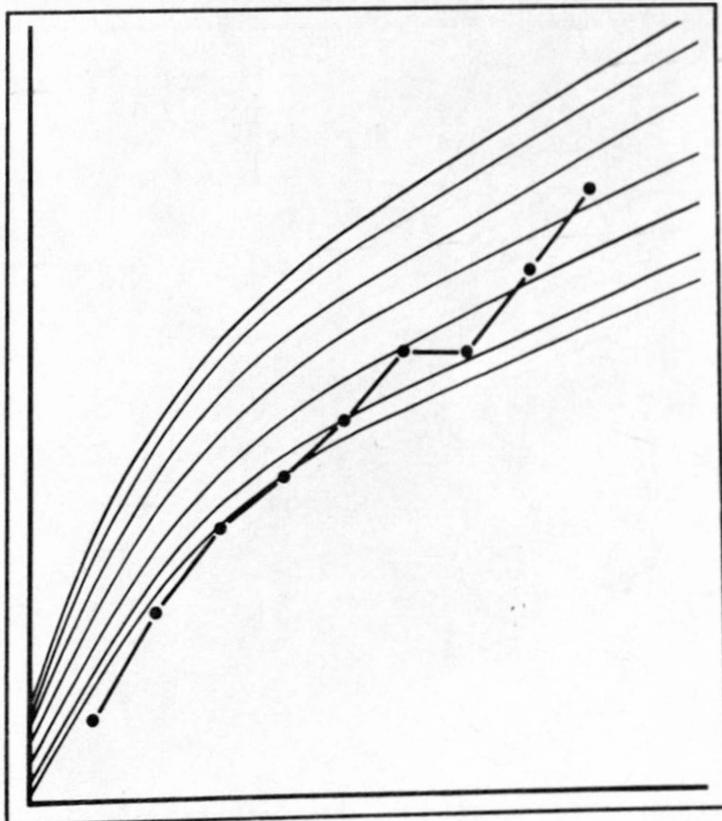


JANUARY-JUNE 1979
ISSUED SEPTEMBER 1980

CENTER FOR DISEASE CONTROL

NUTRITION

SURVEILLANCE



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PREFACE

This report summarizes information, including selected indices of nutrition status, received from 17 participating states which comprise a group of contributors to a developing program of nutrition surveillance in the United States. We will consider adding other indices as their utility and availability become evident. To the extent possible, tabulations in subsequent issues will be presented in the same format unless experience indicates a change is appropriate.

The data presented in these tabulations come from a variety of sources including health department clinics, WIC screening, Headstart programs, and other health care situations. Because of the lack of uniformity of data sources, as well as methodology, direct comparisons among states should be made with caution.

Contributions to NUTRITION SURVEILLANCE ARE WELCOME. Please submit to

Nutrition Division. BSE
Center for Disease Control
Atlanta, Georgia 30333

Center for Disease Control. William H. Foege, M.D.
Director

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Nutritional Status of
Southeast Asian Refugee
Children

NUTRITION INDICES

Data presented in Tables 1-6, represent children examined during the first and second quarters of 1979. They reflect initial visits to the health system and do not represent either the results of nutrition intervention or the nutritional status of the general population. Data from Colorado are included for the first time.

CRITERIA FOR IDENTIFYING INDIVIDUALS WITH LOW OR HIGH VALUES.

1. Low Hemoglobin and Low Hematocrit: Hemoglobin or hematocrit below the level specified in the following table for appropriate age and sex.

<u>Age</u>	<u>Hgb.</u>	<u>Hct.</u>
6-23 months	10 grams	31%
2-5 years	11 grams	34%
6-14 years	12 grams	37%
15 or more years (females)	12 grams	37%
15 or more years (males)	13 grams	40%

2. Low Height-for-Age: Height-for-age less than the 5th percentile of a person of the same sex and age in the reference population.
3. Low Weight-for-Age: Weight-for-age less than the 5th percentile of a person of the same sex and in the reference population.
4. Low Weight-for-Height: Weight-for-height less than the 5th percentile of a person of the same sex and height in the reference population.
5. High Weight-for-Height: Weight-for-height greater than the 95th percentile of a person of the same sex and height in the reference population.

Reference Population: Smoothed distribution of percentiles of the following populations:

<u>Age</u>	<u>Reference Population Data</u>
Birth - 24 months	Fels Research Institute Growth Study
25 - 59 months	First Health and Nutrition Examination Survey (HANES)
60 - 143 months	National Health Examination Survey, Cycle II; and HANES
144 - 215 months	National Health Examination Survey, Cycle III; and HANES

Note Growth percentiles represent heights and weights which have been standardized for sex and age, and sex and height (for weight-for-height). Therefore height and weight comparisons may be made between groups of individuals using percentiles without being concerned about the age and sex distributions of groups being compared. However, comparisons of height and weight among groups with persons of diverse ethnic origins should be made with care because of possible genetic differences in growth potential. Differences observed between groups may be due to differences in nutritional status of the individuals or in possible differences in the ethnic makeup of the groups.

NUTRITION INDICES

State	Hemoglobin		Hematocrit	
	No. Exam.	% Low	No. Exam.	% Low
Alabama	0	0.0	57	3.5
Arizona	399	8.3	661	18.2
California	1	0.0	83	19.3
Colorado	131	13.0	826	17.7
Florida	830	17.1	996	22.8
Idaho	0	0.0	9	11.1
Indiana	110	16.4	77	22.1
Kentucky	1,261	12.3	1,468	22.3
Louisiana	2,051	17.2	767	19.7
Michigan	0	0.0	150	10.0
Minnesota	453	11.0	710	12.3
New Jersey	491	7.3	362	28.2
Ohio	1,196	6.5	2,172	13.8
Oregon	310	12.3	1,094	10.1
Tennessee	112	6.3	5,546	17.6
Washington	289	12.8	3,067	18.9
Wisconsin	1	0.0	2,517	14.2
TOTAL	7,635	12.6	20,562	17.2

Table 1

BY STATE, JANUARY-MARCH 1979

<u>Height-for-Age</u>		<u>Weight-for-Age</u>		<u>Weight for Height</u>		
No.	%	No.	%	No.	%	%
Exam.	Low	Exam.	Low	Exam.	Low	High
284	12.0	287	5.2	122	3.3	6.6
2,618	13.6	2,625	8.6	1,524	3.6	12.7
82	11.0	83	7.2	83	0.0	7.2
1,798	13.3	1,819	10.2	1,270	6.1	7.6
2,393	9.5	2,437	7.4	1,898	6.4	10.6
9	22.2	9	11.1	6	16.7	16.7
524	12.0	556	6.8	384	3.9	8.3
5,545	10.7	5,577	5.4	3,944	3.8	10.8
3,662	10.1	3,692	6.0	2,675	3.6	9.1
24,794	8.1	24,715	4.9	17,037	2.3	8.1
1,967	8.6	2,011	7.3	1,788	3.1	8.4
1,497	16.2	1,562	9.8	1,243	4.6	13.7
4,879	8.3	4,913	5.9	4,054	4.3	8.5
2,237	11.2	2,263	7.0	1,949	2.8	10.2
7,940	10.3	7,984	5.3	6,138	2.8	10.7
4,570	11.3	4,586	6.0	3,835	3.1	10.8
2,579	7.4	2,575	3.7	1,905	2.5	10.4
67,378	9.6	67,694	5.8	49,855	3.2	9.5

Table 2

Nutrition Indices by Sex and Ethnic Group, January-March 1979
Persons Less than 18 Years of Age

Sex and Ethnic Group	Hemoglobin		Hematocrit		Height-for-Age		Weight-for-Age		Weight-for-Height			
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High	
Male												
White	1,984	8.8	6,866	15.4	20,094	9.9	20,185	5.6	16,110	2.9	9.3	
Black	1,463	16.2	1,896	22.1	9,773	9.2	9,820	5.9	7,207	4.0	8.0	
Sp. American	248	10.9	727	23.2	20,092	12.9	2,113	7.0	1,562	3.5	13.3	
Am. Indian	26	15.4	394	16.0	839	10.5	842	5.3	603	2.3	15.1	
Oriental	37	5.4	73	8.2	175	23.4	176	17.0	154	8.4	10.4	
Other	12	0.0	54	16.7	264	15.5	266	10.2	191	4.7	9.9	
Unknown	28	7.1	255	11.4	520	10.8	518	7.3	506	1.8	6.3	
Total	3,798	11.8	10,265	17.1	33,757	10.0	33,920	5.9	26,333	3.3	9.2	
Female												
White	2,047	10.6	6,824	16.1	19,795	9.7	19,882	5.9	14,268	3.1	9.2	
Black	1,412	18.3	1,900	20.4	9,981	7.5	10,011	5.1	6,531	3.5	9.7	
Sp. American	272	11.8	768	24.0	2,128	11.5	2,139	6.3	1,424	2.5	13.7	
Am. Indian	25	12.0	403	15.4	820	8.4	822	4.4	504	2.2	16.9	
Oriental	34	2.9	67	17.9	139	25.2	153	17.6	118	2.5	5.1	
Other	16	12.5	52	21.2	238	10.9	242	6.2	171	2.9	12.3	
Unknown	31	12.9	283	9.5	520	15.0	525	6.1	506	1.4	9.5	
Total	3,837	13.5	10,297	17.3	33,621	9.3	33,774	5.7	23,522	3.1	9.8	

Table 3

Nutrition Indices by Sex and Age, January-March 1979
Persons Less than 18 Years of Age

Sex and Age Group	Hemoglobin		Hematocrit		Height-for-Age		Weight-for-Age		Weight-for-Height			
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High	
Male												
<1	558	7.9	1,387	8.3	9,851	12.7	9,993	7.0	6,854	4.3	9.3	
1	909	6.9	2,182	7.7	4,019	13.0	4,059	7.3	4,012	5.5	12.8	
2-5	1,607	14.3	4,572	21.0	10,127	9.3	10,165	5.5	10,124	2.3	9.3	
6-9	355	20.3	1,017	33.2	4,403	5.5	4,355	3.4	4,286	2.3	6.6	
10-12	165	10.3	505	18.0	2,490	6.5	2,487	4.2	1,057	1.6	5.5	
13-17	204	10.8	602	13.1	2,867	9.0	2,861	6.4	0	0.0	0.0	
Total	3,798	11.8	10,265	17.1	33,757	10.0	33,920	5.9	26,333	3.3	9.2	
Female												
<1	551	7.3	1,365	8.6	9,569	10.8	9,660	6.6	6,170	4.5	9.8	
1	885	8.4	2,070	8.9	3,832	11.0	3,856	6.2	3,810	3.7	13.2	
2-5	1,509	14.9	4,489	18.4	9,815	10.0	9,838	6.3	9,787	2.2	9.2	
6-9	316	28.8	867	29.1	4,273	5.5	4,259	3.8	3,722	2.5	7.6	
10-12	154	12.3	492	17.3	2,450	8.1	2,450	5.0	33	6.1	3.0	
13-17	422	16.1	1,014	31.4	3,682	6.5	3,711	4.2	0	0.0	0.0	
Total	3,837	13.5	10,297	17.3	33,621	9.3	33,774	5.7	23,522	3.1	9.8	

NUTRITION INDICES BY STATE, APRIL-JUNE 1979
Persons Less than 18 Years of Age

State	Hemoglobin		Hematocrit		Height-for-Age		Weight-for-Age		Weight-for-Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
Alabama	0	0.0	156	5.8	319	7.8	322	5.6	201	3.5	5.5
Arizona	682	6.2	566	18.7	2,357	11.2	2,345	8.4	1,558	5.0	11.4
California	0	0.0	116	36.2	115	6.1	115	1.7	112	0.0	15.2
Colorado	97	8.2	693	18.0	1,494	13.3	1,525	10.7	1,053	4.7	6.8
Florida	1,469	24.1	1,073	26.2	3,549	11.9	3,608	8.7	2,798	6.5	8.9
Idaho	0	0.0	51	5.9	47	10.6	48	8.3	47	0.0	6.4
Indiana	242	12.8	197	15.7	904	10.4	933	6.4	723	5.3	10.0
Kentucky	1,320	17.1	1,345	22.7	5,412	11.1	5,458	6.2	3,782	4.0	11.1
Louisiana	1,859	16.4	887	17.5	3,587	10.3	3,589	6.5	2,626	4.1	9.0
Michigan	0	0.0	3,005	9.5	24,226	8.1	24,132	4.9	16,307	2.2	8.2
Minnesota	304	20.7	627	9.9	1,921	7.5	1,934	3.8	1,851	1.7	6.7
New Jersey	512	6.6	224	23.2	1,286	17.0	1,328	9.1	1,072	4.9	13.4
Ohio	1,055	7.8	2,161	14.1	4,775	7.4	4,776	5.3	3,854	3.1	7.7
Oregon	91	14.3	1,125	11.5	1,656	9.8	1,664	5.7	1,291	1.7	8.7
Tennessee	98	14.3	4,745	18.1	6,399	11.4	6,422	6.4	4,990	3.5	11.2
Washington	306	9.5	2,698	17.8	3,784	11.6	3,745	6.2	3,067	3.5	11.8
Wisconsin	49	6.1	2,869	14.8	3,482	8.0	3,480	4.9	2,620	2.6	9.8
TOTAL	8,084	14.9	22,538	16.2	65,313	9.6	65,424	5.9	47,952	3.2	9.3

Table 5

Nutrition Indices by Sex and Ethnic Group, April-June 1979
Persons Less than 18 Years of Age

Sex and Ethnic Group	Hemoglobin		Hematocrit		Height-for-Age		Weight-for-Age		Weight-for-Height		
	No.	%	No.	%	No.	%	No.	%	No.	%	%
	Exam.	Low	Exam.	Low	Exam.	Low	Exam.	Low	Exam.	Low	High
Male											
White	2,086	11.8	7,337	13.9	19,878	9.8	19,910	5.8	15,759	3.0	8.7
Black	1,550	19.6	2,508	20.5	9,636	9.8	9,658	5.8	7,123	3.8	8.3
Sp. American	345	8.1	740	24.5	2,008	13.2	2,013	6.3	1,571	3.6	12.9
Am. Indian	16	31.3	358	15.1	761	10.8	753	7.2	525	5.7	13.7
Oriental	17	0.0	112	11.6	193	23.8	193	17.6	179	6.1	11.7
Other	14	28.6	93	14.0	280	15.4	283	10.2	211	3.8	10.0
Unknown	13	23.1	65	13.8	120	10.0	121	5.8	103	4.9	5.8
Total	4,041	14.6	11,213	16.1	32,876	10.2	32,931	6.0	25,471	3.3	9.0
Female											
White	2,145	13.0	7,337	14.9	19,419	9.3	19,476	5.9	13,889	2.7	9.0
Black	1,505	19.5	2,588	19.6	9,742	7.9	9,745	5.5	6,310	4.0	9.4
Sp. American	324	10.5	746	20.6	1,941	11.6	1,939	6.1	1,388	3.2	14.0
Am. Indian	19	15.8	402	13.4	805	10.2	796	6.0	474	3.2	19.8
Oriental	17	11.8	109	17.4	192	20.3	195	10.3	170	4.1	4.7
Other	19	5.3	90	4.4	235	8.5	241	8.7	171	4.1	8.8
Unknown	14	14.3	53	32.1	103	10.7	101	7.9	79	3.8	12.7
Total	4,043	15.2	11,325	16.3	32,437	9.1	32,493	5.8	22,481	3.1	9.6

Table 6

Nutrition Indices by Sex and Age, April-June 1979
Persons Less than 18 Years of Age

Sex and Age Group	Hemoglobin		Hematocrit		Height-for-Age		Weight-for-Age		Weight-for-Height		
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	% High
Male											
< 1	767	10.2	1,438	8.8	9,243	12.9	9,300	6.8	6,648	4.4	9.5
1	888	9.3	1,877	8.0	3,465	15.1	3,500	8.7	3,449	5.9	11.8
2- 5	1,665	16.9	4,682	17.7	9,775	9.4	9,799	5.9	9,753	2.4	9.0
6- 9	347	25.4	1,468	31.4	4,587	5.4	4,557	3.2	4,485	2.1	6.6
10-12	190	15.3	805	17.5	2,807	6.7	2,789	4.5	1,136	2.3	6.4
13-17	184	16.3	943	10.6	2,999	8.9	2,986	6.1	0	0.0	0.0
Total	4,041	14.6	11,213	16.1	32,876	10.2	32,931	6.0	25,471	3.3	9.0
Female											
<1	647	8.2	1,332	8.9	8,561	11.1	8,621	6.9	5,685	4.5	9.4
1	872	12.8	1,853	8.1	3,467	12.0	3,480	7.2	3,418	3.8	13.8
2-5	1,609	15.8	4,565	16.3	9,519	9.3	9,540	6.5	9,486	2.4	9.3
6-9	360	32.5	1,437	28.2	4,465	5.6	4,438	3.4	3,863	2.4	7.1
10-12	147	16.3	784	17.6	2,621	7.4	2,614	5.3	29	3.4	10.3
13-17	408	13.2	1,354	21.6	3,804	6.5	3,800	3.7	0	0.0	0.0
Total	4,043	15.2	11,325	16.3	32,437	9.1	32,493	5.8	22,481	3.1	9.6

SPECIAL REPORT

NUTRITIONAL STATUS OF SOUTHEAST ASIAN REFUGEE CHILDREN

INTRODUCTION

Since mid-1975 nearly 300,000 Indochinese refugees have been relocated in the United States. This large influx of individuals may have a significant impact on the future planning and implementation of various health and social services provided by state and local jurisdictions. While some data are being accumulated pertaining to the health status of these refugee people, little is known about their nutritional status. There has been some speculation that there is a high prevalence of malnutrition among refugee populations. If this is the case, then careful attention should be directed to identifying problems and implementing intervention programs targeted on refugees. Inquiries from several Federal agencies prompted the Nutrition Division, Center for Disease Control (CDC), to utilize the Nutrition Surveillance System as a mechanism for acquiring nutrition-related data among Southeast Asian refugee children.

BACKGROUND

In late October 1979 the twenty state health departments participating in the CDC Coordinated Nutrition Surveillance System were asked to begin identifying records of Indochinese refugees with a special ethnic code. Up to this time records were coded simply as "Oriental." Since July 1, 1979, there has been a sharp increase in the number of records of Orientals submitted to the Nutrition Surveillance System.

Because of the relatively recent coding change, data specifically identified as coming from Southeast Asian refugee children were not available within the CDC Coordinated Nutrition Surveillance System in the spring of 1980. Consequently in May 1980 a special survey was designed and undertaken by the Nutrition Division.

METHODS

Children under 5 years old were selected because this age group is usually most vulnerable to protein-energy malnutrition. Children seen after July 1, 1979 were included in the study, based on the assumption that significant nutrition-related problems would more likely be present among more recent arrivals. Only data from the first health screening visit were collected; data from follow-up visits were not collected because of the possible impact of intervention activities, such as special feeding programs, upon nutrition-related indicators.

Inquiries by letter and phone were made to Federal, State and local health agencies to identify clinics screening large numbers of Southeast Asian refugee children. Ultimately, four clinics on the west coast (in Washington and California) were identified for record search. Three of the four clinics were visited by a three-member CDC team; data from selected patients' charts were abstracted at the clinics. The fourth clinic completed the forms using local staff and returned them to CDC by mail. Data on a total of 850 Southeast Asian Refugee children were obtained in this manner.

1. Data Collection

Height was recorded to the nearest 0.1 cm. or one-eighth of an inch. Weight was recorded to the nearest 0.1 kilogram or rounded to one-fourth pound. Depending on availability, either hematocrit or hemoglobin value was collected. When both were available, both were collected.

The quality of height and weight measurements varied from clinic to clinic. For example, one clinic had no adequate measuring board; another clinic had an adequate board available but it was not regularly used. In another location children were placed on paper on an examination table, marks were made on the paper at the head and feet, and the distance between the marks measured.

A comparison group for this study was selected from the Nutrition Surveillance System data base. This group consisted of 1,100 Oriental children less than 5 years of age who were screened in clinics throughout the country before the influx of Southeast Asian refugees in 1979. This comparison group included an unknown number of refugee children, but the consensus of health professionals suggests that those refugees who arrived earlier (1975-1979) may have been better nourished than those who arrived later.

2. Anthropometric and Hematology Indices

Three anthropometric indices were used to describe the nature and extent of malnutrition in preschool children: height for age, weight for age and weight for height.

Data for all anthropometric indices are presented as standard deviation values based on the National Center for Health Statistics/Center for Disease Control reference population distribution. Children with a height for age more than 2.0 standard deviations below the reference mean* are considered chronically malnourished (stunted). Children with a weight for height more than 2.0 standard deviations below the reference mean are considered acutely malnourished (wasted). Children with both height for age and weight for height more than 2.0 standard deviations below the reference mean are classified as having concurrent stunting and wasting. This group is considered to be at the greatest risk of morbidity and mortality.

The following cutoffs, identical to those used in the CDC Coordinated Nutrition Surveillance System, were used to determine low hemoglobin and low hematocrit:

<u>Age</u>	<u>Hemoglobin</u>	<u>Hematocrit</u>
6 -23 months	10 grams	31%
24-59 months	11 grams	34%

*approximately 2.3% of the NCHS/CDC reference population falls below this cut-off.

RESULTS

Data from 824 children were analyzed. Records on 26 children were excluded because of obvious clerical errors or deviations from the selection criteria. Records of 605 patients provided both anthropometric measurements, height and weight. Two hundred twenty-six charts lacked either height or weight data.

Table 1 presents the prevalence of selected indices of nutritional status by age and sex for the survey and the control groups. There was a higher prevalence of anemia among the survey group (39% with low hemoglobin) than the control group (13% with low hemoglobin). Children over 24 months of age appeared to have a higher prevalence of anemia than those less than 2 years. It is recognized that pediatric anemia has other than nutritional causes; other investigations have shown low prevalences of malaria and other parasitic diseases among Southeast Asian refugee children. It may be that some portion of this anemia is due to presently unrecognized causes.

Significantly more stunting was found among the survey group than among the control group (38% compared to 9%). Children over 24 months of age were more stunted than those less than 2 years. These age differences were seen in both the survey and control groups. The overall prevalence of wasting was 3% for the survey group and 1% for the control group, but increased prevalences (6-7%) were seen among children less than 2 years of age in the study group. The expected prevalence for all anthropometric indices is 2.3% based on the reference population.

Only three of 605 children in the survey group were identified as having concurrent stunting and wasting.

SUMMARY

Both anemia and stunting appear to be significant nutrition-related problems among Southeast Asian refugee children who entered the U.S. since July 1, 1979. Wasting was relatively uncommon in both groups except among recent arrivals who were less than 24 months of age at the time of initial clinic visit.

These data suggest the need for increased awareness among clinic personnel caring for Southeast Asian refugee children concerning the need for identification and following up of anemia in all age groups and possible acute undernutrition below the age of 24 months.

Reported by International Health Center, Seattle, Washington; Indochinese Refugee Screening Clinic, King County Department of Public Health, Seattle, Washington; U.S. Public Health Service Hospital, San Francisco, California; and Queen of Angels Hospital, Los Angeles, California.

Table 1. Southeast Asian Refugee Study
Washington and California, July 1979 - June 1980
Nutrition Indices by Sex and Age

Survey Group	Hemoglobin*		Hematocrit**		Height-for-Age***		Weight-for-Age***		Weight-for-Height***	
	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low	No. Exam.	% Low
Male										
0-23 months	50	36%	70	42%	106	31%	106	18%	106	6%
24-59 months	139	40%	174	48%	237	39%	237	16%	237	1%
Female										
0-23 months	37	43%	54	41%	72	33%	72	14%	72	7%
24-59 months	118	38%	149	41%	190	43%	190	24%	190	2%
TOTAL	344	39%	447	44%	605	38%	605	19%	605	3%

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Control Group

Male

0-23 months	51	4%	245	11%	329	7%	329	3%	329	2%
24-59 months	44	28%	183	12%	236	15%	236	6%	236	1%

Female

0-23 months	60	8%	242	7%	321	5%	321	4%	321	1%
24-59 months	49	16%	167	13%	214	11%	214	7%	214	1%
TOTAL	204	13%	837	10%	1100	9%	1100	5%	1100	1%

*Children 0-23 months hemoglobin less than 10 grams or children 24-59 months, hemoglobin less than 11 grams were considered low.

**Children 0-23 months hematocrit less than 31% or children 24-59 months hematocrit less than 34% were considered low.

***Values more than 2 standard deviations below the mean were considered low for all anthropometric indices.