Sociedad Española de Dietética y Ciencias de la Alimentación

ACCIÓN CONTRA EL HAMBRE

EPINUT EPIDEMIOLOGÍA NUTRICIONAL

VIII Congreso Internacional SEDCA 2013

Antropometría en Cooperación al Desarrollo y Ayuda Humanitaria

ESTÁNDARES PARA LA EVALUACIÓN DEL CRECIMIENTO Y LA CONDICIÓN NUTRICIONAL

Dra. María Dolores Marrodán

Grupo de Investigación EPINUT-UCM

(www.epinut.ucm.es)

- **Estado nutricional**: condición corporal resultante del balance entre la ingestión de alimentos y su utilización por parte del organismo

Eunutrición: Estado nutricional correcto

Malnutrición: alteración de la normalidad

los estándares describen la **variabilidad normal**, por lo tanto son fundamentales para el diagnóstico

Estándares y Referencias

- Las curvas de crecimiento (Growth charts) pueden ser de dos tipos: estándares (**standards)** o referencias (**references**)
- Los estándares son prescriptivos y definen como los niños y niñas deberían crecer en condiciones óptimas de nutrición y salud.
- Las referencias son descriptivas y muestran como crecen los niños y niñas "sanos" de una determinada población.
- La metodología de los estánadares debería ser longitudinal o al menos semilongitudinal.

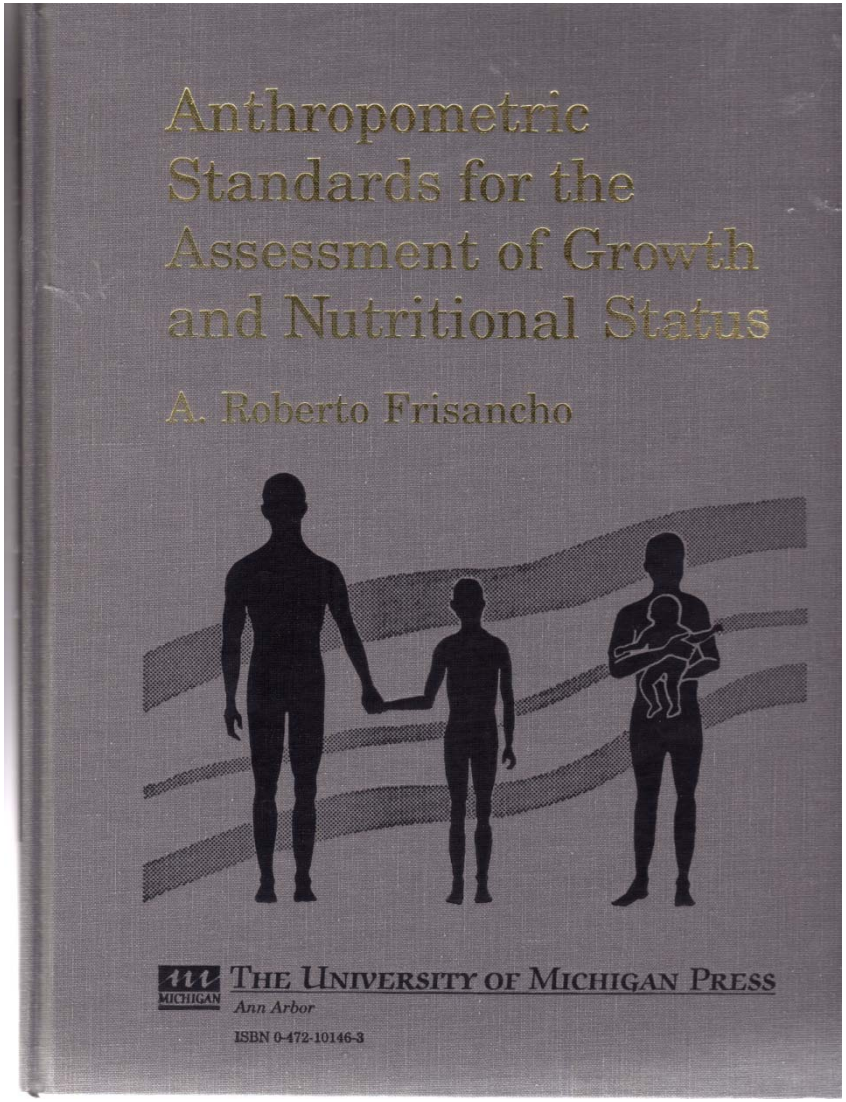
National Center for Health Statistics (NCHS)/WHO International Growth Reference. 1977

Población de EEUU

1 a 24 años

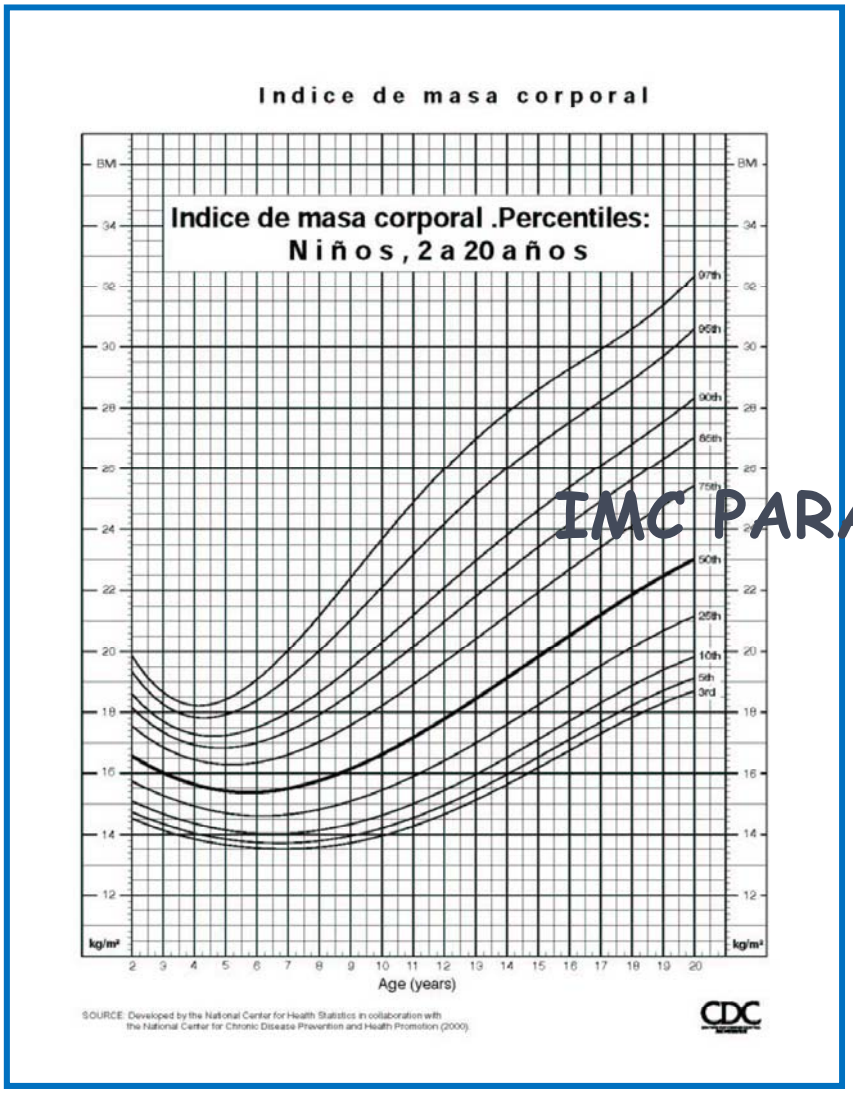
¿por qué internacionales?

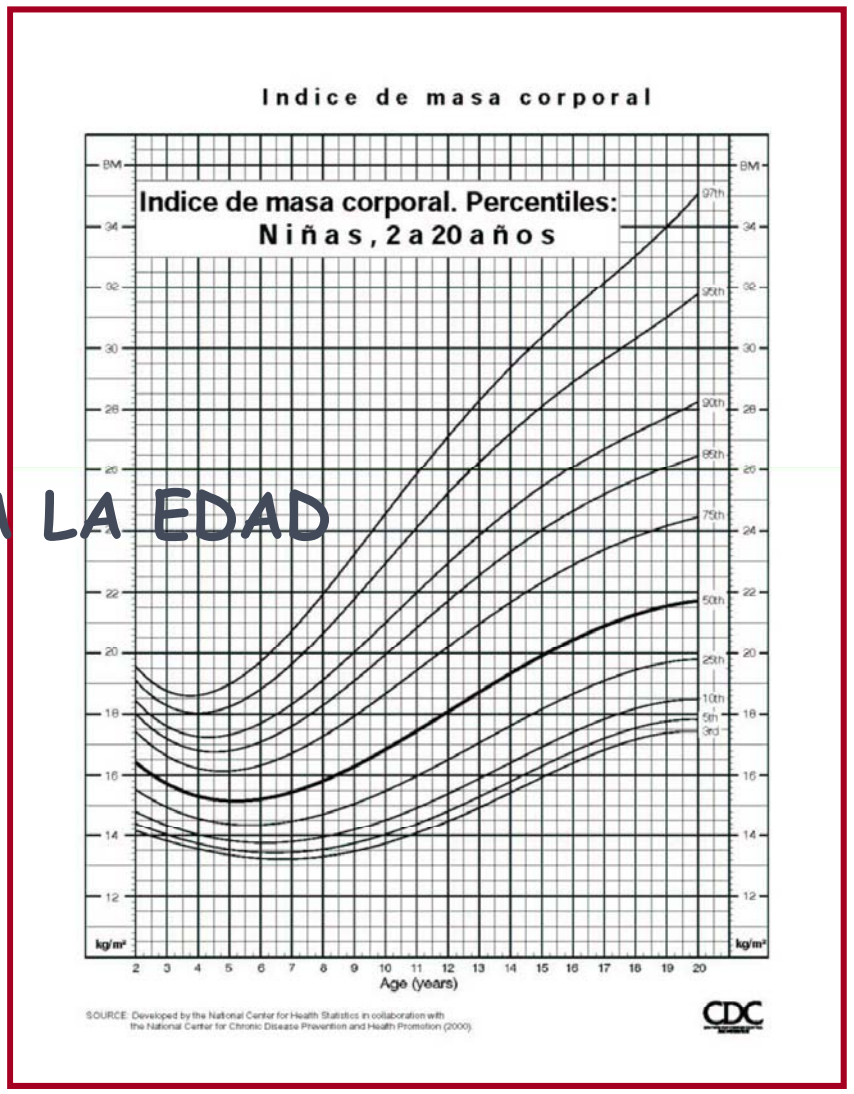
National Health and Nutrition Examination Survey



- estudio transversal (NHANES I y NAHANES II)
- Población estadounidense
- N= 43.774 entre 1 y 64 años
- Tablas para "blancos" "negros" y combinada (incluye 718 sujetos de otras etnias)

-Estatura
-Peso
-Talla sentado
-IMC
-Índice córmico
- Anchura bitrocantérea
- Anchura bicondílea del húmero
- Perímetro del brazo
- Pliegues del triceps y subescapular
- Áreas mesobraquiales

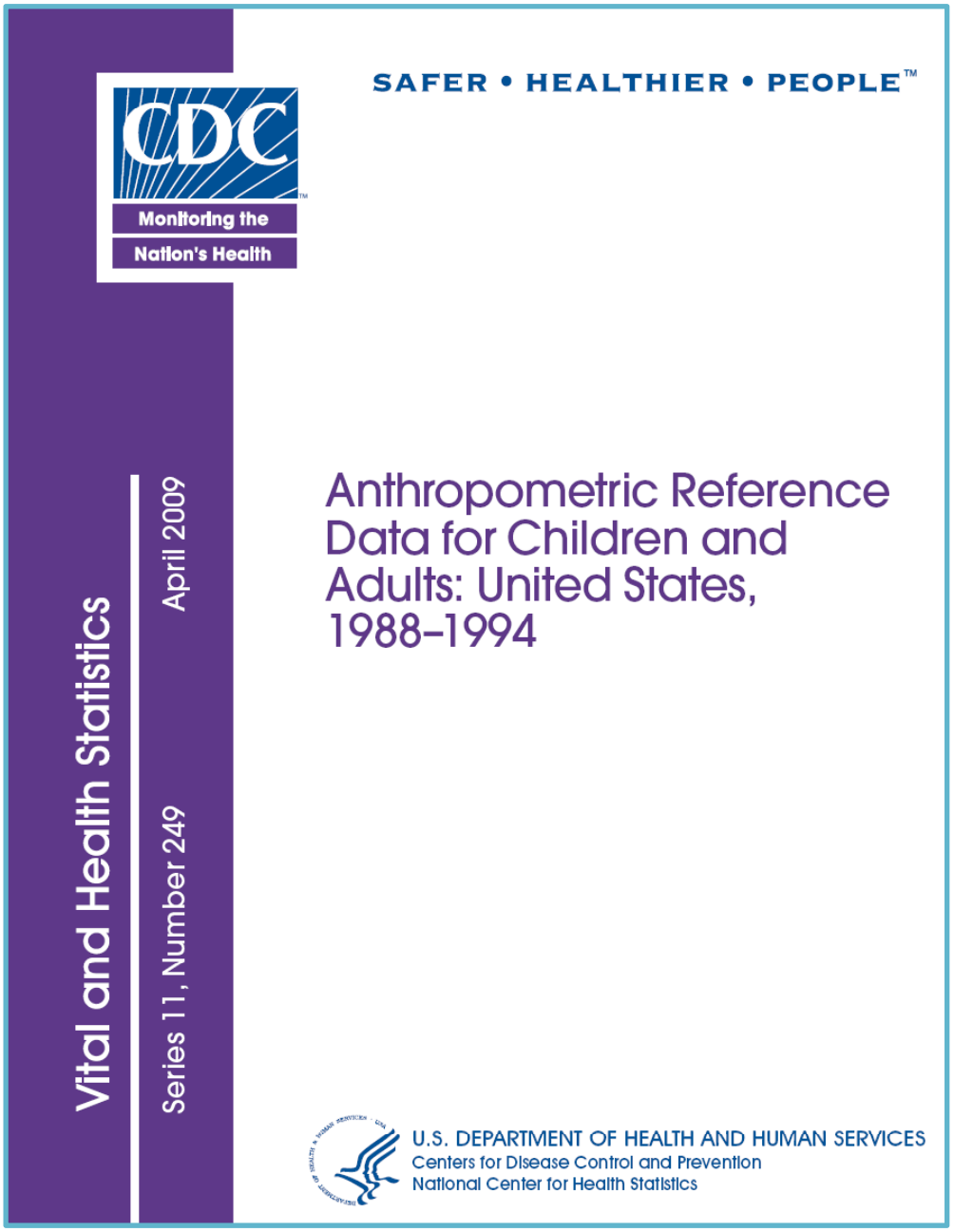




IMC PARA LA EDAD

http://www.cdc.gov/growthcharts

Kuczmarski *et al*. 2000 CDC (Centers for Disease Control and Prevention) growth charts for the United States: methods and development. Vital Health Stat 11 2002;246:1-190.

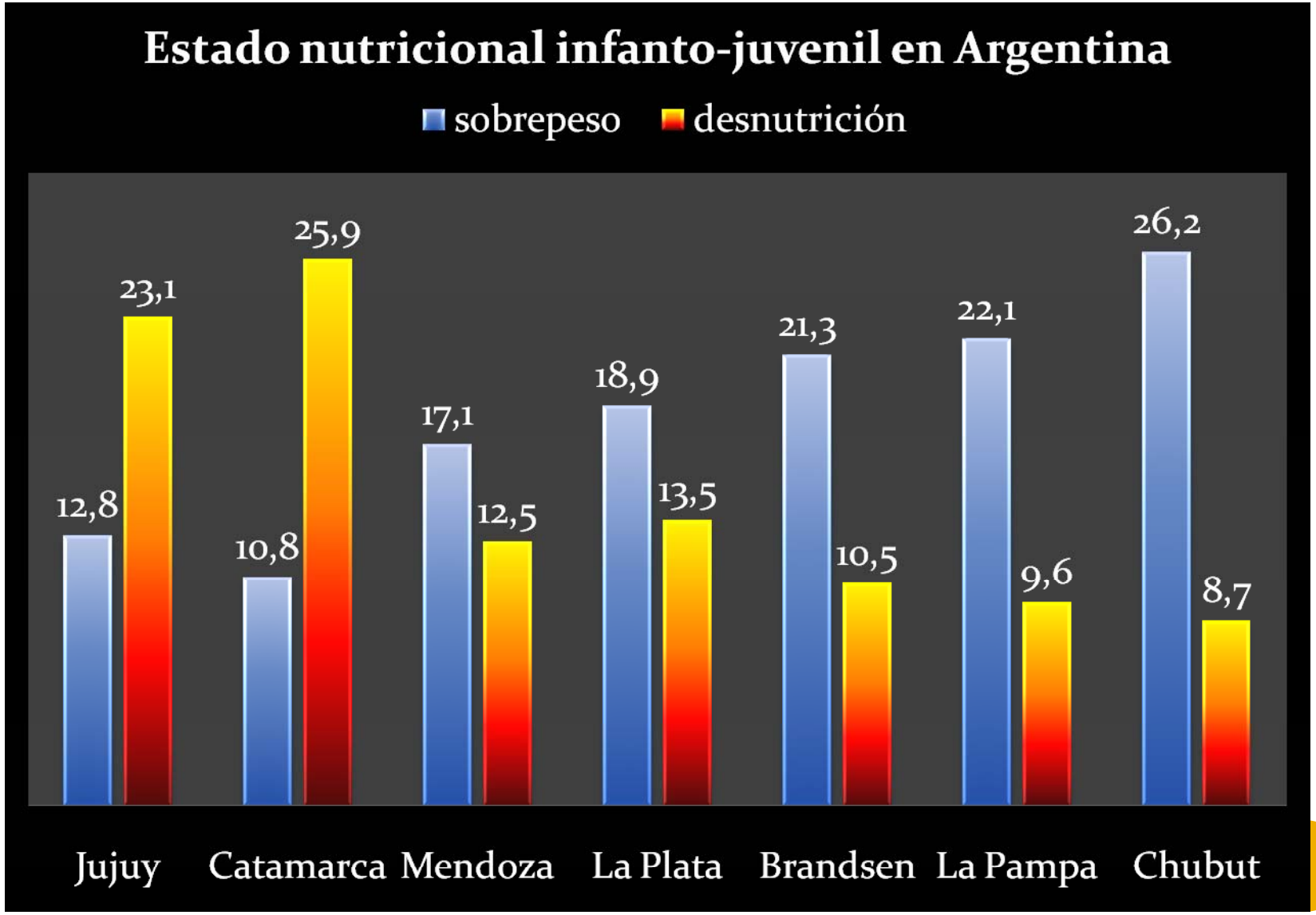


Third National Health and Nutrition Examination Survey (NHANES III)

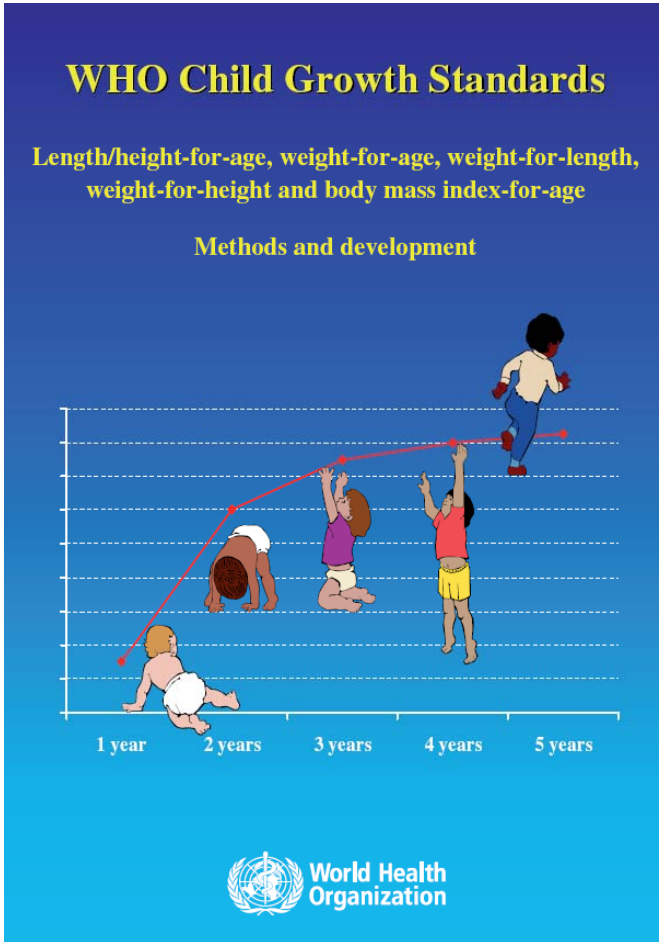
Estado nutricional infanto-juvenil en Argentina: variación regional

N= 15.011 escolares entre 5 y 18 años

E. E. **Oyhenart**, S. L. Dahinten, J. A. Alba, E. L. Alfaro, I. F. Bejarano, G. E. Cabrera, M. F. Cesani, J. E. Dipierri, L. M. Forte, D. B. Lomaglio, M. A. Luis, M. D. Marrodán, S. Moreno Romero, A. B. Orden, F. A. Quintero, M. L. Sicre, M. F. Torres, J. A. Verón y J. R. Zavatti. Revista Argentina de Antropología Biológica 10 (1), 1-62 (**2008).** ISSN 1514-7991. www.epinut.ucm.es


Estado nutricional infanto-juvenil en Argentina
sobrepeso
desnutrición
12,8
23,1
10,8
25,9
17,1
12,5
18,9
13,5
21,3
10,5
22,1
9,6
26,2
8,7
Jujuy
Catamarca
Mendoza
La Plata
Brandsen
La Pampa
Chubut

MULTICENTRE GROWTH REFERENCE STUDY (MGRS)



WHO Multicentre Growth Reference Study Group. Child Growth Standards based on lenght, heigth, weight and age. Acta Paediatr. Suppl, 2006; 450:76-85

WHO Multicentre Growth Reference Study Group. Child Growth Standards: length/height-for-age, weight-for-age, weight-for-length, weight-for-age and body mass index-for-age: methods and development. Geneva:World Health Organization, 2006; pp 312.

http://www.who.int/childgrowth/standards/technical_report/en/

Países e investigadores participantes

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Ghana: Anna Lartey, William B. Owusu, Isabella Sagoe-Moses, Veronica Gomez, Charles SagoeMoses (Department of Nutrition and Food Science, University of Ghana; and Ghana Health Service).

India: Nita Bhandari, Maharaj K. Bhan, Sunita Taneja, Temsunaro Rongsen, Jyotsna Chetia, Pooja Sharma, Rajiv Bahl (All India Institute of Medical Sciences).

Noruega Gunn-Elin Aa. Bjoerneboe, Anne Baerug, Elisabeth Tufte, Kaare R. Norum, Karin Rudvin, Hilde Nysaether (Directorate of Health and Social Affairs; National Breastfeeding Centre, Rikshospitalet University Hospital; and Institute for Nutrition Research, University of Oslo).

Oman: Ali Jaffer Mohamed, Deena Alasfoor, Nitya S. Prakash, Ruth M. Mabry, Hanadi Jamaan Al Rajab, Sahar Abdou Helmi (Ministry of Health).

USA: Kathryn G. Dewey, Laurie A. Nommsen-Rivers, Roberta J. Cohen, M. Jane Heinig (University of California, Davis).

Coordinadores: Mercedes de Onis, Adelheid Onyango, Elaine Borghi, Amani Siyam, Alain Pinol (Department of Nutrition for Health and Development, World Health Organization).

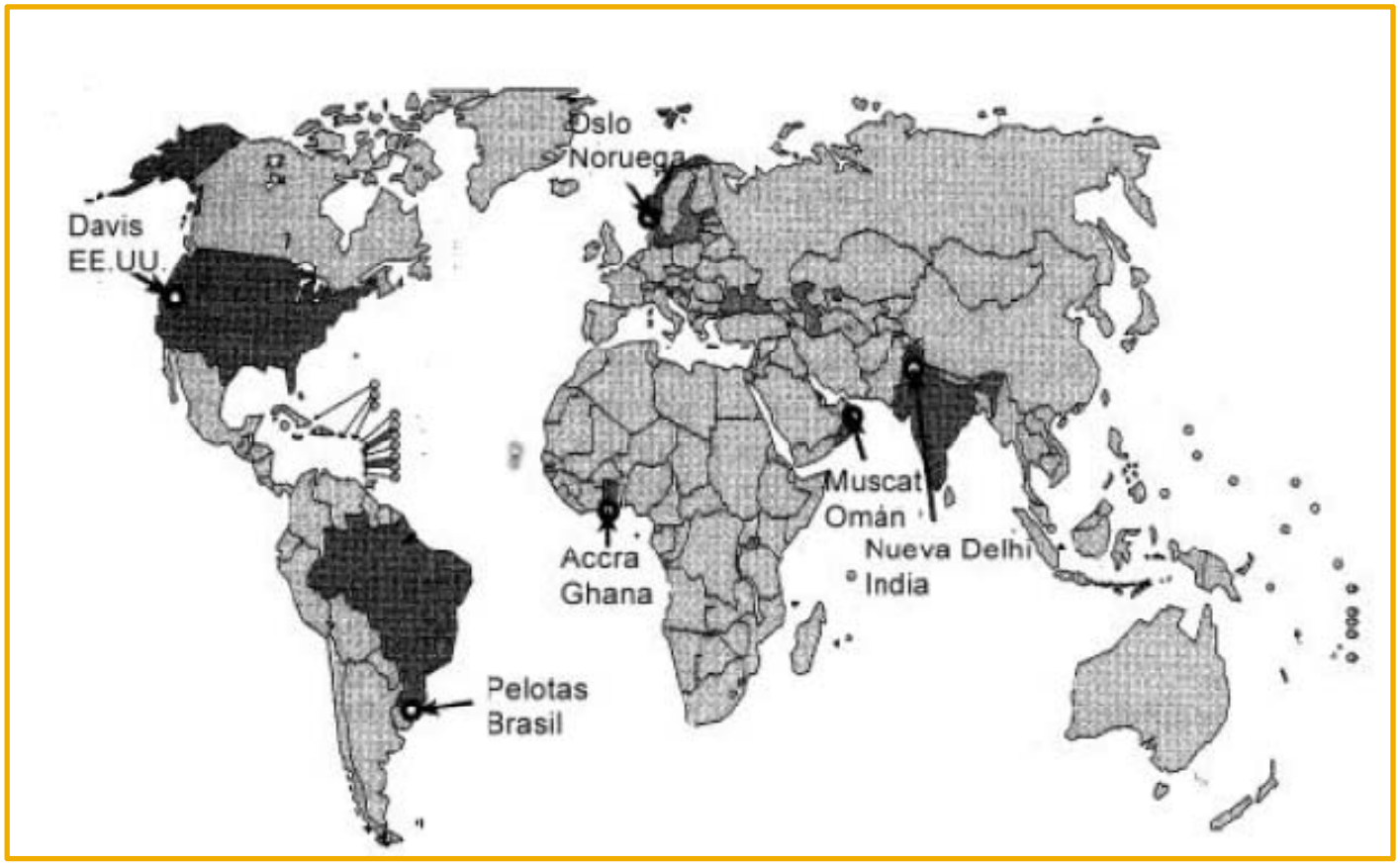
CARACTERÍSTICAS DEL MGRS

- **Mixto**: muestra longitudinal (N= 1737) de 0 a 24 meses; muestra transversal (N= 6669) de 17 a 71 meses. Total de 26985 observaciones efectuadas entre 1997 y 2003

- **Origen**: Davis,(California,USA), Muscat (Omán), Oslo (Noruega), Pelotas (Brasil), Accra (Ghana), Sur de Delhi (India)

- **Datos**: Antropometría, tipo de alimentación, factores perinatales, desarrollo motor, morbilidad infantil, características demográficas y socioambientales.

Mapa del Estudio Multi-céntrico sobre las Referencias de Crecimiento de la OMS



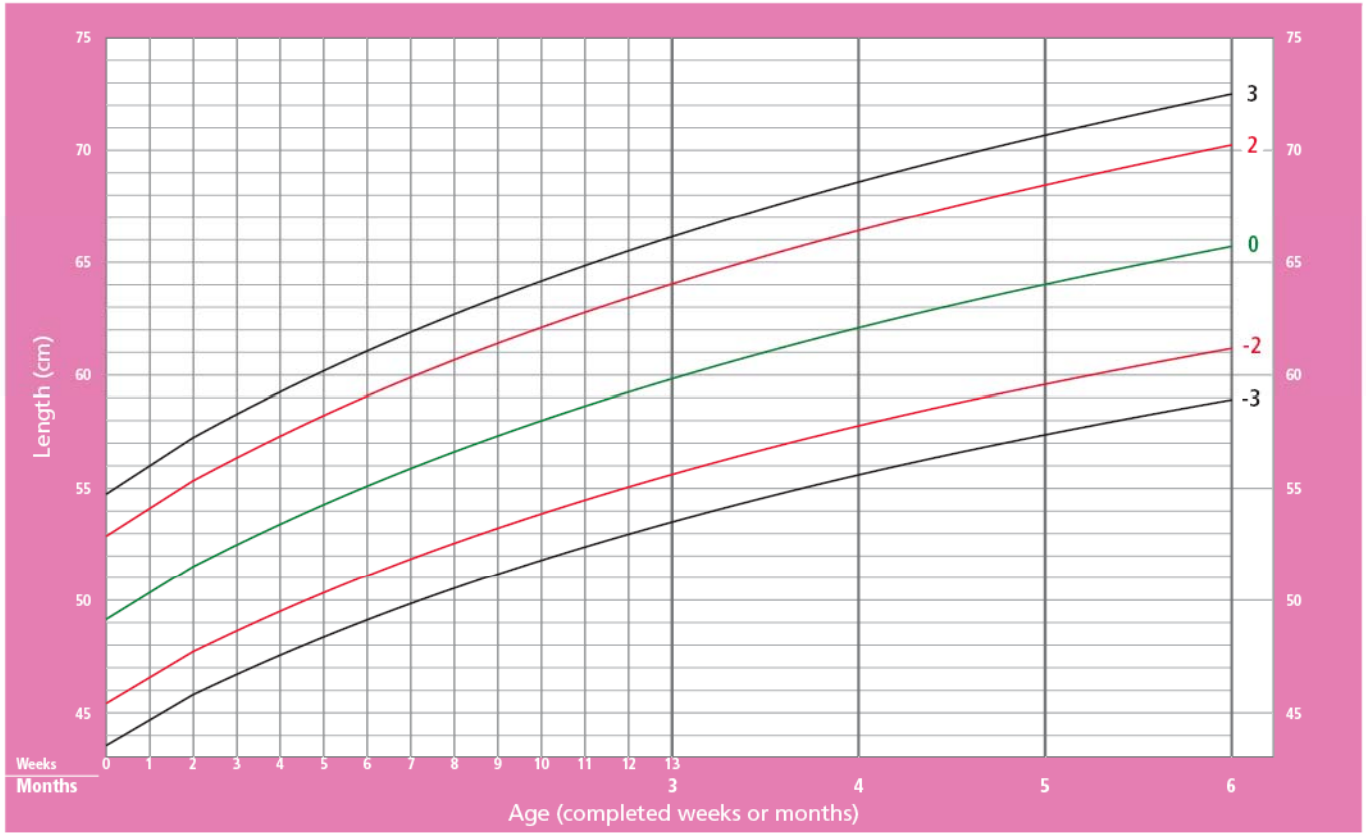
METODOLOGÍA MGRS

- Niños sanos
- Familias “clase media”
- Partos simples
- Madres no fumadoras
- Lactancia materna durante al menos 4 meses
- Introducción de otros alimentos a los 6 meses
- Ajuste LMS

Length-for-age GIRLS

Birth to 6 months (z-scores)

World Health Organization

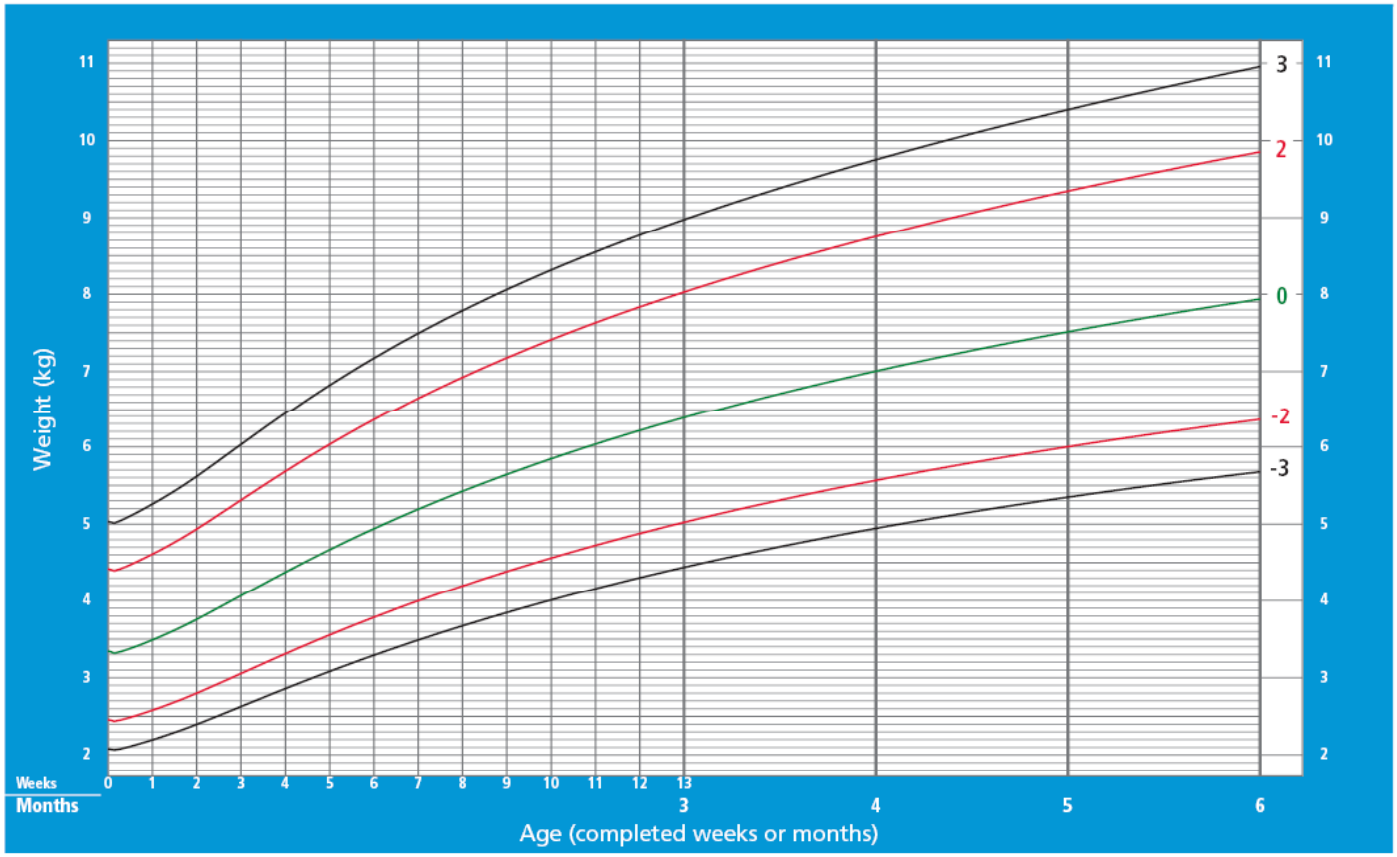


WHO Child Growth Standards

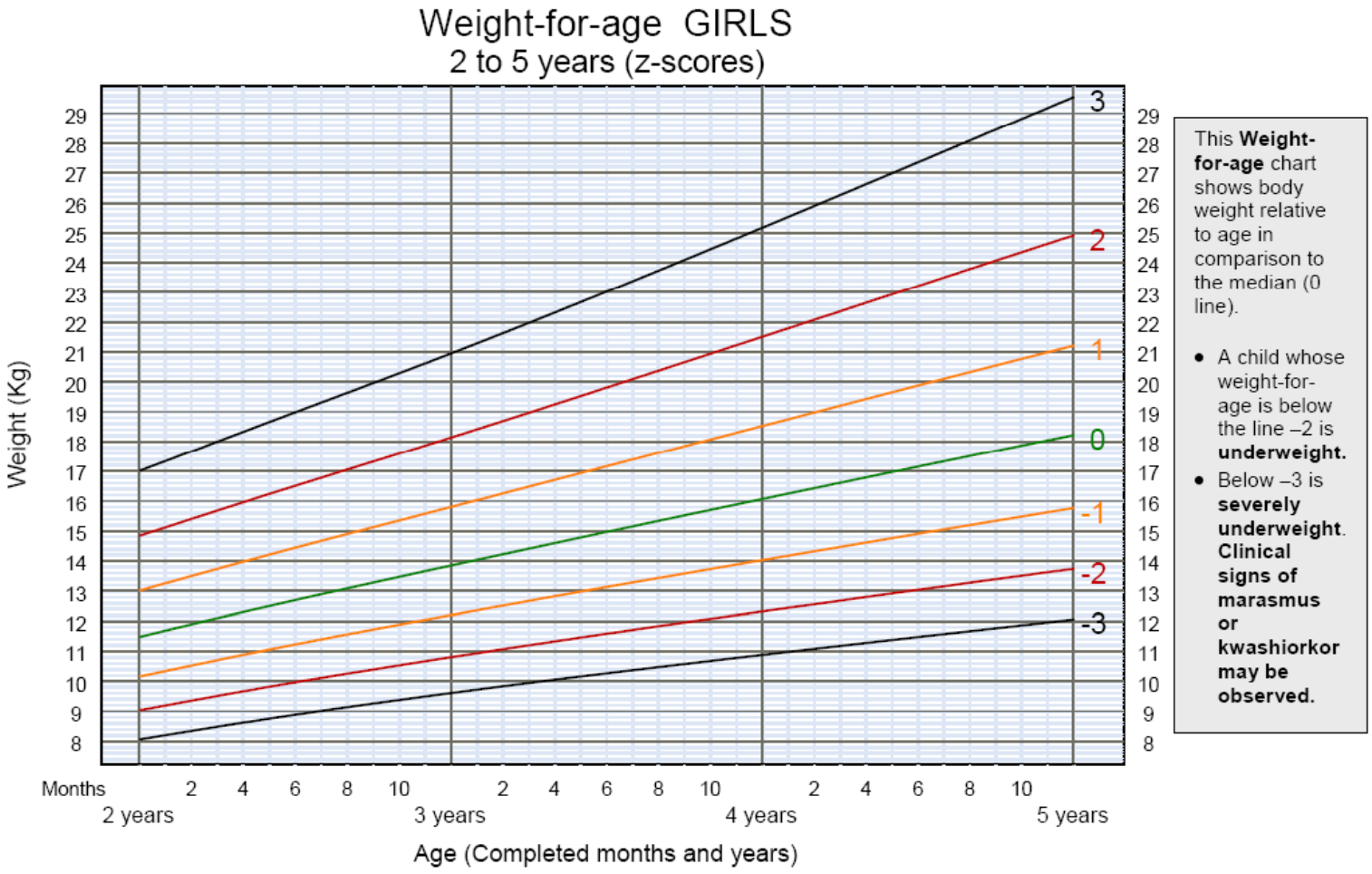
Weight-for-age BOYS

Birth to 6 months (z-scores)

World Health Organization



WHO Child Growth Standards



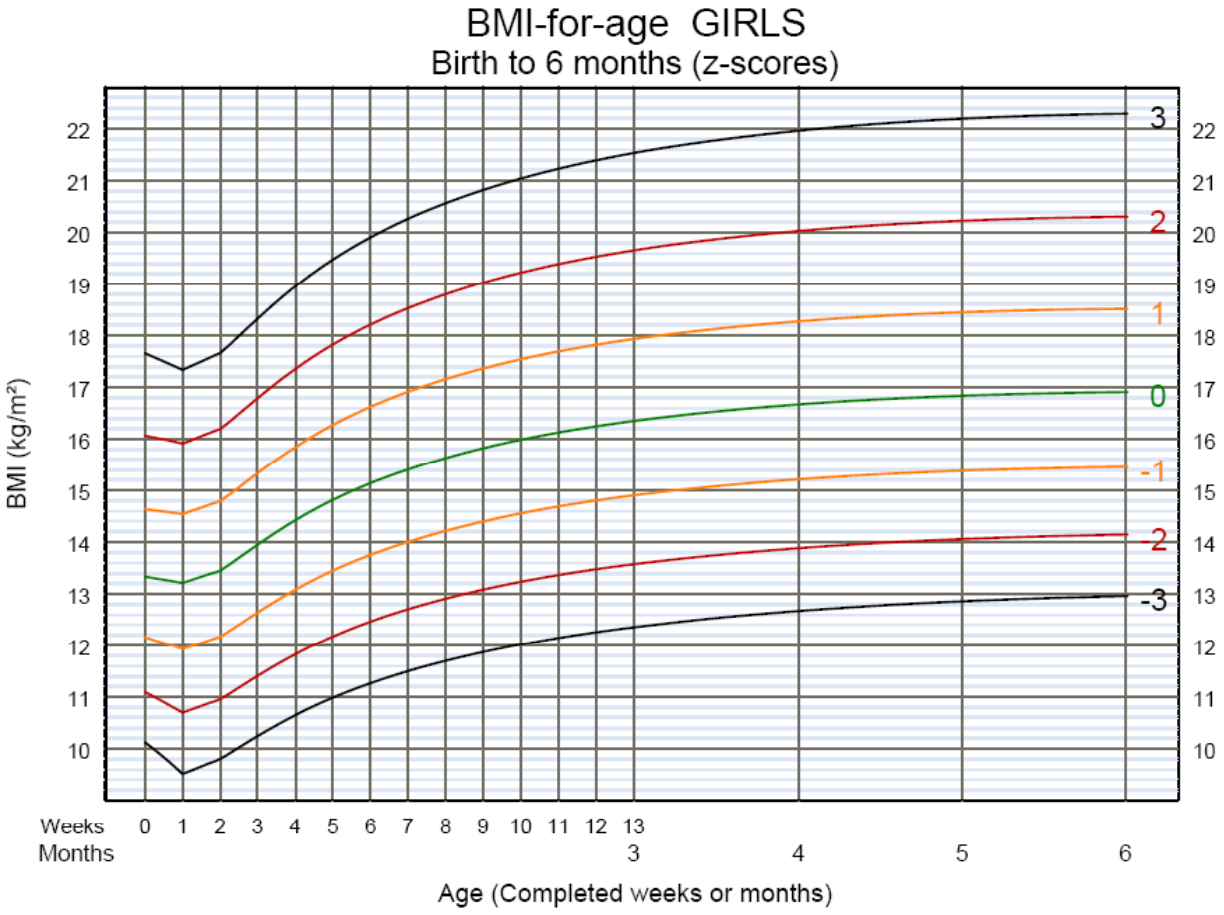
This **Weight-for-age** chart shows body weight relative to age in comparison to the median (0 line).

- A child whose weight-for-age is below the line –2 is **underweight.**
- Below –3 is **severely underweight. Clinical signs of marasmus or kwashiorkor may be observed.**

This **Weight-for-height** chart shows body weight relative to height in comparison to the median (0 line).

- A child whose weight-for-height is above the line 3 is **obese**.
- Above 2 is **overweight**.
- Above 1 shows possible **risk of overweight**.
- Below the line –2 is **wasted.**
- Below –3 is **severely wasted. Refer for urgent specialized care.**

2 to 5 years



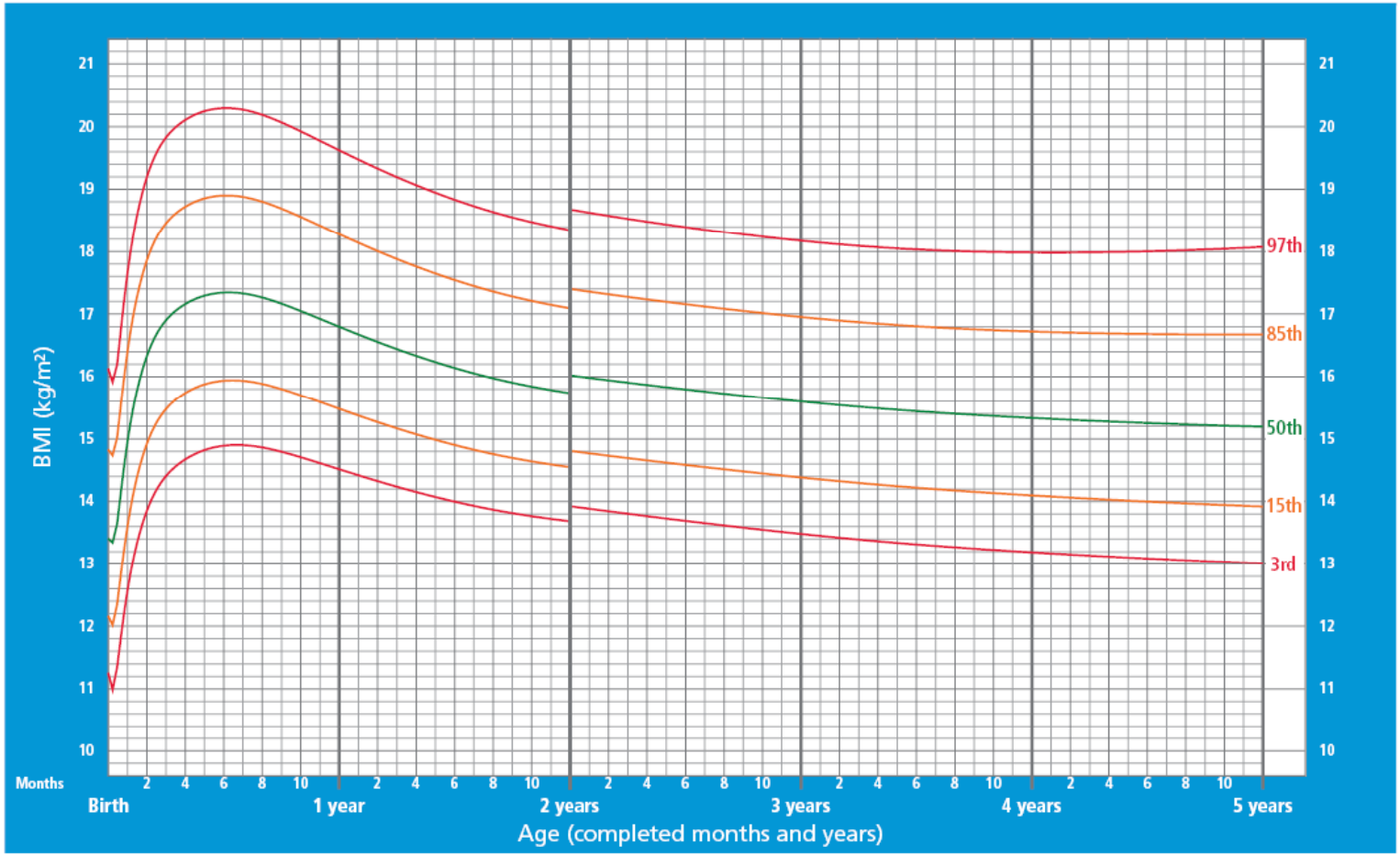
This **BMI-for-age** chart shows Body Mass Index (BMI, a ratio of body weight to length) for the child's age in comparison to the median (0 line). BMI-for-age is especially useful for screening for overweight.

- A child whose BMI-for-age is above the line 3 is **obese**.
- Above 2 is **overweight**.
- Above 1 shows possible **risk of overweight**.

BMI-for-age BOYS

Birth to 5 years (percentiles)

World Health Organization



WHO Child Growth Standards

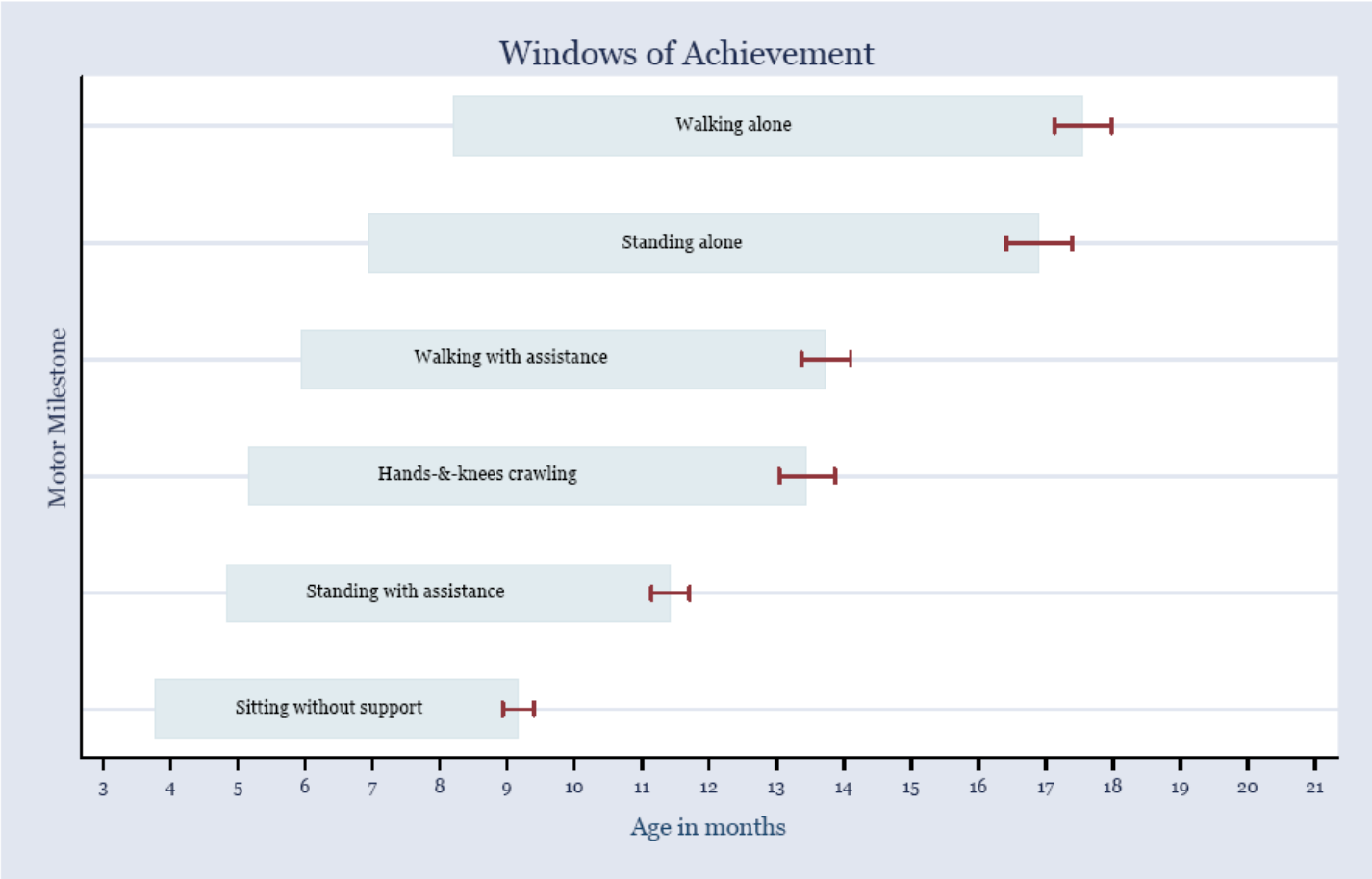
Weight-for-length GIRLS

Birth to 2 years (z-scores)

World Health Organization

				Z-scores (weight in kg)						
Length (cm)	L	M	S	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
45.0	-0.3833	2.4607	0.09029	1.9	2.1	2.3	2.5	2.7	3.0	3.3
45.5	-0.3833	2.5457	0.09033	2.0	2.1	2.3	2.5	2.8	3.1	3.4
46.0	-0.3833	2.6306	0.09037	2.0	2.2	2.4	2.6	2.9	3.2	3.5
46.5	-0.3833	2.7155	0.09040	2.1	2.3	2.5	2.7	3.0	3.3	3.6
47.0	-0.3833	2.8007	0.09044	2.2	2.4	2.6	2.8	3.1	3.4	3.7
47.5	-0.3833	2.8867	0.09048	2.2	2.4	2.6	2.9	3.2	3.5	3.8
48.0	-0.3833	2.9741	0.09052	2.3	2.5	2.7	3.0	3.3	3.6	4.0
48.5	-0.3833	3.0636	0.09056	2.4	2.6	2.8	3.1	3.4	3.7	4.1
49.0	-0.3833	3.1560	0.09060	2.4	2.6	2.9	3.2	3.5	3.8	4.2
49.5	-0.3833	3.2520	0.09064	2.5	2.7	3.0	3.3	3.6	3.9	4.3
50.0	-0.3833	3.3518	0.09068	2.6	2.8	3.1	3.4	3.7	4.0	4.5
50.5	-0.3833	3.4557	0.09072	2.7	2.9	3.2	3.5	3.8	4.2	4.6
51.0	-0.3833	3.5636	0.09076	2.8	3.0	3.3	3.6	3.9	4.3	4.8
51.5	-0.3833	3.6754	0.09080	2.8	3.1	3.4	3.7	4.0	4.4	4.9
52.0	-0.3833	3.7911	0.09085	2.9	3.2	3.5	3.8	4.2	4.6	5.1
52.5	-0.3833	3.9105	0.09089	3.0	3.3	3.6	3.9	4.3	4.7	5.2
53.0	-0.3833	4.0332	0.09093	3.1	3.4	3.7	4.0	4.4	4.9	5.4
53.5	-0.3833	4.1591	0.09098	3.2	3.5	3.8	4.2	4.6	5.0	5.5
54.0	-0.3833	4.2875	0.09102	3.3	3.6	3.9	4.3	4.7	5.2	5.7
54.5	-0.3833	4.4179	0.09106	3.4	3.7	4.0	4.4	4.8	5.3	5.9
55.0	-0.3833	4.5498	0.09110	3.5	3.8	4.2	4.5	5.0	5.5	6.1
55.5	-0.3833	4.6827	0.09114	3.6	3.9	4.3	4.7	5.1	5.7	6.3
56.0	-0.3833	4.8162	0.09118	3.7	4.0	4.4	4.8	5.3	5.8	6.4
56.5	-0.3833	4.9500	0.09121	3.8	4.1	4.5	5.0	5.4	6.0	6.6

Gross Motor Milestones



These windows show when the reference population for the WHO Child Growth Standards achieved these motor milestones.

CRITERIOS DIAGNÓSTICOS DE LA DESNUTRICIÓN

- **baja estatura para la edad** (*stunting*) → crónica
- **bajo peso para la talla, IMC** (*wasting*)→ aguda
- **bajo peso para la edad** (*underweight*) → buen predictor de la mortalidad

CLASIFICACIÓN DE LA CONDICIÓN NUTRICIONAL

Z	< 3DS Severo	< 2DS Moderado	< 1DS Riesgo	>1DS Riesgo	>2DS Moderado	>3DS Severo
Peso/edad	Bajo peso (*underweight*)					
Talla/edad	Retardo en el crecimiento (*stunting*)					
Peso/talla, BMI	Emaciación (*wasting*)				sobrepeso	obesidad

$$Z = \frac{\text{valor observado - mediana de referencia}}{\text{desviación estándar}}$$

WHO Growth reference data for 5-19 years

Indicators

Height-for-age

Weight-for-age

BMI-for-age

Development of a WHO growth reference for school-aged children and adolescents

Mercedes de Onis,[a] Adelheid W Onyango,[a] Elaine Borghi,[a] Amani Siyam,[a] Chizuru Nishida[a] & Jonathan Siekmann[a]

Resumen

Elaboración de valores de referencia de la OMS para el crecimiento de escolares y adolescentes

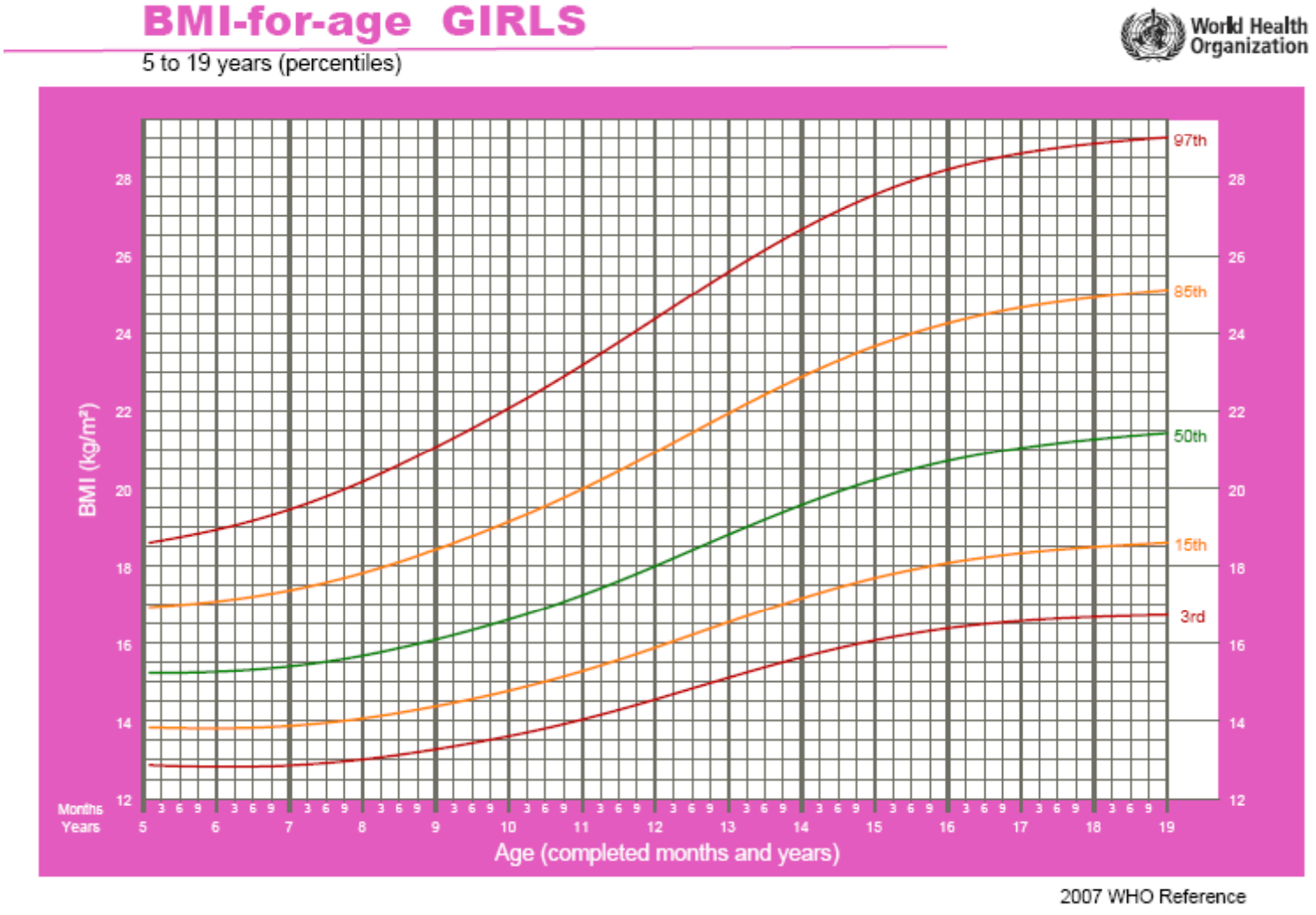
Objetivo Elaborar curvas de crecimiento para escolares y adolescentes que concuerden con los Patrones de Crecimiento Infantil de la OMS para preescolares y los valores de corte del índice de masa corporal (IMC) para adultos.

Métodos Se fusionaron los datos del patrón internacional de crecimiento del *National Center for Health Statistics*/OMS de 1977 (1–24 años) con los datos de la muestra transversal de los patrones de crecimiento para menores de 5 años (18–71 meses), con el fin de suavizar la transición entre ambas muestras. A esta muestra combinada se le aplicaron los métodos estadísticos de vanguardia utilizados en la elaboración de los Patrones de Crecimiento Infantil de la OMS (0–5 años), es decir, la transformación de potencia de Box-Cox exponencial, junto con instrumentos diagnósticos apropiados para seleccionar los mejores modelos.

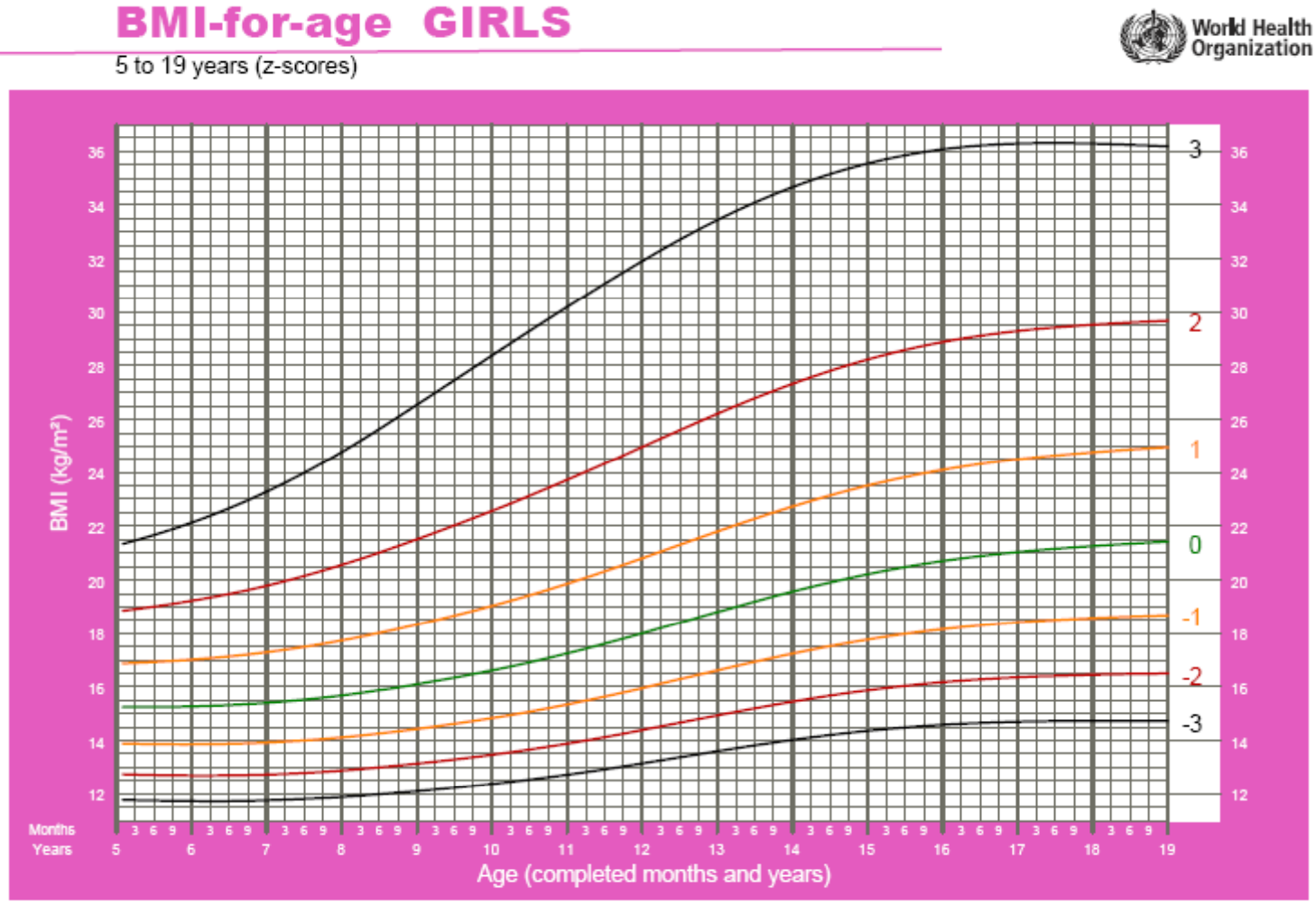
Resultados La fusión de los dos conjuntos de datos proporcionó una transición suave de la talla para la edad, el peso para la edad y el IMC para la edad a los 5 años. Con respecto al IMC para la edad, la magnitud de la diferencia entre ambas curvas a los 5 años fue generalmente de 0,0 kg/m² a 0,1 kg/m² en todos los centiles. A los 19 años, los nuevos valores del IMC para +1 desviación estándar (DE) fueron de 25,4 kg/m² para el sexo masculino y de 25,0 kg/m² para el sexo femenino, es decir, equivalentes al valor de corte del sobrepeso en adultos (≥ 25,0 kg/m²). A su vez, el valor correspondiente a +2 DE (29,7 kg/m² en ambos sexos) fue muy similar al valor de corte de la obesidad (≥ 30,0 kg/m²).

Conclusión Las nuevas curvas se ajustan bien a los Patrones de Crecimiento Infantil de la OMS a los 5 años y a los valores de corte del sobrepeso y de la obesidad recomendados para los adultos a los 19 años, colman la laguna existente en las curvas de crecimiento y constituyen una referencia apropiada para el grupo de 5 a 19 años de edad.

Población estadounidense de los años 70



Distribución percentilar



Desviación estándar

Simplified field tables

BMI-for-age GIRLS
5 to 19 years (percentiles)

World Health Organization

Year: Month	Months	3rd	15th	Median	85th	97th
5: 1	61	12.9	13.8	15.2	16.9	18.8
5: 2	62	12.9	13.8	15.2	16.9	18.8
5: 3	63	12.9	13.8	15.2	16.9	18.8
5: 4	64	12.9	13.8	15.2	17.0	18.8
5: 5	65	12.9	13.8	15.2	17.0	18.8
5: 6	66	12.8	13.8	15.2	17.0	18.8
5: 7	67	12.8	13.8	15.2	17.0	18.8
5: 8	68	12.8	13.8	15.3	17.0	18.8
5: 9	69	12.8	13.8	15.3	17.0	18.8
5: 10	70	12.8	13.8	15.3	17.0	18.9
5: 11	71	12.8	13.8	15.3	17.1	18.9
6: 0	72	12.8	13.8	15.3	17.1	18.9
6: 1	73	12.8	13.8	15.3	17.1	19.0
6: 2	74	12.8	13.8	15.3	17.1	19.0
6: 3	75	12.8	13.8	15.3	17.1	19.0
6: 4	76	12.8	13.8	15.3	17.2	19.1
6: 5	77	12.8	13.8	15.3	17.2	19.1
6: 6	78	12.8	13.8	15.3	17.2	19.2
6: 7	79	12.8	13.8	15.3	17.2	19.2
6: 8	80	12.8	13.8	15.3	17.3	19.3
6: 9	81	12.8	13.9	15.4	17.3	19.3
6: 10	82	12.9	13.9	15.4	17.3	19.3
6: 11	83	12.9	13.9	15.4	17.3	19.4
7: 0	84	12.9	13.9	15.4	17.4	19.4
7: 1	85	12.9	13.9	15.4	17.4	19.5
7: 2	86	12.9	13.9	15.4	17.4	19.5
7: 3	87	12.9	13.9	15.5	17.5	19.6
7: 4	88	12.9	13.9	15.5	17.5	19.7
7: 5	89	12.9	13.9	15.5	17.5	19.7
7: 6	90	12.9	14.0	15.5	17.6	19.8

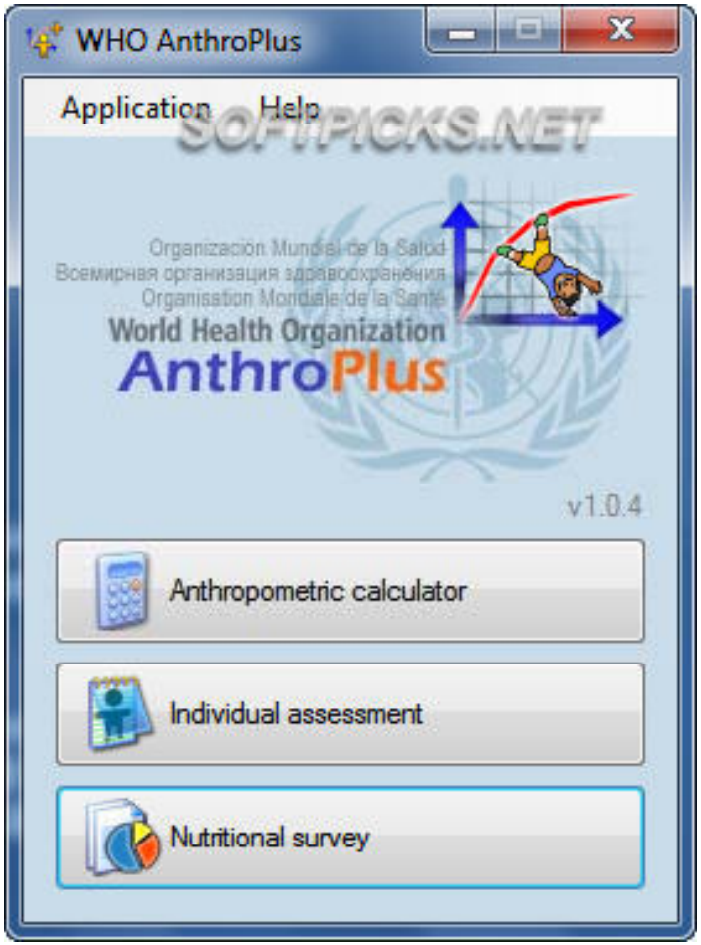
Simplified field tables

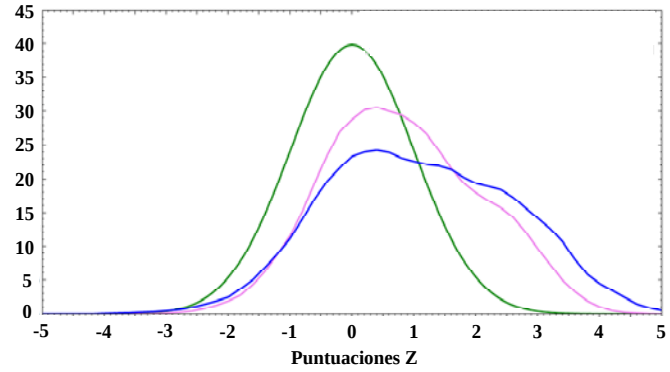
BMI-for-age GIRLS
5 to 19 years (z-scores)

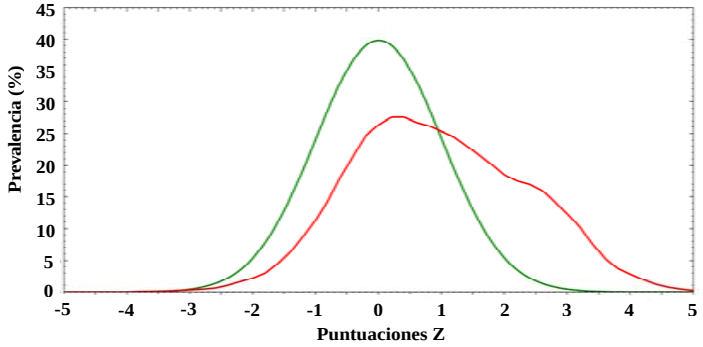
World Health Organization

Year: Month	Months	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
5: 1	61	11.8	12.7	13.9	15.2	16.9	18.9	21.3
5: 2	62	11.8	12.7	13.9	15.2	16.9	18.9	21.4
5: 3	63	11.8	12.7	13.9	15.2	16.9	18.9	21.5
5: 4	64	11.8	12.7	13.9	15.2	16.9	18.9	21.5
5: 5	65	11.7	12.7	13.9	15.2	16.9	19.0	21.6
5: 6	66	11.7	12.7	13.9	15.2	16.9	19.0	21.7
5: 7	67	11.7	12.7	13.9	15.2	16.9	19.0	21.7
5: 8	68	11.7	12.7	13.9	15.3	17.0	19.1	21.8
5: 9	69	11.7	12.7	13.9	15.3	17.0	19.1	21.9
5: 10	70	11.7	12.7	13.9	15.3	17.0	19.1	22.0
5: 11	71	11.7	12.7	13.9	15.3	17.0	19.2	22.1
6: 0	72	11.7	12.7	13.9	15.3	17.0	19.2	22.1
6: 1	73	11.7	12.7	13.9	15.3	17.0	19.3	22.2
6: 2	74	11.7	12.7	13.9	15.3	17.0	19.3	22.3
6: 3	75	11.7	12.7	13.9	15.3	17.1	19.3	22.4
6: 4	76	11.7	12.7	13.9	15.3	17.1	19.4	22.5
6: 5	77	11.7	12.7	13.9	15.3	17.1	19.4	22.6
6: 6	78	11.7	12.7	13.9	15.3	17.1	19.5	22.7
6: 7	79	11.7	12.7	13.9	15.3	17.2	19.5	22.8
6: 8	80	11.7	12.7	13.9	15.3	17.2	19.6	22.9
6: 9	81	11.7	12.7	13.9	15.4	17.2	19.6	23.0
6: 10	82	11.7	12.7	13.9	15.4	17.2	19.7	23.1
6: 11	83	11.7	12.7	13.9	15.4	17.3	19.7	23.2
7: 0	84	11.8	12.7	13.9	15.4	17.3	19.8	23.3
7: 1	85	11.8	12.7	13.9	15.4	17.3	19.8	23.4
7: 2	86	11.8	12.8	14.0	15.4	17.4	19.9	23.5
7: 3	87	11.8	12.8	14.0	15.5	17.4	20.0	23.6
7: 4	88	11.8	12.8	14.0	15.5	17.4	20.0	23.7
7: 5	89	11.8	12.8	14.0	15.5	17.5	20.1	23.9
7: 6	90	11.8	12.8	14.0	15.5	17.5	20.1	24.0

Tablas simplificadas


WHO AnthroPlus
Application
Help
SOFTPICKS.NET
Organización Mundial de la Salud
Всемирная организация здравоохранения
Organisation Mondiale de la Santé
World Health Organization
AnthroPlus
v1.0.4
Anthropometric calculator
Individual assessment
Nutritional survey


45
40
35
30
25
20
15
10
5
0
-5 -4 -3 -2 -1 0 1 2 3 4 5
Puntuaciones Z


Prevalencia (%)
45
40
35
30
25
20
15
10
5
0
-5 -4 -3 -2 -1 0 1 2 3 4 5
Puntuaciones Z

REFERENCIAS INTERNACIONALES IOTF (COLE *ET AL.* 2000; 2007)

BMJ

Establishing a standard definition for child overweight and obesity worldwide: international survey

Tim J Cole, Mary C Bellizzi, Katherine M Flegal and William H Dietz

BMJ 2000;320;1240-
doi:10.1136/bmj.320.7244.1240

BMJ

RESEARCH

Body mass index cut offs to define thinness in children and adolescents: international survey

Tim J Cole, professor of medical statistics,[1] Katherine M Flegal, senior research scientist,[2] Dasha Nicholls, consultant child and adolescent psychiatrist,[3] Alan A Jackson, professor of human nutrition[4]

N= 97876 varones y 94851 mujeres
edad= de 0 a 25 años

Table 1 Six nationally representative datasets of body mass indices in childhood

			Males		Females	
Country	Year	Description	Age range	Sample size	Age range	Sample size
Brazil	1989	Second national anthropometric survey	2-25	15 947	2-25	15 859
Great Britain	1978-93	Data pooled from five national growth surveys	0-23	16 491	0-23	15 731
Hong Kong	1993	National growth survey	0-18	11 797	0-18	12 168
Netherlands	1980	Third nationwide growth survey	0-20	21 521	0-20	20 245
Singapore	1993	School health service survey	6-19	17 356	6-20	16 616
United States	1963-80	Data pooled from four national surveys	2-20	14 764	2-20	14 232

Antigüedad de los datos:1963 a 1993

	Boys			Girls		
Age (years)	16	17	18.5	16	17	18.5
2.0	13.37	14.12	15.14	13.24	13.90	14.83
2.5	13.22	13.94	14.92	13.10	13.74	14.63
3.0	13.09	13.79	14.74	12.98	13.60	14.47
3.5	12.97	13.64	14.57	12.86	13.47	14.32
4.0	12.86	13.52	14.43	12.73	13.34	14.19
4.5	12.76	13.41	14.31	12.61	13.21	14.06
5.0	12.66	13.31	14.21	12.50	13.09	13.94
5.5	12.58	13.22	14.13	12.40	12.99	13.86
6.0	12.50	13.15	14.07	12.32	12.93	13.82
6.5	12.45	13.10	14.04	12.28	12.90	13.82
7.0	12.42	13.08	14.04	12.26	12.91	13.86
7.5	12.41	13.09	14.08	12.27	12.95	13.93
8.0	12.42	13.11	14.15	12.31	13.00	14.02
8.5	12.45	13.17	14.24	12.37	13.08	14.14
9.0	12.50	13.24	14.35	12.44	13.18	14.28
9.5	12.57	13.34	14.49	12.53	13.29	14.43
10.0	12.66	13.45	14.64	12.64	13.43	14.61
10.5	12.77	13.58	14.80	12.78	13.59	14.81
11.0	12.89	13.72	14.97	12.95	13.79	15.05
11.5	13.03	13.87	15.16	13.15	14.01	15.32
12.0	13.18	14.05	15.35	13.39	14.28	15.62
12.5	13.37	14.25	15.58	13.65	14.56	15.93
13.0	13.59	14.48	15.84	13.92	14.85	16.26
13.5	13.83	14.74	16.12	14.20	15.14	16.57
14.0	14.09	15.01	16.41	14.48	15.43	16.88
14.5	14.35	15.28	16.69	14.75	15.72	17.18
15.0	14.60	15.55	16.98	15.01	15.98	17.45
15.5	14.86	15.82	17.26	15.25	16.22	17.69
16.0	15.12	16.08	17.54	15.46	16.44	17.91
16.5	15.36	16.34	17.80	15.63	16.62	18.09
17.0	15.60	16.58	18.05	15.78	16.77	18.25
17.5	15.81	16.80	18.28	15.90	16.89	18.38
18.0	16.00	17.00	18.50	16.00	17.00	18.50

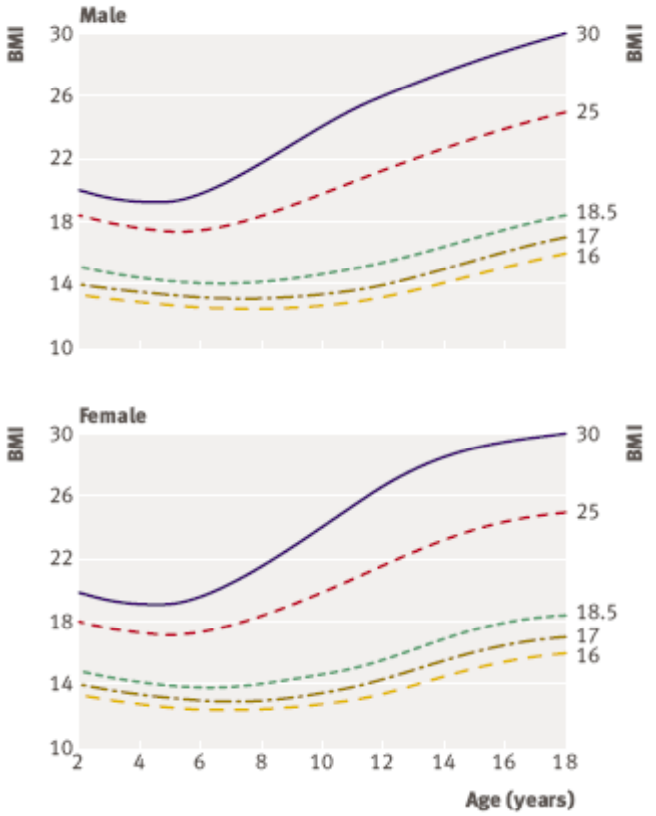


Fig 4 | Cut offs for thinness by age and sex defined to pass through BMI 16, 17, and 18.5 at 18 years, with the international cut offs for overweight and obesity based on BMI 25 and 30[31]

Cole *et al.* BMJ 2007

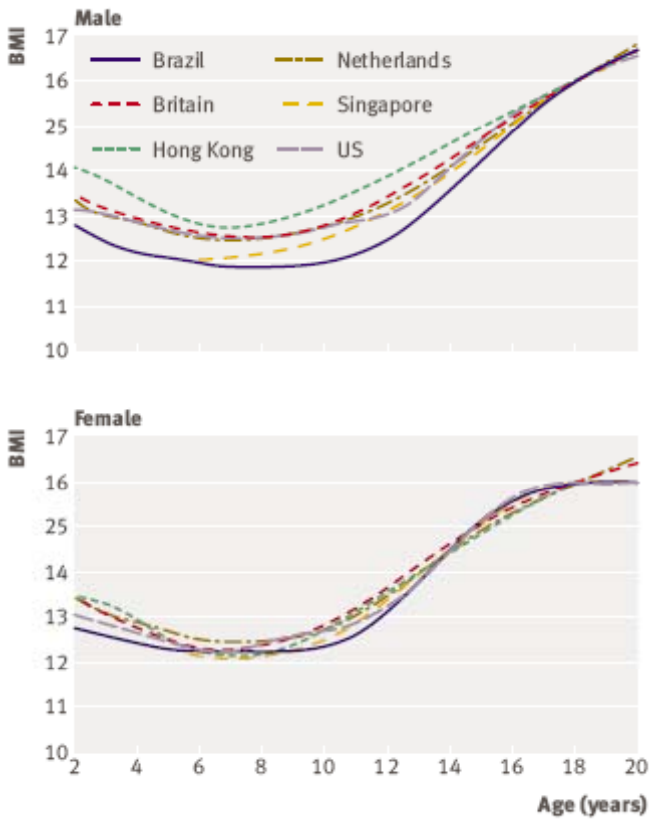


Fig 3| Centiles by age and sex defined to pass through BMI 16 at age 18 years in six datasets

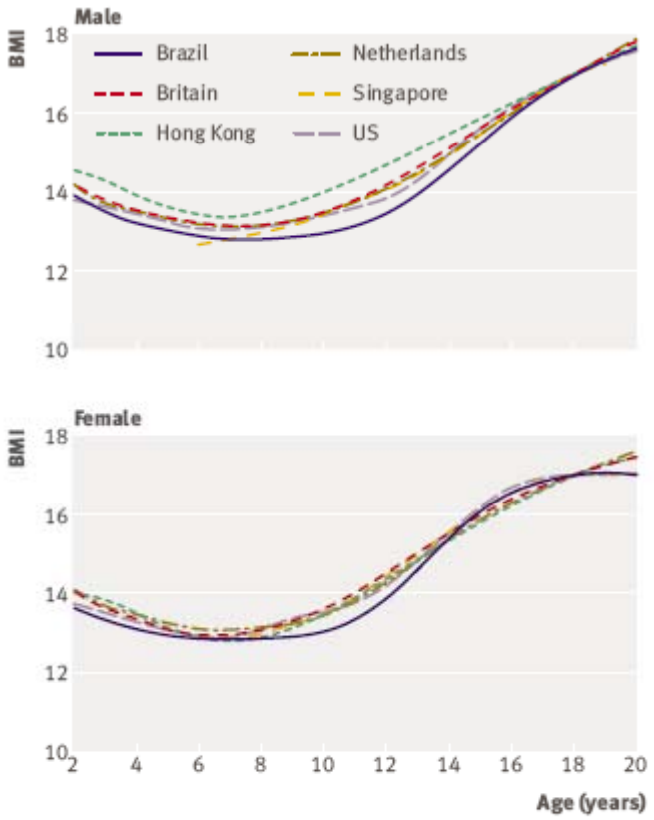


Fig 1| Centiles by age and sex defined to pass through BMI 17 at age 18 years in six datasets

Cole *et al.* BMJ 2007

Public Health Nutrition: 9(7), 942–947 DOI: 10.1017/PHN20062005

Comparison of the World Health Organization (WHO) Child Growth Standards and the National Center for Health Statistics/WHO international growth reference: implications for child health programmes

Mercedes de Onis[1,*], Adelheid W Onyango[1], Elaine Borghi[1], Cutberto Garza[2] and Hong Yang[1], for the WHO Multicentre Growth Reference Study Group†
[1]Department of Nutrition, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland:
[2]Boston College, Chestnut Hill, MA, USA

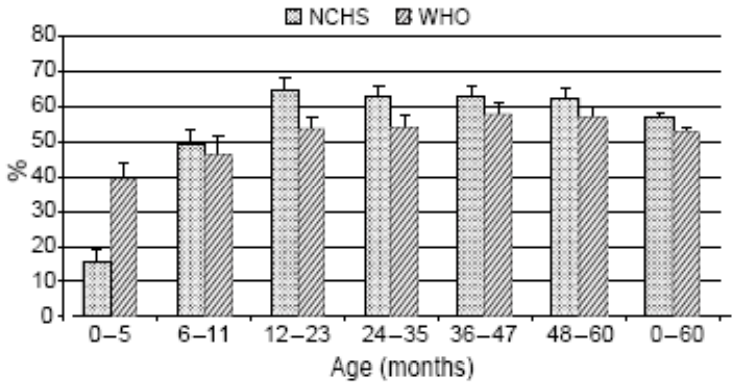


Fig. 2 Prevalence of underweight (below −2 standard deviations from the median for weight-for-age) by age based on the World Health Organization (WHO) standards and the National Center for Health Statistics (NCHS) reference in Bangladesh

WHO diagnostica menos bajo peso (salvo en menores de 5 meses)

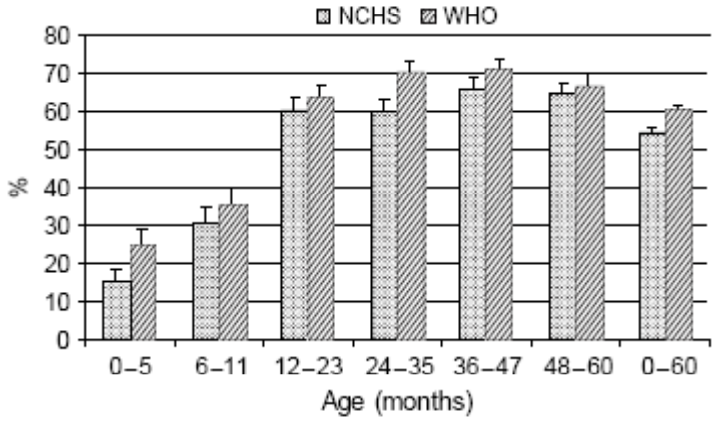


Fig. 3 Prevalence of stunting (below −2 standard deviations from the median for length/height-for-age) by age based on the World Health Organization (WHO) standards and the National Center for Health Statistics (NCHS) reference in Bangladesh

WHO diagnostica mas niños retardo

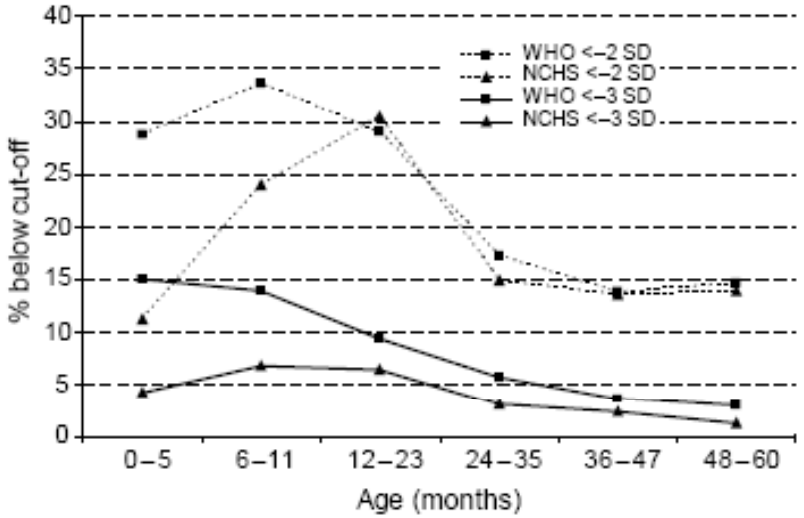


Fig. 4 Prevalence of wasting (below −2 standard deviations (SD) from the median for weight-for-length/height) and severe wasting (below −3SD from the median for weight-for-length/height) by age based on the World Health Organization (WHO) standards and the National Center for Health Statistics (NCHS) reference in Bangladesh

Seal A, Kerac M. Operational implications of using 2006 World Health Organization growth standards in nutrition programmes: secondary data analysis. *BMJ*, 2007, 334:733:705–6.

Myatt M, Duffield A. Weight-for-height and MUAC for estimating the prevalence of acute malnutrition. SCN Cluster meeting background paper. Geneva, 22nd October 2007.

Para el peso para la talla: mediante los estándares de la OMS, se incrementa el número de niños diagnosticados por debajo del -3SD.

Sociedad Española de Dietética y Ciencias de la Alimentación

EPINUT
EPIDEMIOLOGÍA NUTRICIONAL

Muchas gracias por vuestra atención