

# H

## Comparison of Vitamin A and Iron Intake and Biochemical Indicators from the Third National Health and Nutrition Examination Survey (NHANES III), 1988–1994

**TABLE H-1** Mean Serum Retinol Concentrations ( $\mu\text{g}/\text{dl}$ ) by Quartile of Dietary Vitamin A Intake of Individuals Who Were Not Taking Supplements, NHANES III (1988–1994)

Sex/Age Category <sup>a</sup>	n	Quartile			
		1st	2nd	3rd	4th
M 4–8 y	950	35.6	34.5	35.2	34.4
M 9–13 y	885	39.5	40.5	41.8	39.4
M 14–18 y	698	47.8	49.7	49.9	51.4
M 19–30 y	1,210	54.0	58.2	56.1	56.8
M 31–50 y	1,520	60.7	62.6	62.5	61.7
M 51–70 y	1,035	62.6	59.7	64.2	65.4
M 71+ y	490	62.7	61.7	62.9	62.2
M Total	6,788	54.5	55.8	55.9	55.9
F 4–8 y	926	34.8	34.1	35.3	34.6
F 9–13 y	851	38.9	40.6	38.9	40.9
F 14–18 y	624	42.2	42.0	45.5	46.4
F 19–30 y	833	45.0	44.3	47.3	47.8
F 31–50 y	1,583	47.2	46.9	48.7	48.7
F 51–70 y	871	56.8	56.4	57.7	59.2
F 71+ y	524	58.4	61.5	60.0	59.6
F Total	6,212	46.9	46.9	48.3	48.9

<sup>a</sup> M = male, F = female.

SOURCE: C. Ballew and C. Gillespie, Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention, unpublished data.

**TABLE H-2** Mean Serum Retinol Concentrations ( $\mu\text{g}/\text{dl}$ ) by Quartile of Total Vitamin A Intake of Individuals Who Were Taking Supplements, NHANES III (1988–1994)

Sex/Age Category <sup>a</sup>	n	Quartile			
		1st	2nd	3rd	4th
M 4–8 y	401	— <sup>b</sup>	33.0	35.6	35.2
M 9–13 y	159	—	33.0	45.0	41.6
M 14–18 y	71	—	52.0	53.0	53.8
M 19–30 y	227	—	—	64.0	60.5
M 31–50 y	360	—	—	63.3	68.4
M 51–70 y	295	—	—	59.4	68.6
M 71+ y	151	—	—	66.2	64.4
M Total	1,664	—	45.9	54.3	59.4
F 4–8 y	380	—	32.0	34.3	35.7
F 9–13 y	185	—	—	34.2	40.8
F 14–18 y	85	—	—	—	46.5
F 19–30 y	202	—	—	41.0	49.5
F 31–50 y	519	35.0	44.0	48.4	51.9
F 51–70 y	271	—	—	53.6	60.4
F 71+ y	194	—	—	59.6	63.0
F Total	1,836	35.0	36.9	44.2	51.2

<sup>a</sup> M = male, F = female.

<sup>b</sup> No value could be computed, primarily due to an empty data cell or the absence of sampling strata representation.

SOURCE: C. Ballew and C. Gillespie, Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention, unpublished data.

**TABLE H-3** Weighted Median Serum Ferritin by Body Mass Index (BMI) Quartiles, Adult Reference Sample, NHANES III (1988–1994)

BMI Quartile <sup>a</sup>	Men		Women	
	20–49 y Median	50+ y Median	20–49 y Median	50+ y Median
Non-Hispanic White				
Quartile 1	118	138	39	77
Quartile 2	132	156	38	89
Quartile 3	132	165	48	92
Quartile 4	168	172	50	101
Regression Results, BMI (adjusted for age)				
Beta	4.007	3.619	1.434	2.358
<i>p</i>	0.0001	0.007	0.014	0.0017
Non-Hispanic Black				
Quartile 1	129	207	38	125
Quartile 2	143	146	51	120
Quartile 3	166	206	47	124
Quartile 4	186	191	59	150
Regression Results, BMI (adjusted for age)				
Beta	2.786	1.885	0.917	0.58
<i>p</i>	0.0048	NS <sup>b</sup>	0.03	NS
Mexican American				
Quartile 1	90	111	30	90
Quartile 2	128	160	34	87
Quartile 3	137	169	40	93
Quartile 4	178	174	65	112
Regression Results, BMI (adjusted for age)				
Beta	6.852	−0.6788	3.192	1.372
<i>p</i>	0	NS	0	0.019

NOTE: Excludes individuals with C-reactive protein levels > 1 and values indicative of iron deficiency for transferrin saturation, erythrocyte protoporphyrin, and mean corpuscular volume.

<sup>a</sup> BMI quartiles were defined using race/ethnicity-, age-, and sex-specific cutoffs.

<sup>b</sup> NS = not significant.

**TABLE H-4** Lower and Upper Quartiles of Plasma Glucose (mmol/L) and Median Serum Ferritin Levels (µg/L), NHANES III (1988–1994)

Sex/Age Category <sup>a</sup>	Lower Quartile of Plasma Glucose		Upper Quartile of Plasma Glucose	
	Median Plasma Glucose (mmol/L)	Median Serum Ferritin (µg/L)	Median Plasma Glucose (mmol/L)	Median Serum Ferritin (µg/L)
M 20 to 30 y	4.66	108.4	5.57	116.2
M 31 to 50 y	4.77	147.5	5.82	177.8
M 51 to 70 y	4.87	131.2	6.57	188.6
M 71+ y	4.95	122.8	6.72	149.4
F 20 to 30 y	4.41	33.0	5.23	37.3
F 31 to 50 y	4.55	36.4	5.62	44.8
F 51 to 70 y	4.74	73.6	6.19	119.5
F 71+ y	4.90	87.8	6.37	120.0
F P/L	4.17	21.6	5.00	22.0

NOTE: The plasma glucose values used for constructing the lower and upper quartile populations were estimated using WestVarPC 2.12. Median serum ferritin values and plasma glucose values also were estimated with WestVarPC 2.12. Plasma glucose values were measured for individuals 20 years and older. Only individuals who reported fasting 4 or more hours prior to the blood draw and individuals not taking insulin were included in the analyses. Population groups included only those individuals for whom complete food intakes were reported. Females who had “blank but applicable” pregnancy and lactating status data or who responded “I don’t know” to questions on pregnancy and lactating status were excluded from all analyses.

<sup>a</sup> M = male, F = female, P/L = pregnant and lactating.

SOURCE: ENVIRON International Corporation, 1999.

**TABLE H-5** Lower and Upper Quartiles of Iron Intake from Food (mg/d) and Median Levels of Serum Ferritin ( $\mu\text{g/L}$ ): Individuals Who Do Not Report Intake of Iron Supplements, NHANES III (1988–1994)

Sex/Age Category <sup>a</sup>	Lower Quartile of Iron Intake		Upper Quartile of Iron Intake	
	Median of Estimated Usual Iron Intake from Food	Median of Observed Serum Ferritin Levels	Median of Estimated Usual Iron Intake from Food	Median of Observed Serum Ferritin Levels
Both sexes, 1 to 3 y	4.6	21.0	16.3	23.5
Both sexes, 4 to 8 y	9.4	29.0	16.9	30.0
M 9 to 13 y	10.4	35.0	21.6	33.0
M 14 to 18 y	12.8	48.0	26.9	50.0
M 19 to 30 y	13.2	111.0	23.6	105.0
M 31 to 50 y	12.6	168.0	24.4	163.0
M 51 to 70 y	10.0	160.0	23.6	148.0
M 71+ y	8.3	148.0	25.1	134.0
F 9 to 13 y	10.5	29.0	16.4	31.0
F 14 to 18 y	7.8	28.0	16.5	25.0
F 19 to 30 y	9.9	33.0	15.4	31.0
F 31 to 50 y	8.4	43.0	16.9	40.0
F 51 to 70 y	7.3	102.0	17.0	93.5
F 71+ y	7.4	107.5	16.9	87.0
F P/L	10.8	32.0	21.1	28.5
All Individuals	9.2	51.0	19.6	49.0
All Individuals (+P/L)	9.2	51.0	19.6	49.0

NOTE: The iron intakes used for constructing the lower and upper quartiles were estimated using the Iowa State University method. Computations of the medians were completed with the C-SIDE program. Children fed human milk and females who had “blank but applicable” pregnancy and lactating status data or who responded “I don’t know” to questions on pregnancy and lactating status were excluded from all analyses.

<sup>a</sup> M = male, F = female, P/L = pregnant and lactating.

SOURCE: ENVIRON International Corporation and Iowa State University Department of Statistics, 1999.