Medical Journal of the
Islamic Republic of Iran

Volume 9
Number 2
Summer 1374
August 1995

RAPID NUTRITIONAL ASSESSMENT OF UNDER-FIVE YEAR OLD KURDISH REFUGEE CHILDREN IN IRAN

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ABSTRACT

In an attempt to depict the nutritional status of Kurdish refugee children under five years of age, a rapid survey was conducted on 900 children in 9 camps of Kurdistan and Bakhtaran province in May 1991. The study included anthropometric measurements on all, clinical examination of 731, and biochemical tests for anemia and protein energy malnutrition (PEM) on 160 subjects. The results showed half of the children to be anemic. Twenty percent of the children had moderate to severe PEM by the most conservative criteria. This figure was around 40% in the 2 to 3 year old children. It was concluded that 50% of the children required urgent nutritional intervention and the other half were potentially in danger. Although malnutrition was serious enough in the subjects, the sanitary condition of the camps was even worse. Any measure to rectify the situation in similar cases should include both public health and nutritional solutions.

MJIRI, Vol. 9, No. 2, 117-121, 1995.

INTRODUCTION

Following the retreat of Iraqi forces from Kuwait and during the Kurdish uprising and clashes with the Iraqi government, hundreds of thousands of the Kurds began a mass exodus and sought refuge in the western provinces of the Islamic Republic of Iran. During the months of March and April 1991 the number of refugees surpassed one million.

In May, UNICEF representatives in Tehran, apparently in urgent need of objective information on the real nutritional status of the refugee children, among spread of conflicting accounts by various visitors to the camps, approached the author of this report to conduct a rapid nutritional assessment of children under five years of age, the results of which are presented here.

MATERIALS AND METHODS

In two out of five provinces hosting the refugees, namely Kurdistan and Bakhtaran, nine camps in five districts were chosen for survey by quota sampling. Altogether 900 under-five children were surveyed. The situation permitted us to clinically examine 731 of the children, that is, 84% of the total subjects.

Weight was measured by Seca lever scales up to 100g accuracy. Children under one year of age were weighed by a Salter scale (MS Weighing Equipment Ltd, London). A baby board was used to measure length in children under 2 years of age (0.5 cm accuracy). Height in 2 to 5 year old children was measured using a Nivotoise tape measure with 0.5 cm accuracy. Mid-upper arm circumference was measured with an inelastic tape measure.

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Table I. Prevalence of low anthropometry (-2 S.D) by age in both sexes

Age (mo.)	Stature/Age			Weight/Stature			Weight/Age		
	#	N	%	#	N	%	#	N	%
0-6	5	71	7.04	15	76	19.74	10	73	13.70
6-12	11	94	11.70	19	94	20.21	32	94	34.04
12-24	42	190	22.11	50	181	27.62	78	189	41.27
24-36	40	132	30.30	22	132	16.67	47	134	35.07
36-48	55	126	43.65	8	122	6.56	36	124	29.03
48-60	47	120	39.17	11	116	9.48	34	116	29.31
60-72	34	96	35.42	5	94	5.32	25	97	25.77
0-72	234	829	28.23	130	815	15.95	262	827	31.68

N= Total number
#= Number below -2 S.D.
%= Percentage

Table II. Prevalence of low anthropometry (-2 S.D) by age in girls.

Age (mo.)	Stature/Age			Weight/Stature			Weight/Age		
	#	N	%	#	N	%	#	N	%
0-6	2	33	6.06	8	38	21.05	3	35	8.57
6-12	4	41	9.76	5	41	12.20	12	41	29.27
12-24	19	96	19.79	23	91	25.27	34	92	36.96
24-36	24	68	35.29	11	68	16.18	26	69	37.68
36-48	24	56	42.86	2	55	3.64	12	55	21.82
48-60	22	59	37.29	7	57	12.28	15	57	26.32
60-72	16	49	34.78	1	46	2.17	10	48	20.83
0-72	111	399	27.82	57	396	14.39	112	397	28.21

N= Total number
#= Number below -2 S.D.
%= Percentage

The QUAC-stick method which relates arm circumference to height regardless of age was also employed in this survey.[1,2] The weight and stature data were entered into a Dbase III file and the analysis was performed with ANTHRO software.

Children were examined by the team's pediatrician. The same physician (M.B.) carried out all the physical examinations.

Hemoglobin, hematocrit and serum albumin levels[3,4,5] were measured in one-fifth of the subjects on the spot in the field. Blood specimens were collected by finger-prick and in children below 6 months of age from the foot-heel into capillary tubes.

Hemoglobin was assayed using Drabkin's reagent.[4] The minimum acceptable value for children below 6 years of age is 11g/dl (WHO 1972).

Hematocrit was measured by the micro-method in heparinized capillary tubes.[3,4] The minimum acceptable level for children one to five years of age is 35%. Serum albumin was measured using the sera in the capillaries after having been read for hematocrit.

The results were processed manually. Weight for age and height for age values were compared with those of the National Center for Health Statistics (N.C.H.S.) (U.S. Food and Nutrition Board, 1974; WHO, 1983).

RESULTS

The Environment

Camps were generally overpopulated and crowded, just as the families were. The food ration was raw material in the form of rice, pulses, shortening, etc. which was given to the families. No fruit, vegetables or dairy products (except for cheese, occasionally distributed in some camps) were given.

Anthropometric Findings

Tables I, II and III demonstrate height for age and

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Table III. Prevalence of low anthropometry (-2 S.D) by age in boys.

Age (mo.)	Stature/Age			Weight/Stature			Weight/Age		
	#	N	%	#	N	%	#	N	%
0-6	3	38	7.89	7	38	18.42	7	38	18.42
6-12	7	53	13.21	14	53	26.42	20	53	37.74
12-24	23	94	24.47	27	90	30.00	44	97	45.39
24-36	16	64	25.00	11	64	17.19	21	65	32.31
36-48	31	70	44.29	6	67	8.96	24	69	34.78
48-60	25	61	40.98	4	59	6.78	19	59	32.20
60-72	18	50	36.00	4	48	8.33	15	49	30.61
0-72	123	430	28.60	73	419	17.42	150	430	34.88

N= Total number
#= Number below -2 S.D.
%= Percentage
Record number: 850

Table IV. Degree of malnutrition as determined by QUAC-stick method in 1 to 5 years old Kurdish refugee girls and boys in Iran (total number of girls 324).

Degree of malnutrition		Severe	Moderate	Mild	Normal
No.	Female	29	43	52	190
	Male	22	37	53	219
Percent	Female	8.9	13.3	16.0	58.6
	Male	6.6	11.2	16.0	66.2

weight for age in girls and boys respectively. As can be seen 30 to 40% of the children could be classified as moderately to severely malnourished based on these criteria.

The anthropometric measurements have been compared with the NCHS standard curve[6,7,8] in Fig. 1 (Z scores). The skew to the left clearly demonstrates the severity of the situation.

The degree of malnutrition as determined by the QUAC-stick method is presented in Table IV. The results agree with those obtained by weight for age or height for age alone.

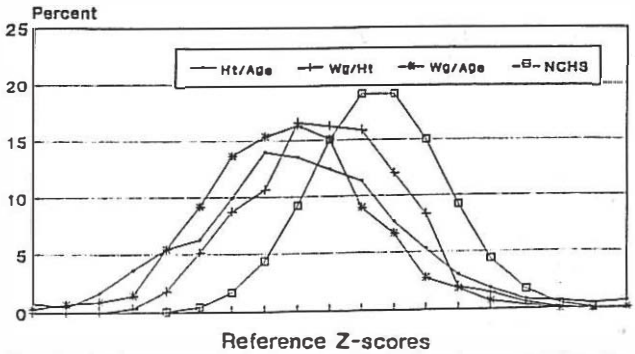


Fig. 1. Anthropometric indicators Kurdish refugee children in Iran; Z-score distribution. May, 1991.

Clinical Status

The results of clinical examination of the children are presented in Table V. These data demonstrate that approximately 45% of the children could be classified as having frank anemia by clinical signs. Conjunctival xerosis of the eyes was also highly prevalent (18%) which could be due to vitamin A deficiency. Thin and sparse hair was observed in 19% of the subjects.

Biochemical Data

The mean and standard deviation for hemoglobin values in 156 subjects were 11.1 ± 2.7 g/dl which is low by any standard. Table VI shows the percentage of girls and boys with hemoglobin values below 11 g/dl. As shown, over 50% of the children can be categorized by this index as anemic. Twenty-four percent of the children had hemoglobin values below 10 g/dl.

Mean and standard deviation for hematocrit values

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Table V. Presence of clinical signs with nutritional significance in 0-5 years old Kurdish refugee children in Iran (total number examined 731).

Clinical sign	Pale conjunctiva	Pale lips	Conjunctival xerosis of the eyes	Angular stomatitis	Bitot's spot	Tbin, sparse hair
No.	331	330	132	7	2	139
Percent	45.3	45.1	18.0	0.96	0.27	19.0

Table VI. Percentage of girls and boys with hemoglobin values below I lg/dl.

Age group (yr.)		Total number of assays	No. below cut-off point	Percent below cut-off point
0-1	Female	13	8	62
	Male	15	7	47
1-5	Female	64	33	52
	Male	64	34	53
Total	Female	77	41	53
	Male	79	41	52

were 35.6± 3.6. Over 47% of the subjects were below the cut-off point of 35 for hematocrit. Also 48.6% of girls and 51.8% of boys had MCHC values below 30.

The mean serum albumin level was 3.63 ± 0.6g/dl. In 14% of the subjects serum albumin was below 3g/dl which suggests protein energy malnutrition (Table VII).

Table VII. Percentage of Kurdish refugee children in Iran with serum albumin values below 3 g/dl (159 subjects).

Albumin (g/dl)	No.	Percent
1.5-1.99	1	0.6
2-2.49	9	5.7
2.5-2.99	13	8.2

DISCUSSION

The anthropometric results clearly demonstrate the presence of moderate to severe malnutrition in the subjects. Usually those falling below the -2 S.D. weight for age or height for age curve are classified as malnourished requiring urgent help. In this study 35 to 45% of the children 1 to 3 years of age were below this cut-off point for weight versus age and 20 to 47% below the cut-off point for height versus age. As wasting is usually indicative of present malnutrition and stunting of past malnutrition, these children seem to have suffered for some time. As linear growth is retarded in older children such that around 40% of them are below two standard deviations and even 20% below-3 S.D., one could conclude that their previous conditions had been bad enough, only to be worsened in the new setting. Weight for stature was below -2.S.D. in 20% of children under 12 months of age which shows the situation to be critical.

The fact that the QUAC-stick method also showed about 40% malnutrition in girls and 34% in boys, confirms the seriousness of the problem. This index shows that the children are lean even for their own height. Therefore the question of whether the refugee children are malnourished or not seems to have been settled by these data. Many frank cases of marasmus observed in our study, depict the plight of these children. It is noteworthy that these were the cases residing in the camps and not those referred to district hospitals.

The clinical signs of anemia which quite agree with the biochemical data are remarkable (Tables V, VI). Having observed the sanitary condition of the camps and food rations, it is our belief that the high prevalence of anemia among refugee children is a combination of health and nutritional factors. The number of children in each family and lack of birth spacing are also matters of importance.

We recommend that a rapid nutrition survey such as

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this one be carried out in all refugee camps and those at high risk be identified within the first few weeks of their settlement.

Our study seems to have documented and quantified the presence of malnutrition among refugee children. These data clearly put half of the children in the category requiring urgent nutritional intervention with the other half being potentially in danger.

Although the nutritional status is precarious by any account, the fact remains that food per se will not rectify matters, as the sanitary condition in the camps is much worse than the nutritional status. No action without first taking care of the environmental health of the camps will be effective or can even provide temporary relief.

We therefore urge the officials to take care of public health matters and propose the following nutritional recommendations:

1. As most of the children are suffering from or are at risk of protein energy malnutrition, more food is definitely needed.

2. Since unprepared food items will become polluted or spoiled given the situation in the camps, it is recommended that food-catering centers for children be established in the camps so the children can be group-fed. This would also be an opportunity for educating the children and will ensure consumption of the food by them.

3. Fruit or fruit juice and dairy items, especially yoghurt, should be provided to the camps on a regular basis.

4. Vitamin and iron supplements are to be provided.

5. High protein biscuits are popular among these children, and should be provided on a regular basis and preferably as rations to control over- or under consumption.

6. In order to achieve the best results it is suggested that a nutrition team supervise the feeding programs and monitor the food and nutritional status of the children in the future.

ACKNOWLEDGEMENT

The assistance of Mrs. Roya Riazi in preparing the manuscript is greatly appreciated.

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