

**CHILE**
**Last Updated: 2008-01-02**

Level	Date	Region and sample descriptor	Sex	Age (years)	Sample size	Haemoglobin (g/L)						Mean	SD	Method	Reference	Notes	
						Proportion (%) of population with haemoglobin below:										General	Line
						70	100	110	115	120	130						
N	2003	Women: Total	F	17.00-NS	1822					5.1		137	0.4	C	5783	*	
		Women by age	F	17.00- 24.99	195					5.7		135					
		Women by age	F	25.00- 44.99	536					4.5		136					
		Women by age	F	45.00- 64.99	6.3					4.4		138					
		Women by age	F	65.00-NS	488					8.2		137					
		Women by area: Urban	F	17.00-NS	1529					5.4		136					
		Women by area: Rural	F	17.00-NS	293					3.5		138					
		Women by region: I	F	17.00-NS	83					14.3		130					
		Women by region: II	F	17.00-NS	84					6.7		140					
		Women by region: III	F	17.00-NS	84					3.7		137					
		Women by region: IV	F	17.00-NS	105					9.0		135					
		Women by region: V	F	17.00-NS	167					4.9		136					
		Women by region: RM	F	17.00-NS	312					4.0		137					
		Women by region: VI	F	17.00-NS	109					3.4		139					
		Women by region: VII	F	17.00-NS	107					9.0		135					
		Women by region: VIII	F	17.00-NS	408					4.3		136					
		Women by region: IX	F	17.00-NS	107					4.5		137					
		Women by region: X	F	17.00-NS	107					5.4		136					
		Women by region: XI	F	17.00-NS	82					2.6		136					
		Women by region: XII	F	17.00-NS	67					12.6		134					
L	2002 P	La Pintana: Children	B	2.00- 5.99	96			1.0						D	4260	*	
L	2001	Puente Alto: PW	F	18.00-NS	1683			11.6						A	4500	*	1
L	2000 P	Santiago: Elderly women	F	60.00- 93.99	181					4.4		140	13	C	3739	*	
		Santiago: Elderly men	M	60.00- 89.99	93					5.4		152	14				
L	1993	Santiago: PW: Total	F	12.00- 18.99	342							131	11	C	2732	*	2
		Santiago: PW by gestational age: <14 wks	F	12.00- 18.99	234			0.9				134	10				
		Santiago: PW by gestational age: 14-19 wks	F	12.00- 18.99	108							126	11				3
L	1988 P	Santiago: Infants by feeding regimen: unfortified mil	B	0.25- 0.32	173							110	8	A	896	*	
		Santiago: Infants by feeding regimen: fortified milk	B	0.25- 0.32	191							111	9				
L	1987 P	Cautín: Children	B	0.67- 1.24	110			4.5				123	14	D	2735	*	

**CHILE**

Last Updated: 2008-01-02

Level	Date	Region and sample descriptor	Sex	Age (years)	Sample size	Haemoglobin (g/L)						Mean	SD	Method	Reference	Notes	
						Proportion (%) of population with haemoglobin below:										General	Line
						70	100	110	115	120	130						
L	1987 P	Santiago: Infants by feeding regimen: breast-fed	B	0.33- 0.41	68							118	8		931	*	
		Santiago: Infants by feeding regimen: non-fortified m	B	0.33- 0.41	54							118	9				
		Santiago: Infants by feeding regimen: fortified milk	B	0.33- 0.41	52							118	9				
L	1984 P	Santiago: PW	F	NS	124							115	13	A	2739	*	4
L	1982 -1985	Infants	B	0.75- 0.82	189									C	921	*	5
L	1978 P	North Santiago: All	B	0.00- 18.99	337									A	2740	*	6
		North Santiago: Children by age	B	0.00- 1.99	11							120	13				
		North Santiago: Children by age	B	2.00- 5.99	66							133	12				
		North Santiago: Children by age	B	6.00- 12.99	184							137	11				
		North Santiago: Children by age and sex	F	13.00- 18.99	NS							144	14				
		North Santiago: Children by age and sex	M	13.00- 18.99	NS							153	13				
L	1970 P	Santiago: San Rafael: Children	B	0.50- 2.99	183									NS	2741	*	7
		Santiago: Caimi: Children	B	0.50- 1.57	140												8
L	1970	Santiago: NLW	F	NS	189					9.2	129	12	A	3712	*		
		Santiago: LW	F	NS	136					9.2	129	16					
		Santiago: Children by age	B	0.00- 2.07	404			25.3			114	14					
		Santiago: Children by age	B	20.80- 5.07	217			9.2			123	13					
		Santiago: Children by age	B	6.08- 15.07	226			3.2			130	12					

## NOTES

### CHILE

---

**Reference No:** 5783

**General Notes:** *Sample comprised of a subsample of subject who took part in the ENS 2000 (Encuesta de Calidad de Vida del año 2000); 3616 adults included in the sample (54.5% women).*

**Reference No:** 4260

**General Notes:** *Facility based study survey (day care centers) in a community of the metropolitan Region; method: Cell-Dyn 1700.*

**Reference No:** 4500

**General Notes:** *Facility based study (first visit to public antenatal consultation in 4 centers) in Puente Alta in Santiago; values for other Hb cut-off values.*

**Line note 1** Mean age 26.6 yrs, mean gestational age 13.7 wks.

**Reference No:** 3739

**General Notes:** *Elderly people assigned to an outpatient clinic in a low socio economic district in Santiago.*

**Reference No:** 2732

**General Notes:** *Facility based study (first antenatal visit to 5 out patient clinics) in southeast area of Santiago; low socioeconomic status.*

**Line note 2** Prevalence of anaemia 1.2% (Hb <110 g/L 1st trimester, Hb 105 g/L 2nd trimester).

**Line note 3** Prevalence of anaemia 1.9% (Hb <105 g/L).

**Reference No:** 896

**General Notes:** *Facility based study (2 community clinics); baseline values of longitudinal study.*

**Reference No:** 2735

**General Notes:** *Facility based study (3 rural health centers) in Province of Cautín; indigenous (mapuche) children of low socioeconomic status; method: Analyzer Ultra Logic 800.*

**Reference No:** 931

**General Notes:** *Facility based study (7 health centers in central area of metropolitan Region); baseline values of longitudinal study.*

**Reference No:** 2739

**General Notes:** *PW at term (mean gestational age 39 wks) in south east Region of Santiago; PW had not received iron supplements during pregnancy; mean age 24.2 yrs.*

**Line note 4** Prevalence of anaemia 18.5% (Hb <105 g/L).

**Reference No:** 921

**General Notes:** *Location not defined; values of longitudinal study at 9 months of age; Hb cut-off level not according to WHO recommendations (please see 'Key to the data tables').*

**Line note 5** Prevalence of anaemia 11.1% (Hb <105 g/L).

**Reference No:** 2740

**General Notes:** *Hb cut-off level not according to WHO recommendations (please see 'Key to the data tables').*

**Line note 6** Prevalence of anaemia 1.4% (0-1.99 years <100 g/L, 2-5 years <110 g/L, 6-12 years <115 g/L, 13-16 years males <130 g/L, 13-16 years females <115 g/L, >16 years males <140 g/L, >16 years females <120 g/L).

**Reference No:** 2741

**General Notes:** *Facility based study (2 outpatient clinics: Caimi and San Rafael); Hb cut-off levels not according to WHO recommendations (please see 'Key to the data tables').*

**Line note 7** Prevalence of anaemia 29.5% (Hb <100 g/L).

**Line note 8** Prevalence of anaemia 15.7% (Hb <90 g/L).

**Reference No:** 3712

**General Notes:** *Survey in La Granja community in South-east Greater Santiago de Chile; sampling of newborns in 3 hospitals, study five months later including mothers and brothers and sisters; Hb cut-off level for 5-15 year olds not according to WHO recommendations (please see 'Key to the data tables').*

## REFERENCES

### CHILE

---

- Reference 896** Stekel A, Olivares M, Cayazzo M, Chadud P, Llaguno S, Pizarro F. Prevention of iron deficiency by milk fortification, II: a field trial with a full-fat acidified milk. *American Journal of Clinical Nutrition*, 1988, 47 :265-269.
- Reference 921** Walter T, De Andraca I, Chadud P, Perales CG. Iron deficiency anemia: adverse effects on infant psychomotor development. *Pediatrics*, 1989, 84 :7-17.
- Reference 931** Hertrampf E, Dinamarca M, Llaguno TM, Stekel A. Nutrición de hierro y lactancia natural en lactantes chilenos [Iron nutrition and breast feeding in Chilean infants]. *Revista Chilena de Pediatría*, 1987, 58 :193-197.
- Reference 2732** Hertrampf E, Olivares M, Letelier A, Castillo C. Situación de la nutrición de hierro en la embarazada adolescente al inicio de la gestación [Iron nutritional status in pregnant adolescents at the beginning of gestation]. *Revista Médica de Chile*, 1994, 122 :1372-1377.
- Reference 2735** Franco E, Rodríguez E, Raquel Espinoza TM, Stekel A, Hertrampf E. Prevalencia de anemia por déficit de hierro en lactantes mapuches alimentados con leche materna [Prevalence of anemia caused by iron deficiency in Mapuche infants fed breast milk]. *Revista Chilena de Pediatría*, 1987, 58 :361-365.
- Reference 2739** Lira P, Foradori A, Grebe G, Vela P. Deficiencia de hierro y folato en mujeres embarazadas de término [Iron and folate deficiency in pregnant women at term]. *Revista Médica de Chile*, 1984, 112 :127-131.
- Reference 2740** Pak N, Araya J, Vera G, Atalah E. Evaluación del estado nutricional de la población del área norte de Santiago: indicadores bioquímicos [Evaluation of the nutritional status of the population of the northern area of Santiago: biochemical indicators]. *Revista Chilena de Pediatría*, 1978, 49 :96-102.
- Reference 2741** Winter A, Taboada H, Ducos R, Norambuena N, Vera S, Delgado C. Incidencia de anemia y ferropenia en el lactante Chileno [Incidence of anemia and ferropenia in Chilean infant]. *Revista Chilena de Pediatría*, 1970, 41 :1035-1042.
- Reference 3712** Winter A, Taboada H, Galoie A, Maiz A, Arteaga A. Prevalencia de anemia ferropriva y deficiencia de hierro en una población materno infantil del área sur oriente de Santiago de Chile, 1970. *Revista Chilena de Pediatría*, 1974, 45 :53-61.
- Reference 3739** Olivares M, Hertrampf E, Capurro MT, Wegner D. Prevalence of anemia in elderly subjects living at home: role of micronutrient deficiency and inflammation. *European Journal of Clinical Nutrition*, 2000, 54 :834-839.
- Reference 4260** Díaz AMS, Guerra HP, Campos SMS, Letelier CMA, Olivares GM. Prevalencia de deficiencia de hierro en preescolares de la comuna la Pintana [Prevalence of iron deficiency in preschool children from la Pintana county]. *Revista Chilena de Nutrición*, 2002, 29 :10-13.
- Reference 4500** Mardones F, Riosco A, Ocqueteau M, Urrutia MT, Javet L, Rojas I, Villarroel L. Anemia en las embarazadas de la comuna de Puente Alto, Chile [Anemia during pregnancy in Puente Alto, Chile]. *Revista Médica de Chile*, 2003, 131 :520-525.
- Reference 5783** Ministerio de Salud. Resultados 1. Encuesta de Salud, Chile 2003. Santiago, Departamento de Epidemiología, Ministerio de Salud, 2004.

## ADDITIONAL REFERENCES

### CHILE

---

- Reference 791 INACG. Combatting iron deficiency in Chile: a case study. .
- Reference 892 Olivares M, Walter T, Hertrampf E, Pizarro F, Stekel A. Prevention of iron deficiency by milk fortification: the Chilean experience. *Acta Paediatrica Scandinavica. Supplement*, 1989, 361 :109-113.
- Reference 898 Hertrampf E, Cayazzo M, Pizarro F, Stekel A. Bioavailability of iron in soy-based formula and its effect on iron nutriture in infancy. *Pediatrics*, 1986, 78 :640-645.
- Reference 923 Pizarro F, Yip R, Dallman PR, Olivares M, Hertrampf E, Walter T. Iron status with different infant feeding regimens: relevance to screening and prevention of iron deficiency. *Journal of Pediatrics*, 1991, 118 :687-692.
- Reference 932 Palomo I, Gutierrez B, Guerra M, de la Fuente M, Pino M. Ferropenia y anemia ferropriva en lactantes y preescolares normales [Iron deficiency and iron deficiency anaemia in well-nourished infants and children]. *Revista Chilena de Pediatría*, 1984, 55 :248-253.
- Reference 1456 Lozoff B, De Andraca I, Castillo M, Smith JB, Walter T, Pino P. Behavioral and developmental effects of preventing iron-deficiency anemia in healthy full-term infants. *Pediatrics*, 2003, 112 :846-854.
- Reference 1888 Franco EY, Hertrampf ED, Hazbun JG, Segu SS, Illanes JC, Palacios LS, Figueroa GP, Orellana JC. Suplementación de hierro en lactantes mapuches de la Provincia de Cautin, Chile [Iron supplementation in Chilean Mapuche infants of the Cautin Province, Chile]. *Archivos Latinoamericanos de Nutrición*, 1996, 46 :118-121.
- Reference 1903 Atalah E. Análisis de la situación nutricional de la población de Santiago [Analysis of the nutritional situation of the population from Santiago]. *Revista Médica de Chile*, 1993, 121 :819-826.
- Reference 2731 Walter T, Pino P, Pizarro F, Lozoff B. Prevention of iron-deficiency anemia: comparison of high- and low-iron formulas in term healthy infants after six months of life. *Journal of Pediatrics*, 1998, 132 :635-640.
- Reference 2733 Franco E, Hertrampf E, Rodriguez E, Illanes JC, Palacios L, Llaguno S, Lettelier A. Nutrición de hierro en lactantes mapuches alimentados con leche materna (2a etapa) [Iron nutrition in Mapuche infants fed with human milk (2d phase)]. *Revista Chilena de Pediatría*, 1990, 61 :248-252.
- Reference 2734 Walter T, Kovalskys J, Stekel A. Effect of mild iron deficiency on infant mental development scores. *Journal of Pediatrics*, 1983, 102 :519-522.
- Reference 2736 Palomo I, Guerra M, Gutierrez B, Pina E, Padilla S, Pino M. Valores hematológicos en adultos sanos [Hematological values in healthy adults]. *Revista Médica de Chile*, 1986, 114 :132-139.
- Reference 2737 Trujillo S, Valenzuela C. Correlaciones entre la edad de manarquia y variables hematológicas en niñas del área norte de Santiago [Correlations between the age of menarche and hematological variables in girls of the northern area of Santiago]. *Revista Chilena de Pediatría*, 1986, 57 :18-21.
- Reference 2738 Grebe G, Lira P, Legues ME, Munoz B, Foradori A. Estudio de las reservas de hierro en una población de adultos sanos en Chile [Iron stores in a healthy adult population in Chile]. *Revista Médica de Chile*, 1984, 112 :884-892.
- Reference 3713 Atalah E. The analysis of the nutritional situation of the population of Santiago, Chile and programs designed to improve it. *Archivos Latinoamericanos de Nutrición*, 1994, 44 :22-30.
- Reference 4279 Walter T, Dallman PR, Pizarro F, Velozo L, Pena G, Bartholmey SJ, Hertrampf E, Olivares M, Letelier A, Arredondo M. Effectiveness of iron-fortified infant cereal in prevention of iron deficiency anemia. *Pediatrics*, 1993, 91 :976-982.

## ADDITIONAL REFERENCES

### CHILE

---

- Reference 4570 Robinovich JT, Rubio EL, Saez JC, Ramirez MI. Influencia del peso corporal en el embarazo y resultado perinatal [Influence of body weight in pregnancy and the perinatal results]. *Revista Chilena de Obstetricia y Ginecología*, 1995, 60 :151-167.
- Reference 4574 Olivares M, Walter T, Cook JD, Hertrampf E, Pizarro F. Usefulness of serum transferrin receptor and serum ferritin in diagnosis of iron deficiency in infancy. *American Journal of Clinical Nutrition*, 2000, 72 :1191-1195.
- Reference 4765 Olivares M, Pizarro F, de Pablo S, Araya M, Uauy R. Iron, zinc, and copper: contents in common Chilean foods and daily intakes in Santiago, Chile. *Nutrition*, 2004, 20 :205-212.
- Reference 4766 Torrejón CS, Castillo-Durán C, Hertrampf ED, Ruz M. Zinc and iron nutrition in Chilean children fed fortified milk provided by the Complementary National Food Program. *Nutrition*, 2004, 20 :177-180.