informed by research and current best practices.

The SMART Methodology is based on the two most vital and basic public health indicators for the assessment of the magnitude and severity of a humanitarian crisis:

1. Nutritional status of children under-five.
2. Mortality rate of the population.

These indicators are useful for prioritizing resources as well as for monitoring the extent to which the relief system is meeting the needs of the population, and therefore the overall impact of relief response.

ADVANTAGES OF USING SMART

SMART ensures that consistent and reliable survey data is collected and analysed using a single standardized methodology, it provides technical capacity for decision-making and reporting, and comprehensive support for strategic and sustained capacity building.

Key SMART Innovations

- Plausibility check to verify data quality and flag problems.
- User-friendly software Emergency Nutrition Assessment (ENA) and manuals that are easy to use even for non-epidemiologists.
- Flexibility in sample size calculation and cluster sizes, with standardized survey protocols with the use of replacement clusters, household selection techniques, and best field practices (e.g. for absent children or empty households).
- Rigorous standardization test procedures and analysis.
- Regularly updated, clear sampling guidance based on field experiences, research and best practices.
- Improved census procedure for mortality assessments.

The widely used combination of SMART and ENA has improved data quality review and assurance in larger surveys (e.g. Multiple-Indicator Cluster Surveys-MICS and Demographic Household Surveys-DHS) and has also been incorporated into many national nutrition protocols.

SURVEY OBJECTIVES

The overall objectives of the survey are as below:

- 1- To provide updated information on the nutrition situation of children 0-59 months in IDPs.
- 2- To provide information on infant and young child feeding practices.
- 3- To recommend immediate and medium/long-term interventions to save lives and support livelihoods.

Specifically, the survey aims to:

- 1- Measure the prevalence of acute malnutrition in children aged 6-59 months old.
- 2- Measure the prevalence of stunting in children aged 6-59 months old.
- 3- Determine the coverage of vitamin A supplementation in the last six months among children aged 6-59 months old.
- 4- Determine the prevalence of child illness (acute respiratory infection (ARI) and diarrhoea) among children 6 to 59 months of age.
- 5- Investigate infant and young child feeding practices among children aged 0-23 months.

METHODOLOGY

Sample size

Due to the nature of distribution and structure of IDP families in the survey, a two stages cluster and simple random sampling was used to determine the sample size and allocation of clusters, as simple random allocation of the enrolled families was done in the field.

The sample size calculation which was carried out, used the Emergency Nutrition Assessment (ENA) software (planning section), where the estimated prevalence was 7%, and the expected design effect was 1.489, and the desired precision was 3%. The number of households to be included for the children sample size was 650, distributed among 65 clusters, with inclusion of 7 Reserve Clusters (RCs) and 10 households per cluster randomly distributed among 18 camps, taking into account, their population size by assigning probability proportional to the population size. Sample size calculation for death rate was also calculated by using ENA and the assumption included each household calculated above.

Sample sizes were adjusted for non-response and the predicted non-response rate used was 5%.

Sampling procedure: selecting households and children

Households were selected based on a simple random technique in which household lists were provided and allocation of households was done before commencement of the fieldwork. Replacement of any empty or moved household was done in site using the random number table method.

Any empty household or absent children were revisited during the day or the next day in three consecutive visits. Taking the weights and length/height measurements of all eligible children in the selected households was by using a standard weighing scale (uniscale) and measurement board. The respondents within the household, were the head of the families.

Case definitions and inclusion criteria

The definition of "a household" was: one or more people living in the same dwelling and sharing meals, or living accommodation and may consist of a single family or other grouping of people living and eating together, while, on the other hand, a single dwelling will be considered to contain multiple households, if either meals or living space were not shared.

Children under five years old were included in the anthropometric survey and two years of age was used as a cut-off point for deciding whether the height or length of the child would be measured (standing up or laying down). Global acute malnutrition (GAM) was defined as (weight-for-length/height <-2 Z-score and/or bilateral oedema). Moderate acute malnutrition (MAM) was defined as (weight-for-length/height <-2 and ≥ -3 Z-score, no oedema), while severe acute malnutrition (SAM) was defined as (weight-for-length/height <-3 Z-score and/or bilateral oedema). Bilateral oedema was ascertained during the survey, by grasping the foot so that it rests in the surveyor's hand, with the thumb on the dorsum of the foot and to press gently for three seconds. If a pit (dent) remained in the foot upon lifting the thumb, oedema was considered positive (present) in the child.

To determine anthropometric results, WHO Child Growth Standards were used. Three months (90 days) was used as the length of the recall period in the mortality module of this survey, while "major events" or "any major household changes" was used to explain the date of the start of recall period to the survey responders.

Questionnaire, training and supervision

Questionnaire

To collect data related to socioeconomic status, food security and mortality rate, a pre-prepared questionnaire was used.

Survey teams and supervision

Each team consisted of a team leader (supervisor) with two team members (survey workers from the health staffs). A total of 10-trained teams, and 30 participants were constructed to cover both Al-Karkh and Al-Rusafa camps in Baghdad and survey teams supervised at all times. The survey was conducted under the close supervision and coordination of Nutrition Research Institute.

Training

Survey committee leaders conducted two training courses, including a one-day course to local supervisors (team leaders) on Tuesday 29th March 2016. This included survey methodology and aims of the survey in addition to revising the survey questionnaire, sample size distribution and camps enrolled in the study, overview of survey design and survey tools. A sample update activity was conducted prior to survey implementation.

A second training course just before the commencement of the survey was conducted by survey committee leaders for the period from the 3rd to the 5th April 2016 for the teams participating in the survey including team leaders, and the training covered general survey objectives, overview of the survey design, household selection procedures, anthropometric measurements, signs and symptoms of malnutrition, data collection and interview skills, mortality interview with discussing main points of the survey challenges. An anthropometry standardization exercise was conducted as part of the training, one round per team (10 children/team were measured by the teams).

Data analysis

A well-trained team from Nutrition Research Institute entered the data in the same building and a double data entry was used as part of quality assurance.

Different statistical packages namely SPSS, WHO Anthro, Excel, and ENA were used in the entry and analysis phases, missed and outliers were excluded from the survey anthropometric results (+/- 6 SD of WHZ).

Results were presented in tables, figures, 95% confidence interval (CI) was calculated, and prevalence of malnutrition rates were presented and distributed by age and sex.

Nutritional Anthropometric Indicators

The anthropometric data of children (6-59 months) were analysed using the latest version of ENA 2011 (16 November 2013). The ENA software calculates the Z-scores for weight-for-height (WH), height-for-age (HA) and weight-for-age (WA). Using Z-scores in reference to the WHO Child Growth Standards, the following cut-off points were used to determine the prevalence of wasting, stunting and underweight.

Table 1: Cut-off points for definition of global, moderate, and severe acute malnutrition using WHZ (WHO 2006)

Classification of acute malnutrition	Weight-for-length/height Z-scores
Global	< -2 and/or bilateral oedema
Moderate	< -2 SD and ≥ -3 SD, no oedema
Severe	< -3 SD and/or bilateral oedema

Table 2: Cut-off points for definition of stunting and underweight using HAZ and WAZ (WHO 2006)

Length/height-for-Age		Weight-for-Age	
Classification	Z-scores	Classification	Z-scores
Stunted	< -2 SD	Underweight	< -2 SD
Moderately Stunted	< -2 SD and ≥ -3 SD	Moderately Underweight	< -2 SD and ≥ -3 SD
Severely Stunted	< -3 SD	Severely Underweight	< -3 SD

Wasting

Wasting (acute malnutrition) was estimated according to the weight-for-length/height of each child and/or presence of bilateral oedema. Weight-for-length/height is an age independent indicator that assesses weight in relation to length/height; it detects whether children are wasted or severely wasted. Wasting is usually a result of current lack of food or illnesses that lead to acute and severe weight loss and possible onset of malnutrition. It is particularly useful to consider this variable in an emergency situation.

Underweight

Underweight was estimated according to weight-for-age index. Weight-for-age is an indicator that reflects body weight relative to the child's age. It is used to assess whether a child is underweight or severely underweight. It takes into account both acute and chronic malnutrition.

Stunting

On the other hand, stunting was determined using length/height-for-age index. It is an indicator of linear growth of a child, and reflects prolonged or chronic lack of food and repeated infections. The effects of low length/height-for-age or stunting are largely irreversible by the end of 3 years of age, and this includes delayed motor development, impaired cognitive function and poor school performance. Stunting represents long-term effects of malnutrition and is not sensitive in assessing acute malnutrition.

For the measures of MUAC, the standards in table 3 are taken from the WHO Child Growth Standards and the identification of severe acute malnutrition in infants and children, 2009. Moreover, MUAC is used in rapid screening of acute malnutrition for children 6-59 months at high risk of mortality associated with malnutrition. Below are the cut-off points for MUAC.

Table 3: Cut-off points for definition of acute malnutrition defined by MUAC

Children classification of acute malnutrition	MUAC
Global	<12.5 cm and/or oedema
Moderate	<12.5 cm and ≥11.5 cm, no oedema
Severe	<11.5 cm and/or oedema

WHO classification for assessing severity of malnutrition by prevalence ranges among children under 5 years of age was used to determine the severity of malnutrition rates in the survey as shown in table 4.

Table 4: Classification for assessing severity of malnutrition by prevalence ranges among children under 5 years of age

Indicator	Severity of malnutrition by prevalence ranges (%)			
	Low	Medium	High	Very high
Stunting	<20	20-29	30-39	≥40
Underweight	<10	10-19	20-29	≥30
Wasting	< 5	5-9	10-14	≥15

Calculation of the Food Consumption Score (FCS) and Food Consumption Groups (FCGs)

Definition: The frequency weighted diet diversity score or food consumption score (FCS) is a score calculated using the frequency of consumption of different food groups consumed by a household during the seven days before the survey.

Calculation steps:

- I. Standard seven-day food frequency data were collected; all the food items were classified into specific food groups.
- II. All the consumption frequencies of food items of the same group were summed, and recorded the value of each group above seven as seven.
- III. The value obtained for each food group by its weight was multiplied and created new weighted food group scores.
- IV. The weighed food group scores were summed, thus creating the food consumption score (FCS).
- V. Using the appropriate thresholds, the variable food consumption score was recorded, from a continuous variable to a categorical variable.

These are the standard food groups and current standard weights used in all analyses. The food items listed below are an example from the regional bureau for the Southern Africa region (ODJ).

	Food items (<i>examples</i>)	Food groups (definitive)	Weight (definitive)
1	Maize , maize porridge, rice, sorghum, millet pasta, bread and other cereals	Main staples	2
	Cassava, potatoes and sweet potatoes, other tubers, plantains		
2	Beans. Peas, groundnuts and cashew nuts	Pulses	3
3	Vegetables, leaves	Vegetables	1
4	Fruits	Fruits	1
5	Beef, goat, poultry, eggs and fish	Meat and fish	4
6	Milk yogurt and other diary	Milk	4
7	Sugar and sugar products, honey	Sugar	0.5
8	Oils, fats and butter	Oil	0.5
9	spices, tea, coffee, salt, fish power, small amounts of milk for tea.	Condiments	0

* Missing data for individual food items could be interpreted as 0 consumptions days, or as missing. The food consumption data should be properly cleaned to change missing values to 0 where appropriate. Where the data are truly missing, it is recommended not to calculate the FCS for that household

$$\text{FCS} = (\text{Grains}^*2) + (\text{Pulses}^*3) + (\text{Vegetables}^*1) + (\text{Fruits}^*1) + (\text{Fish and meat}^*4) + (\text{Milk}^*4) + (\text{Sugar}^*0.5) + (\text{Oil}^*0.5)$$

Once the food consumption score is calculated, the thresholds for the FCGs should be determined based on the frequency of the scores and the knowledge of the consumption behaviour in that country/region.

The typical thresholds are:

Threshold	Profiles	Threshold when sugar and oil consumed daily
0-21	Poor	0-28
21.5-35	Borderline	28.5-42
> 35	Good	>42

RESULTS AND DISCUSSION

Table 5 represents household socioeconomic characteristics, the first characteristic was age of the household respondent where 99.4% were above eighteen years old and 82.9% of them were male adults. The second characteristic was the educational level of the mother or caretaker. Most of them were illiterate (33.5%) or had a primary educational level (31.9%) which have approximately equal percentages. From the data, most of the head households were unemployed (38.2%).

Most of families were either less than five persons (46.4%) or between 5 and 15 persons (47.3%), which have approximately equal percentages, while the highest percentage of the number of children per household was either one (31.4%) or two (20.6%). The Third characteristic was the age of the youngest child (0-23 months), and the majority were aged 6-23 months (75.2%) with equal gender.

Table 5: Household socioeconomic characteristics

Questions	N	percent	Total
Q2 Respondent age?			
1 < 18 years	5	0.8%	650
2 >18 years	645	99.4%	
Q3 Who is the head of the household?			
1 Male adult (>18 years)	538	82.9%	650
2 Female adult (>18 years)	112	17.3%	
3 Child – headed household (<18)	0	0.0%	
Q4 Level of education of the mother / caretaker?			
1 Illiterate	217	33.5%	650
2 Read alone	149	23.0%	
3 Primary level	207	31.9%	
4 Secondary level	45	6.9%	
5 Above Secondary	28	4.3%	
Q5 Household head main occupation?			
1 Business	53	8.2%	650
2 Trade / Vocational skills	29	4.5%	
3 Casual labour	90	13.9%	
4 Wage employment	144	22.2%	
5 Unemployed	248	38.2%	
6 Others	86	13.3%	
Q6 How many persons living in this household?			
1 <5	301	46.4%	650
2 5-15	307	47.3%	
3 6-15	33	5.1%	
4 16-20	5	0.8%	
5 >21	4	0.6%	
Q7 How many children living in this household?			
No one	22	3.4%	650
One	204	31.4%	
Two	134	20.6%	
Three	54	6.9%	
Four	12	1.8%	
Five	1	0.2%	
Six	-	-	

Seven	420	64.2%	
Q8 Age of the youngest children in this household?			
1 0-6 months	22	20.4%	650
2 6-23 months	82	75.2%	
3 24 and above	5	4.6%	
Gender of the smallest children?			
Male	112	49.3%	227
Female	116	50.8%	

Table 6 represents Infant and young child feeding practices and health status. It shows here that 83.4% of them have ever breastfed, while 44.1% of them were currently breastfeeding; finally, 61.0% were given food or liquid other than breast milk during the first three days after delivery. The highest percentage concerning how long after birth the child was first put to the breast was between 1-23 hours (37.9%).

Table 6: Infant and young child feeding practices and health status

Questions	N	Percent	Total
Q9 Did you ever breastfeed?			
Yes	190	83.4%	227
No	38	16.8%	
Q10 Are you currently breastfeeding?			
Yes	100	44.1%	227
No	127	55.9%	
Q11 During the first three days after delivery, did you give him food or liquid other than your breast milk?			
Yes	139	61.0%	227
No	45	19.8%	
Don't Know	38	16.7%	
Q12 How long after birth did you first put (name) to the breast?			
1 Less than one hour	70	30.9%	227
2 Between 1 & 23 hours	86	37.9%	
3 More than 24 hours	31	13.7%	
4 Don't Know	2	0.01%	

Table 7 shows the age (months) of the child, which takes liquids have had yesterday during the day and at night, the highest percentage was 26.3% at age the age of 6-9 months.

About 58.6% of children were reported to have never taken vitamin A, and 37.4% had diarrhoea, while 51.1% had ARI in the last two weeks preceding the survey.

Table 7: About liquid introduction, vitamin A, diarrhoea and ARI

Q14: Liquid introduction	N	Percent	Total
Un-introduced	66	34.0%	194
<2 months	34	17.5%	
3-5 months	40	20.6%	
6-9 months	51	26.3%	
9-12 months	3	1.5%	
Q 15: Did (name) take vitamin A			
Yes	71	31.3%	227
No	133	58.6%	
Don't know	23	10.0%	

Q16: Has (name) had diarrhoea in the last two weeks?

Yes	85	37.4%	227
No	140	61.7%	
Don't know	23	10.0%	

Q17: Has (name) had ARI in the last two weeks?

Yes	116	51.1%	227
No	107	47.1%	
Don't know	4	10.8%	

Figure 1 shows that the highest percentage of main food sources came from stores or markets bought with their own cash, and following that, from non-WFP humanitarian assistance.

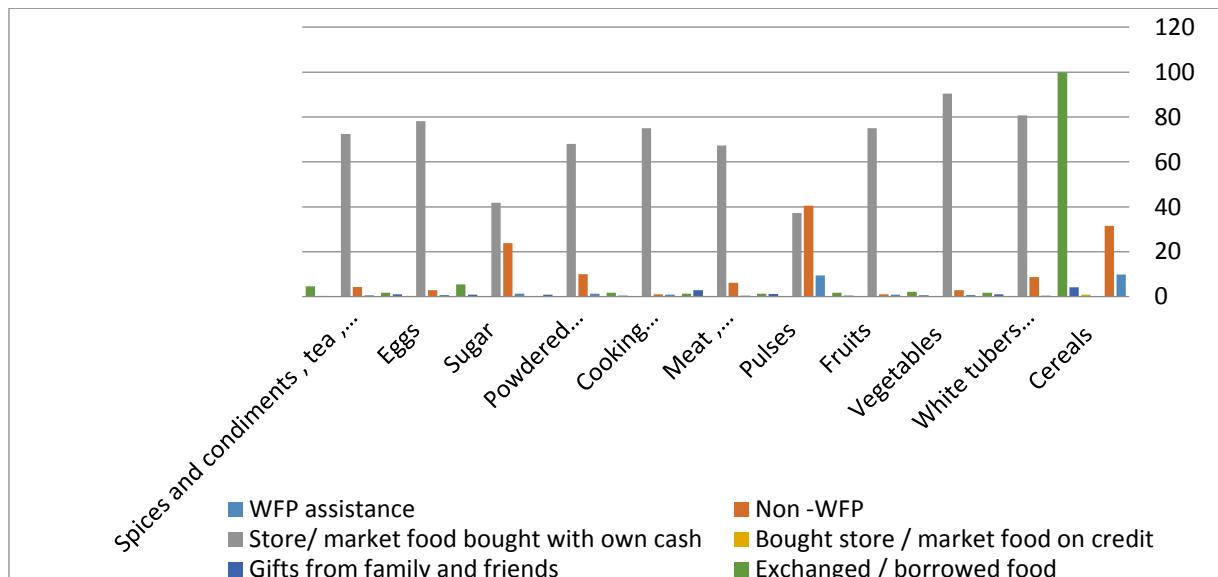


Figure 1 Food sources

Table 8 shows that 85.4% of the families included in the survey received food aids from an agency in the past 30 days, and 87.4% of them received actual food.

Table 8: About received food aid from agency in the past 30 days

Q20: Did the family received food aid from agency in the past 30 days?

	N	Percent	Total
Yes	555	85.4%	650
No	95	14.6%	
Did you receive actual food or in – kind (food voucher)?			
Actual food	568	87.4%	650
In- Kind / voucher (indicate value)			
Not received	82	12.6%	

About 90.6% of enrolled households were in the category of good food consumption, whereas 1.5% were in the weak category of food consumption as shown in figure 2.

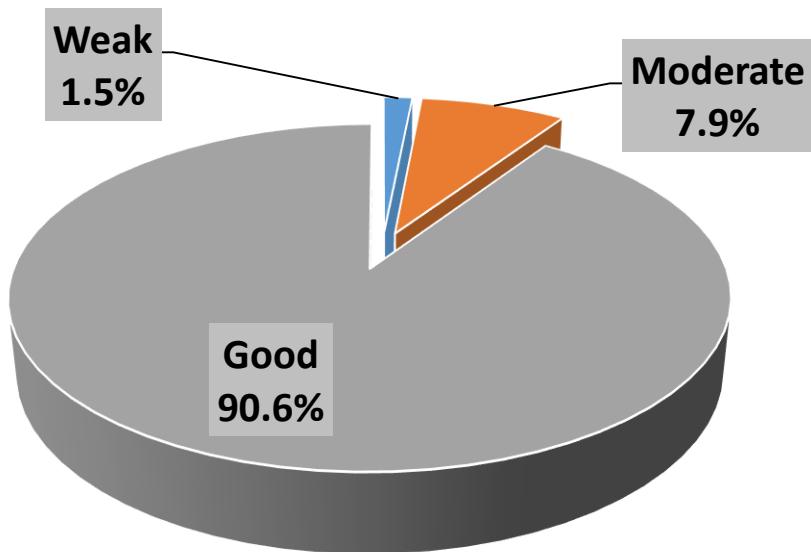


Figure 2: Food consumption score for enrolled households

Anthropometric results (based on WHO standards 2006):

A total number of 664 of children under five enrolled in the survey and 606 children aged 6-59 months of age in which 53.5% were boys with a boy:girl ratio is 1:1 as shown in table 9.

Table 9: Distribution of age and sex of sample

Age (months)	Boys		Girls		Total		Ratio
	N	%	N	%	N	%	
6-17	65	50.8	63	49.2	128	21.1	1.0
18-29	80	54.1	68	45.9	148	24.4	1.2
30-41	71	49.0	74	51.0	145	23.9	1.0
42-53	74	64.3	41	35.7	115	19.0	1.8
54-59	34	48.6	36	51.4	70	11.6	0.9
Total	324	53.5	282	46.5	606	100.0	1.1

WHO standards were used to estimate the malnutrition rates of 628 eligible children; concerning GAM, MAM and SAM, as shown in table 10 where the prevalence of global malnutrition (weight-for-length/height <-2 Z-score and/or oedema) was 4.0% with a higher ratio in boys (4.5%) compared to girls. Moderate acute malnutrition (weight-for-length/height <-2 and ≥ -3 Z-score, no oedema) was found in 2.2% of enrolled children and a higher prevalence in boys (3.0%) compared to girls. Severe acute malnutrition (weight-for-length/height <-3 Z-score and/or oedema) was found in 11 children (1.8%) with six of them in girls. The prevalence of oedema was 0.0%.

Table 10: Prevalence of acute malnutrition based on weight-for-length/height Z-scores (and/or oedema) and by sex

	All N = 628	Boys N = 334	Girls N = 294
Prevalence of global malnutrition (<-2 Z-score and/or oedema)	(25) 4.0% (2.7 - 5.9 95% C.I.)	(15) 4.5% (2.7 - 7.3 95% C.I.)	(10) 3.4% (1.9 - 6.1 95% C.I.)
Prevalence of moderate malnutrition (<-2 Z-score and ≥-3 Z-score, no oedema)	(14) 2.2% (1.3 - 3.8 95% C.I.)	(10) 3.0% (1.6 - 5.7 95% C.I.)	(4) 1.4% (0.5 - 3.6 95% C.I.)
Prevalence of severe malnutrition (<-3 Z-score and/or oedema)	(11) 1.8% (0.9 - 3.4 95% C.I.)	(5) 1.5% (0.6 - 3.5 95% C.I.)	(6) 2.0% (0.9 - 4.5 95% C.I.)

Most of the children with SAM and MAM were found in those aged 6-17 months, which constituted 4.0% and 4.8 % respectively as shown in table 11.

Table 11: Prevalence of acute malnutrition by age, based on weight-for-length/height Z-scores (and/or oedema)

Age (months)	Total	Severe wasting (<-3 Z-score)		Moderate wasting (≥-3 and <-2 Z-score)		Normal (≥ -2 Z-score)		Oedema	
		N	%	N	%	N	%	N	%
6-17	124	5	4.0	6	4.8	113	91.1	0	0.0
18-29	144	3	2.1	1	0.7	140	97.2	0	0.0
30-41	142	0	0.0	1	0.7	141	99.3	0	0.0
42-53	110	1	0.9	2	1.8	107	97.3	0	0.0
54-59	65	0	0.0	1	1.5	64	98.5	0	0.0
Total	585	9	1.5	11	1.9	565	96.6	0	0.0

The prevalence of acute malnutrition based on MUAC was also estimated depending on a cut-off point of (< 125 mm and/or oedema for GAM) and (< 125 mm and ≥ 115 mm, no oedema for MAM) and (< 115 mm and/or oedema for SAM). About 2.8% of children suffered from GAM while 1.7% of them had MAM, with girls being affected more than boys (3.6% and 2.0% respectively). SAM was found in 1.1% of enrolled children and a higher percentage was in girls (1.7%) as shown in table 12.

Table 12: Prevalence of acute malnutrition based on MUAC cut off points (and/or oedema) and by sex

	All N = 649	Boys N = 347	Girls N = 302
Prevalence of global malnutrition (< 125 mm and/or oedema)	(18) 2.8% (1.7 - 4.5 95% C.I.)	(7) 2.0% (1.0 - 4.1 95% C.I.)	(11) 3.6% (1.9 - 6.7 95% C.I.)
Prevalence of moderate acute malnutrition (< 125 mm and ≥ 115 mm, no oedema)	(11) 1.7% (0.9 - 3.1 95% C.I.)	(5) 1.4% (0.6 - 3.4 95% C.I.)	(6) 2.0% (0.9 - 4.3 95% C.I.)
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	(7) 1.1% (0.5 - 2.5 95% C.I.)	(2) 0.6% (0.1 - 2.3 95% C.I.)	(5) 1.7% (0.6 - 4.7 95% C.I.)

Most of the SAM and MAM children were found in children of 6-17 months of age, which constitute 1.6% and 0.8 % respectively as shown in table 13.

Table 13: Prevalence of acute malnutrition by age, based on MUAC cut-off points (and/or oedema)

Age (months)	Total	Severe wasting (<115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)		Normal (≥ 125 mm)		Oedema	
		N	%	N	%	N	%	N	%
6-17	125	2	1.6	1	0.8	122	97.6	0	0.0
18-29	145	0	0.0	1	0.7	144	99.3	0	0.0
30-41	143	2	1.4	0	0.0	141	98.6	0	0.0
42-53	112	0	0.0	0	0.0	112	100.0	0	0.0
54-59	67	0	0.0	0	0.0	67	100.0	0	0.0
Total	592	4	0.7	2	0.3	586	99.0	0	0.0

Underweight is indicated by weight-for-age lower than -2 SD of the median WHO standard population, and was found in 3.5% of children (boys more than girls, 4.3%and 2.6% respectively), while severe underweight; indicated by weight-for-age lower than -3 SD of the same population and was present in1.4% of the children, and almost equaly distributed between boys and girls. As for moderate underweight that falls between (<-2 Z-score and ≥-3 Z-score), it was found in 2.2% of the children and higher in boys (2.9%). The prevalence of underweight was estimated from those children falling below those cut-off points are shown in table 14.

Table 14: Prevalence of underweight based on weight-for-age Z-scores by sex

	All N = 648	Boys N = 346	Girls N = 302
Prevalence of underweight (<-2 Z-score)	(23) 3.5% (2.4 - 5.2 95% C.I.)	(15) 4.3% (2.7 - 6.9 95% C.I.)	(8) 2.6% (1.4 - 5.1 95% C.I.)
Prevalence of moderate underweight (<-2 Z-score and ≥-3 Z-score)	(14) 2.2% (1.4 - 3.4 95% C.I.)	(10) 2.9% (1.6 - 5.0 95% C.I.)	(4) 1.3% (0.5 - 3.4 95% C.I.)
Prevalence of severe underweight (<-3 Z-score)	(9) 1.4% (0.7 - 2.8 95% C.I.)	(5) 1.4% (0.5 - 4.0 95% C.I.)	(4) 1.3% (0.5 - 3.5 95% C.I.)

Most of the children with severe underweight were found in those aged between 6-17 months of age, while the highest prevalence of moderate underweight was found just below 5 years of age (3.0%), as shown in table 15.

Table 15: Prevalence of underweight by age, based on weight-for-age Z-scores

Age (months)	Total	Severe underweight (<-3 Z-score)		Moderate underweight (≥ -3 and <-2 Z-score)		Normal (≥-2 Z-score)		Oedema	
		N	%	N	%	N	%	N	%
6-17	124	4	3.2	2	1.6	118	95.2	0	0.0
18-29	145	2	1.4	3	2.1	140	96.6	0	0.0
30-41	143	0	0.0	4	2.8	139	97.2	0	0.0
42-53	112	1	0.9	3	2.7	108	96.4	0	0.0
54-59	67	0	0.0	2	3.0	65	97.0	0	0.0
Total	591	7	1.2	14	2.4	570	96.4	0	0.0

Stunting and severe stunting were assessed as the prevalence of length/height-for-age below -2 Z-score, and -3 Z-score using WHO standard population respectively, and 15.8% of the children were found to be stunted (more in boys 18.1%), while 3.9% of them were severely stunted with about equal percentages in both boys and girls. Moderate stunting (length/height-for-age between <-2 Z-score and ≥-3 Z-score) was found in 12.0% of the children with a highest prevalence in boys (14.3%). The prevalence estimates and Z-scores were calculated to assess the distribution of stunting by age group and sex as shown in table 16.

Table 16: Prevalence of stunting based on length/height-for-age Z-scores and by sex

	All N = 644	Boys N = 343	Girls N= 301
Prevalence of stunting (<-2 Z-score)	(102) 15.8% (13.1 - 19.1 95% C.I.)	(62) 18.1% (14.1 - 22.8 95% C.I.)	(40) 13.3% (9.3 - 18.7 95% C.I.)
Prevalence of moderate stunting (<-2 Z-score and ≥-3 Z-score)	(77) 12.0% (9.6 - 14.8 95% C.I.)	(49) 14.3% (10.5 - 19.1 95% C.I.)	(28) 9.3% (6.3 - 13.6 95% C.I.)
Prevalence of severe stunting (<-3 Z-score)	(25) 3.9% (2.7 - 5.6 95% C.I.)	(13) 3.8% (2.3 - 6.2 95% C.I.)	(12) 4.0% (2.3 - 6.8 95% C.I.)

Most of severe and moderate stunting was found in children 18-29 months of age (5.6% and 13.9% respectively) as shown in table 17.

Table 17: Prevalence of stunting by age based on length/height-for-age Z-scores

Age (months)	Total	Severe stunting (<-3 Z-score)		Moderate stunting (≥ -3 and <-2 Z-score)		Normal (≥ -2 Z-score)	
		N	%	N	%	N	%
6-17	126	3	2.4	14	11.1	109	86.5
18-29	144	8	5.6	20	13.9	116	80.6
30-41	142	4	2.8	16	11.3	122	85.9
42-53	111	4	3.6	14	12.6	93	83.8
54-59	66	1	1.5	4	6.1	61	92.4
Total	589	20	3.4	68	11.5	501	85.1

The rate of overweight and obesity was estimated in children with their weight-for-length/height more than +2 Z-score and more than +3 Z-score respectively using WHO standards, and around 7.5% of children were overweight and more in boys (8.4%) than in girls. Obesity was found in 2.2% of children under five and higher in boys (2.7%) than in girls as shown in table 18.

Table 18: Prevalence of overweight and obesity based on weight for length/height cut-off points and by sex (no oedema)

	All N = 628	Boys N = 334	Girls N = 294
Prevalence of overweight (WHZ > +2)	(47) 7.5% (5.4 - 10.3 95% C.I.)	(28) 8.4% (5.6 - 12.5 95% C.I.)	(19) 6.5% (4.2 - 9.8 95% C.I.)
Prevalence of obesity (WHZ > +3)	(14) 2.2% (1.4 - 3.6 95% C.I.)	(9) 2.7% (1.4 - 5.0 95% C.I.)	(5) 1.7% (0.7 - 4.0 95% C.I.)

The highest prevalence of overweight was found in children between 18-29 months of age (9.7%) while obesity was found in children aged 6-17 months (3.2%) as shown in table 19.

Table 19: Prevalence of overweight and obesity by age, based on weight for length/height (no oedema)

Age (months)	Total	Overweight (WHZ>+2)		Obesity (WHZ>+3)	
		N	%	N	%
6-17	124	9	7.3	4	3.2
18-29	144	14	9.7	3	2.1
30-41	142	10	7.0	4	2.8
42-53	110	7	6.4	2	1.8
54-59	65	1	1.5	0	0.0
Total	585	41	7.0	13	2.2

The mean Z-scores ± SD calculated for the three growth indicators, along with the number of Z-scores not available from the total enrolled children in the survey is shown in table 20 and have been used in the calculations.

Table 20: Mean Z-scores, design effects and excluded subjects

Indicator	N	Mean Z-scores ± SD	Design effect (Z-score< -2)	Z-scores not available*	Z-scores out of range
Weight-for-length/height	628	0.31±1.39	1.05	36	0
Weight-for-age	648	-0.15±1.34	1.00	16	0
Length/height-for-age	644	-0.68±2.03	1.08	20	0

* contains for WHZ and WAZ the children with oedema

MORTALITY RESULTS (RETROSPECTIVE OVER 90 DAYS PRIOR TO THE INTERVIEW)

The Mortality rate was not calculated in this survey, due to debate in the quality of data collected during the fieldwork phase.

CONCLUSIONS

According to WHO classification, the prevalence of malnutrition rates of children included in the study (stunting, underweight and wasting) were within the low category of severity in prevalence ranges.

RECOMMENDATIONS AND PRIORITIES

- 1-Protection, promotion and support of breastfeeding and timely introduction of safe and appropriate complementary feeding should be considered as core interventions for prevention and management of severe malnutrition.
- 2-Promotion of a healthy diet, which is an essential factor, to maintain a healthy body weight.
- 3-Conduct further nutritional assessments on a regular basis in order to monitor the nutritional status of children under five.
- 4-Further enhancing SMART methodology application in future surveys.

REFERENCES

1. About SMART methodology; Accessed on 28/5/2016; <http://smartmethodology.org/about-smart/>
2. International Organization for Migration (IOM) Iraq Displacement Tracking Matrix (DTM).
3. WHO Child Growth Standards
4. Comprehensive Food Security Vulnerability Analysis. Baghdad, Central Organization for Statistics, 2008.

APPENDICES

Appendix 1: Assignment of clusters

#	اسم المخيم	عدد الافراد	رقم العنقود
1	زيونة/مخيم مريم العذراء	605	1,2
2	مخيم المدرسة القدارية	587	3
3	مجمع النبي شيت/بوب الشام	654	4,5,6
4	مجمع النبي يونس	3117	7,8,9,10,11,12,13,14,RC,15
5	اكرام زوبع	2440	16,17,18,19,RC,20,21
6	البو عيسى	1120	22,23,24,25
7	عباس النبت	341	RC
8	مجمع عويريج	860	26,27,28
9	الوحدة الوطنية	709	29,30
10	خيمة العراق	606	31,32
11	جسر بزيز	260	33
12	مجمع البكريه الاولى	1221	34,35,36,37
13	مخيم دهاء الراوي	464	38
14	جامع برهان	633	39,40
15	مخيم اسيا	615	41,42
16	التكية الكرزانية	6090	RC,43,RC,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60
17	(النصر والسلام)	463	61,62
18	مخيم الشمس	1557	RC,63,64,RC,65
المجموع الكلي		22342	65 عنقود

Appendix 2: Result tables for NCHS growth reference 1977

Table 1: Prevalence of acute malnutrition based on weight-for-height Z-scores (and/or oedema) and by sex

	All N = 639	Boys N = 340	Girls N = 299
Prevalence of global acute malnutrition (<-2 Z-score and/or oedema)	(22) 3.4% (2.2 - 5.2 95% C.I.)	(12) 3.5% (2.0 - 6.2 95% C.I.)	(10) 3.3% (1.9 - 5.9 95% C.I.)
Prevalence of moderate acute malnutrition (<-2 Z-score and ≥-3 Z-score, no oedema)	(13) 2.0% (1.1 - 3.6 95% C.I.)	(9) 2.6% (1.3 - 5.3 95% C.I.)	(4) 1.3% (0.5 - 3.5 95% C.I.)
Prevalence of severe acute malnutrition (<-3 Z-score and/or oedema)	(9) 1.4% (0.7 - 3.0 95% C.I.)	(3) 0.9% (0.3 - 2.7 95% C.I.)	(6) 2.0% (0.9 - 4.3 95% C.I.)

The prevalence of oedema is 0.0%

Table 2: Prevalence of acute malnutrition by age, based on weight-for-height Z-scores (and/or oedema)

		Severe wasting (<-3 Z-score)		Moderate wasting (≥ -3 and <-2 Z-score)		Normal (≥ -2 Z-score)		Oedema	
Age (months)	Total	N	%	N	%	N	%	N	%
6-17	124	5	4.0	5	4.0	114	91.9	0	0.0
18-29	143	3	2.1	1	0.7	139	97.2	0	0.0
30-41	142	0	0.0	2	1.4	140	98.6	0	0.0
42-53	111	0	0.0	2	1.8	109	98.2	0	0.0
54-59	66	1	1.5	1	1.5	64	97.0	0	0.0
Total	586	9	1.5	11	1.9	566	96.6	0	0.0

Table 3: Distribution of acute malnutrition and oedema based on weight-for-height Z-scores

		<-3 Z-score	≥-3 Z-score
Oedema present		Marasmic kwashiorkor N = 0 (0.0%)	Kwashiorkor N = 0 (0.0%)
Oedema absent		Marasmic N = 9 (1.4%)	Not severely malnourished N = 630 (98.6%)

Table 4: Prevalence of acute malnutrition based on MUAC cut off points (and/or oedema) and by sex

	All N = 649	Boys N = 347	Girls N = 302
Prevalence of global acute malnutrition (< 125 mm and/or oedema)	(18) 2.8% (1.7 - 4.5 95% C.I.)	(7) 2.0% (1.0 - 4.1 95% C.I.)	(11) 3.6% (1.9 - 6.7 95% C.I.)
Prevalence of moderate acute malnutrition (< 125 mm and ≥ 115 mm, no oedema)	(11) 1.7% (0.9 - 3.1 95% C.I.)	(5) 1.4% (0.6 - 3.4 95% C.I.)	(6) 2.0% (0.9 - 4.3 95% C.I.)
Prevalence of severe acute malnutrition (< 115 mm and/or oedema)	(7) 1.1% (0.5 - 2.5 95% C.I.)	(2) 0.6% (0.1 - 2.3 95% C.I.)	(5) 1.7% (0.6 - 4.7 95% C.I.)

Table 5: Prevalence of acute malnutrition by age, based on MUAC cut off points (and/or oedema)

		Severe wasting (< 115 mm)		Moderate wasting (≥ 115 mm and < 125 mm)		Normal (≥125 mm)		Oedema	
Age (months)	Total N	N	%	N	%	N	%	N	%
6-17	125	2	1.6	1	0.8	122	97.6	0	0.0
18-29	145	0	0.0	1	0.7	144	99.3	0	0.0
30-41	143	2	1.4	0	0.0	141	98.6	0	0.0
42-53	112	0	0.0	0	0.0	112	100.0	0	0.0
54-59	67	0	0.0	0	0.0	67	100.0	0	0.0
Total	592	4	0.7	2	0.3	586	99.0	0	0.0

Table 6: Prevalence of acute malnutrition based on the percentage of the median (and/or oedema)

		N = 639
Prevalence of global acute malnutrition (<80% and/or oedema)		(17) 2.7% (1.6 - 4.4 95% C.I.)
Prevalence of moderate acute malnutrition (<80% and ≥ 70%, no oedema)		(10) 1.6% (0.8 - 3.0 95% C.I.)
Prevalence of severe acute malnutrition (<70% and/or oedema)		(7) 1.1% (0.5 - 2.5 95% C.I.)

Table 7: Prevalence of malnutrition by age, based on weight-for-height percentage of the median and oedema

		Severe wasting (<70% median)		Moderate wasting (≥70% and <80% median)		Normal (≥80% median)		Oedema	
Age (months)	Total	N	%	N	%	N	%	N	%
6-17	124	3	2.4	5	4.0	116	93.5	0	0.0
18-29	143	3	2.1	1	0.7	139	97.2	0	0.0
30-41	142	0	0.0	0	0.0	142	100.0	0	0.0
42-53	111	0	0.0	2	1.8	109	98.2	0	0.0
54-59	66	1	1.5	0	0.0	65	98.5	0	0.0
Total	586	7	1.2	8	1.4	571	97.4	0	0.0

Table 8: Prevalence of underweight based on weight-for-age Z-scores by sex

	All N = 648	Boys N = 346	Girls N = 302
Prevalence of underweight (<-2 Z-score)	(36) 5.6% (4.0 - 7.7 95% C.I.)	(23) 6.6% (4.5 - 9.8 95% C.I.)	(13) 4.3% (2.5 - 7.3 95% C.I.)
Prevalence of moderate underweight (<-2 Z-score and ≥-3 Z-score)	(29) 4.5% (3.1 - 6.4 95% C.I.)	(19) 5.5% (3.6 - 8.3 95% C.I.)	(10) 3.3% (1.8 - 6.1 95% C.I.)
Prevalence of severe underweight (<-3 Z-score)	(7) 1.1% (0.5 - 2.2 95% C.I.)	(4) 1.2% (0.4 - 3.0 95% C.I.)	(3) 1.0% (0.3 - 3.2 95% C.I.)

Table 9: Prevalence of underweight by age, based on weight-for-age Z-scores

		Severe underweight (<-3 Z-score)		Moderate underweight (≥ -3 and <-2 Z-score)		Normal (≥ -2 z-score)		Oedema	
Age (months)	Total	N	%	N	%	N	%	N	%
6-17	124	3	2.4	6	4.8	115	92.7	0	0.0
18-29	145	3	2.1	7	4.8	135	93.1	0	0.0
30-41	143	0	0.0	7	4.9	136	95.1	0	0.0
42-53	112	1	0.9	5	4.5	106	94.6	0	0.0
54-59	67	0	0.0	2	3.0	65	97.0	0	0.0
Total	591	7	1.2	27	4.6	557	94.2	0	0.0

Table 10: Prevalence of stunting based on height-for-age Z-scores and by sex

	All N = 644	Boys N= 343	Girls N = 301
Prevalence of stunting (<-2 Z-score)	(74) 11.5% (9.0 - 14.5 95% C.I.)	(44) 12.8% (9.5 - 17.1 95% C.I.)	(30) 10.0% (6.7 - 14.6 95% C.I.)
Prevalence of moderate stunting (<-2 Z-score and ≥-3 Z-score)	(54) 8.4% (6.3 - 11.1 95% C.I.)	(35) 10.2% (7.1 - 14.4 95% C.I.)	(19) 6.3% (3.9 - 10.1 95% C.I.)
Prevalence of severe stunting (<-3 Z-score)	(20) 3.1% (2.0 - 4.8 95% C.I.)	(9) 2.6% (1.3 - 5.1 95% C.I.)	(11) 3.7% (2.2 - 6.1 95% C.I.)

Table 11: Prevalence of stunting by age based on height-for-age Z-scores

		Severe stunting (<-3 Z-score)		Moderate stunting (≥ -3 and <-2 Z-score)		Normal (≥ -2 Z-score)	
Age (months)	Total	N	%	N	%	N	%
6-17	126	3	2.4	11	8.7	112	88.9
18-29	144	5	3.5	11	7.6	128	88.9
30-41	142	2	1.4	11	7.7	129	90.8
42-53	111	4	3.6	10	9.0	97	87.4
54-59	66	1	1.5	4	6.1	61	92.4
Total	589	15	2.5	47	8.0	527	89.5

Table 12: Prevalence of overweight and obesity based on weight for height cut off points and by sex (no oedema)

	All N= 639	Boys N= 340	Girls N= 299
Prevalence of overweight (WHZ > +2)	(32) 5.0% (3.5 - 7.1 95% C.I.)	(17) 5.0% (3.1 - 8.1 95% C.I.)	(15) 5.0% (3.2 - 7.9 95% C.I.)
Prevalence of severe overweight (WHZ > +3)	(11) 1.7% (1.0 - 3.0 95% C.I.)	(6) 1.8% (0.8 - 3.8 95% C.I.)	(5) 1.7% (0.7 - 3.8 95% C.I.)

Table 13: Prevalence of overweight and obesity by age, based on weight for height (no oedema)

Age (months)	Total	Overweight (WHZ > +2)		Obesity (WHZ > +3)	
		N	%	N	%
6-17	124	8	6.5	5	4.0
18-29	143	7	4.9	2	1.4
30-41	142	6	4.2	2	1.4
42-53	111	5	4.5	1	0.9
54-59	66	1	1.5	0	0.0
Total	586	27	4.6	10	1.7

Table 14: Mean Z-scores, design effects and excluded subjects

Indicator	N	Mean Z-scores \pm SD	Design effect (Z-score < -2)	Z-scores not available*	Z-scores out of range
Weight-for-height	639	0.05 \pm 1.28	1.02	25	0
Weight-for-age	648	-0.29 \pm 1.45	1.01	16	0
Height-for-age	644	-0.54 \pm 1.79	1.17	20	0

* contains for WHZ and WAZ the children with oedema

Appendix 3: Questionnaire form used in the survey

IDP NUTRITION SURVEY IN BAGHDAD
Household Data Questionnaire

Respondent's Consent:

My name is _____ and I am working with the Ministry of health. We are conducting a survey on the nutrition and health status of your family. I would like to ask you a few questions about your family and we will also weigh and measure your children who are younger than 5 years of age. The survey usually takes about 30 minutes to complete. Any information that you provide will be kept strictly confidential and will not be shown to other people. Your name or any of the family members will not be mentioned to any document and report. This is voluntary and you can choose not to answer any or all of the questions if you want. However, we hope that you will participate since your views are important.

Questionnaire cleared by: _____ (Supervisor)

Section A : Household identification	
Date: /____ /____ /2015:	Team number: /____ /____
Governorate: _____	District: _____ /____ /____
Sub district/Block: /____ /____ /	Cluster number: /____ /____ /
Household number:	/____ /____ /
Type of settlement: /____ / (Please choose from the list on the left)	<ol style="list-style-type: none">1. With Host family2. Rented house3. In-off camps collective shelter (School, Mosque)4. In an informal self-settled (Tents)5. In unfinished building6. In camp - permanent improved shelter7. Tent without concrete fence/cement platform
Section B : Household Socioeconomic characteristics	
Q 1. Respondent name :	
Q 2. Respondent age (in completed year)?	/____ /____ /
Q 3. Who is the head of the household? 1. Male adult (> 18 years) 2. Female adult (> 18 years) 3. Child-headed household (< 18)	/____ /

Q 4. Level of education of the mother/caretaker?	
1. Illiterate 2. Read alone 3. Primary level 4. Secondary level 5. Above Secondary	/ ___ /
Q 5. Household head main occupation?	
1. Business 2. Trade/vocational skills 3. Casual labour 4. Wage employment 5. Unemployed	/ ___ /
Q 6. How many person living in this household?	/ ___ / ___ /
Q 7. How many children living in this household are under age five? (If none → Skip to Section D)	/ ___ / ___ /
Q 8. Can you please tell me the name of the youngest (0-23 months)? How old is (name of the youngest) Sex: (If none in this category → Skip to Section D)	<p>-----</p> <p>/ ___ / ___ / ___ / (day/month/year) if not known age in months</p> <p>Male: / ___ / Female: / ___ /</p>

Read to Respondent: The following questions below refer to (**child's name**)

Section C : Infant and Young Child Feeding practices and Health status	
Q 9. Did you ever breastfeed (name)? 1. Yes 2. No	/ ___ / If no go to Q13
Q 10. Are you currently breastfeeding (name)? 1. Yes 2. No	/ ___ /
Q 11. During the first three days after delivery did you give (name) any food or liquid other than your breast milk? 1. Yes 2. No 8. Don't know	/ ___ /
Q 12. How long after birth did you first put (name) to the breast? 1. Less than one hour 2. Between 1 and 23 hours 3. More than 24 hours 8. Don't know	/ ___ /

Q 13. Now I would like to ask you about liquids that (name) may have had yesterday during the day and at night. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or at night, did (name) receive any of the following	
a. Plain water 1.Yes 2.No 8. Don't know	__
b. Infant formula 1.Yes 2.No 8. Don't know	__
c. Juice 1.Yes 2.No 8. Don't know	__
d. Porridge 1.Yes 2. No 8. Don't know	__
e. Broth 1. Yes 2. No 8. Don't know	__
f. Yogurt 1.Yes 2. No 8. Don't know	__
g. Tea or coffee 1.Yes 2.No 3 .Don't know	__
Q 14. If yes in Q 13, at what age (months) did you introduce this?	
Q 15. Did (name) take a vitamin A dose like this during the last 6 months? Show Capsule (Red and Blue) 1. Yes 2. No 8. Don't know	/__/
Q 16. Has (name) had diarrhoea in the last 2 weeks? 1. Yes 2. No 8. Don't know	/__/
Q 17. Has (name) had ARI in the last 2 weeks? 1. Yes 2. No 8. Don't know	

Read to Respondent: The following question refers to the household

Section D: Food consumption and Food Assistance

I would like to ask you about all the different foods that your household members have eaten in the last 7 days.

Q18. What was the **primary source** of each of these food items that were consumed in your household for the last 7 days?

Food sources:	Code
WFP assistance	1
Non-WFP humanitarian assistance from local NGO, mosque, etc.	2
Store/market food bought with own cash	3

Bought store/market food on credit	4
Gifts from family and friends	5
Exchanged/borrowed food	6
Other (specify)	7

Q 19. Over the last 7 days, how many days did your household consume the following foods? (no value can be greater than 7, i.e. 7=7 days)

Food item	(0-7) Number of days on which the food was eaten last week?	Main food source (Where do you get it from?) Insert code from above
1. Cereals (bread, rice, pasta, wheat flour, bulgur)		
2. White tubers and roots (potato, sweet potato)		
3. Vegetables (yellow tubers, dark green leaves, tomatoes & onions)		
4. Fruits		
5. Pulses (lentils, chick peas & beans)		
6. Meat, chicken & fish		
7. Cooking oil and fats		
8. Powdered and fresh milk, yogurt, cheese, ghee & butter		
9. Sugar		
10. Eggs		
11. Spices and condiments, tea, garlic, tomato sauce		

Q 20. Have you received food aid from any agency in the past 30 days?

- 1. Yes
- 2. No

/ ____ /

Q 21. If yes, did you receive actual food or in-kind (food voucher)?

- 1. Actual food
- 2. In-kind/voucher (indicate value)

/ ____ /
/ ____ // ____ /

Section E: Anthropometric data

N	Child name	Sex (F/M)	Birth date (dd/mm/yyyy) or age in months	Oedema (Y/N)	Weight (kg)	Length/Height (cm)	MUAC (cm)
1							
2							
3							
4							
5							
6							
7							

Section F: Mortality questionnaire (Recall period = 90 days)

N	Household members	Sex (F/M)	Date of birth/ age in years	Joined during the recall period	Left during the recall period	Born during recall period	Died during recall period	Cause of death or reason for leaving
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Appendix 4: Coordination committee, team leaders, surveyors, data entry and analysis

التنسيق المركزي

الاسم الثلاثي	العنوان الوظيفي	محل العمل	ت
إحسان جعفر أحمد	المدير العام	دائرة الصحة العامة	1
علاء شعلان حسين	طبيب اختصاص	معهد بحوث التغذية	2
سعد الدين حسين علي	طبيب اختصاص	معهد بحوث التغذية	3
علي إسماعيل	طبيب اختصاص	منظمة اليونيسف	4
نيوما نيساني	إخلاصي التغذية	منظمة اليونيسف	5
نازك كاظم لهمود	طبيب اختصاص	دائرة صحة بغداد/ الكرخ	6

فرق العمل الميداني

الاسم الثلاثي	العنوان الوظيفي	محل العمل	ت
جان قاسم حسين	م. طبي اقمن	دائرة صحة بغداد/ الكرخ	1
سهام عبد علي صاحب	ر. اطباء ممارسين	دائرة صحة بغداد/ الكرخ	2
فليحة روضان غيلان	م. طبي اقمن	دائرة صحة بغداد/ الكرخ	3
خالدة عبود حميد	ر. اطباء اسنان اقمن	دائرة صحة بغداد/ الكرخ	4
عماد شهاب أحمد	ر.م. طبي غذائي	دائرة صحة بغداد/ الكرخ	5
رباب سعيد علي	ممرضة قدمى	دائرة صحة بغداد/ الكرخ	6
نظيرة جبار عيدان	م. طبي	دائرة صحة بغداد/ الكرخ	7
عمر فجر مهدي	م. طبي	دائرة صحة بغداد/ الكرخ	8
عامر باقر محمود	طبيب اختصاص	دائرة صحة بغداد/ الكرخ	9
منير طالب سلمان	طبيب اختصاص	دائرة صحة بغداد/ الكرخ	10
ایمان راهي شندوخ	م. طبي اقمن	دائرة صحة بغداد/ الكرخ	11
ميس منعم عبيد	م. طبي	دائرة صحة بغداد/ الكرخ	12
مي جواد خزعل	طبيبة اسنان ممارسة	دائرة صحة بغداد/ الكرخ	13
عبد الجبار عاتي موزان	م. طبي غذائي	معهد بحوث التغذية	14
ليلي نعمة حسين	باحثة صحية	معهد بحوث التغذية	15
وسن عبد المجيد رشيد	طبيبة اختصاص	معهد بحوث التغذية	16
عماد الدين عبد الهادي عبد الرزاق	ر. اطباء اختصاص	معهد بحوث التغذية	17
قيس طه عطوف	ر.م. وقائي	معهد بحوث التغذية	18
محسن احمد جاسم	طبيب اختصاص اقمن	معهد بحوث التغذية	19
مصطفى اكرم احمد	ر. اطباء اختصاص	معهد بحوث التغذية	20
ليلي عبود سلوم	مدير	معهد بحوث التغذية	21

دائرة صحة بغداد/ الكرخ	م. طبي اقدم	رشا عدنان ابراهيم	22
دائرة صحة بغداد/ الكرخ	م. طبي اقدم	اميرة مسلم علي	23
دائرة صحة بغداد/ الكرخ	ملاحظ	داليا رمزي نجم	24
دائرة صحة بغداد/ الكرخ	م.طبي /صحة مجتمع	هند محمد ناجي	25
دائرة صحة بغداد/ الكرخ	م. وقائي اسنان	اسيل عماد محمد	26
معهد بحوث التغذية	احصائي	علي طه محمد	27
دائرة صحة بغداد/ الكرخ	م. طبي	طه زيد ابراهيم	28
دائرة صحة بغداد/ الكرخ	م. صيدلي	نبراس مطرود علي	29
دائرة صحة بغداد/ الكرخ	طبيبة اختصاص	سهاد فلاح حسن	30

تصميم الاستماراة الالكترونية

الاسم الثلاثي	العنوان الوظيفي	محل العمل	ت
سعد الدين حسين علي	طبيب اختصاص	معهد بحوث التغذية	1

إدخال البيانات

الاسم الثلاثي	العنوان الوظيفي	محل العمل	ت
مروة باسم عبد الواحد	مبرمج	معهد بحوث التغذية	1
منى حميد مرزا	مبرمج	معهد بحوث التغذية	2
علي طه محمد	احصائي	معهد بحوث التغذية	3
عماد علي عبد الكريم	مسجل بيانات	معهد بحوث التغذية	4

تحليل البيانات

الاسم الثلاثي	العنوان الوظيفي	محل العمل	ت
سعد الدين حسين علي	طبيب اختصاص	معهد بحوث التغذية	1
حسان عبد الهادي هاشم	مبرمج	معهد بحوث التغذية	2
فاتن عبد السلام	مبرمج	معهد بحوث التغذية	3
اسيل سمير محمد	استاذ مساعد تدريسية	جامعة بغداد/ كلية طب الكندي	4

كتابة ومراجعة التقرير

الاسم الثلاثي	العنوان الوظيفي	محل العمل	ت
علاء شعلان حسين	طبيب اختصاص	معهد بحوث التغذية	1
سعد الدين حسين علي	طبيب اختصاص	معهد بحوث التغذية	2
هند خالد صبيح	طبيب اختصاص	معهد بحوث التغذية	3
اسيل سمير محمد	استاذ مساعد تدريسية	جامعة بغداد/ كلية طب الكندي	4

الإداريون

الرقم	الأسم الثلاثي	العنوان الوظيفي	محل العمل
1	باسمة عبد الكريم فالح	مدير	معهد بحوث التغذية
2	عبد النبي عبد الواحد صبر	امين مخزن	معهد بحوث التغذية
3	هند عبد المنعم مال الله	م. حسابات اقدم	معهد بحوث التغذية
4	فاطمة عبود رسن	م. حسابات اقدم	معهد بحوث التغذية
5	حليمة كاظم محمد	كاتبة	معهد بحوث التغذية
6	فريد حمودي محمد	سائق	معهد بحوث التغذية
7	كاظم شوط كاظم	معين	معهد بحوث التغذية