

Malnutrition between the ages of 6 to 24 months – the role of diet

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Proportion and numbers (x 10⁶) of under-5 children with stunting and severe wasting

	Number of children	% Stunted	Number stunted	% SAM	Number SAM
Africa	141 914	40,1 (36,8–43,4)	56,9 (52,2–61,6)	3,9 (2,2–5,7)	5,6 (3,0–8,0)
East	48 807	50,0 (42,3–57,9)	24,4 (20,7–28,3)	3,6 (1,5–8,4)	1,8 (0,7–4,1)
Central	20,197	41,5 (38,3–44,8)	8,4 (7,7–9,1)	5,0 (2,0–12,0)	1,0 (0,4–2,4)
Northern	22 171	24,5 (17,3–33,9)	5,4 (3,8–7,5)	3,3 (1,2–8,9)	0,7 (0,3–2,0)
Southern	6 075	30,2 (25,4–35,6)	1,8 (1,5–2,2)	2,7 (1,0–6,8)	0,2 (,06–0,4)
Western	44 663	37,7 (33,5–42,1)	16,8 (15,0–18,8)	4,3 (1,8–9,6)	1,9 (0,8–4,3)
Asia	356 879	31,3 (27,5–35,1)	111,6 (98,1–125,1)	3,7 (1,2–6,2)	13,3 (4,4–22,3)
East	95 070	14,5 (13,5–15,5)	13,7 (12,8–14,7)	0,7 (0,3–1,6)	0,7 (0,3–1,6)
Southern	181 481	40,7 (34,2–47,7)	73,8 (62,0–86,5)	5,7 (2,4–12,8)	10,3 (4,4–23,3)
Southeastern	54 970	34,3 (26,5–43,5)	18,9 (14,5–23,9)	3,6 (1,4–8,8)	2,0 (0,8–4,9)
Western	25 358	20,6 (10,0–38,8)	5,2 (2,5–9,8)	1,6 (0,4–5,8)	0,4 (0,1–1,5)
Latin America	56 936	16,1 (9,4–22,8)	9,2 (5,3–13,0)	0,6 (0,2–1,0)	0,3 (0,1–0,6)
Caribbean	3 657	8,2 (3,9–16,7)	0,3 (0,1–0,6)	1,0 (0,4–2,5)	0,03 (0,01–0,9)
Central	16 161	23,1 (13,9–36,4)	3,7 (2,2–5,9)	0,6 (0,2–1,7)	0,1 (0,04–0,3)
Southern	37 118	13,8 (6,9–26,3)	5,1 (2,6–9,8)	0,6 (0,2–1,6)	0,2 (0,07–0,6)
All developing countries	555 729	32,0 (29,3–34,6)	177,7 (162,9–192,5)	3,5 (1,8–5,1)	19,3 (10,0–28,6)

WHO data; Lancet Jan 2008

Current estimates are underestimates

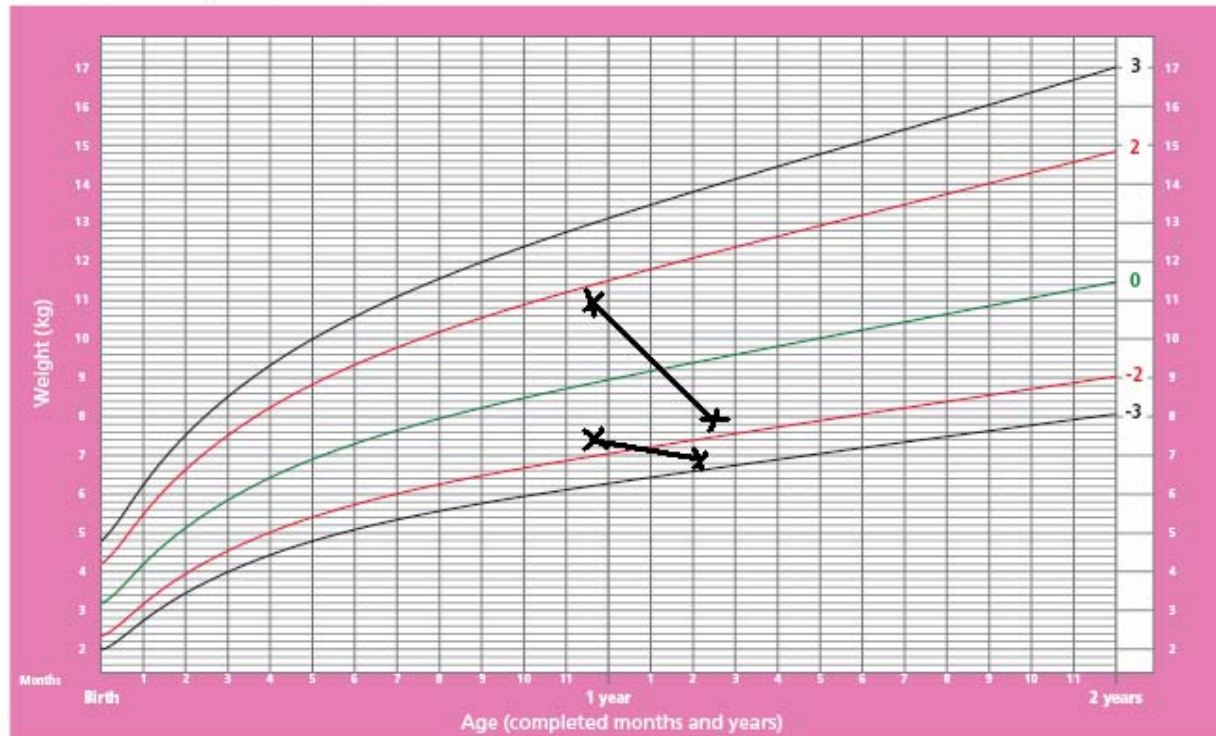
Based on prevalence (number of cases at time of survey), not incidence. Underestimation of importance of SAM

Uses cut off criteria for counting malnourished children. Not reliable in "sick populations"

Problem with the cut off method

Weight-for-age GIRLS

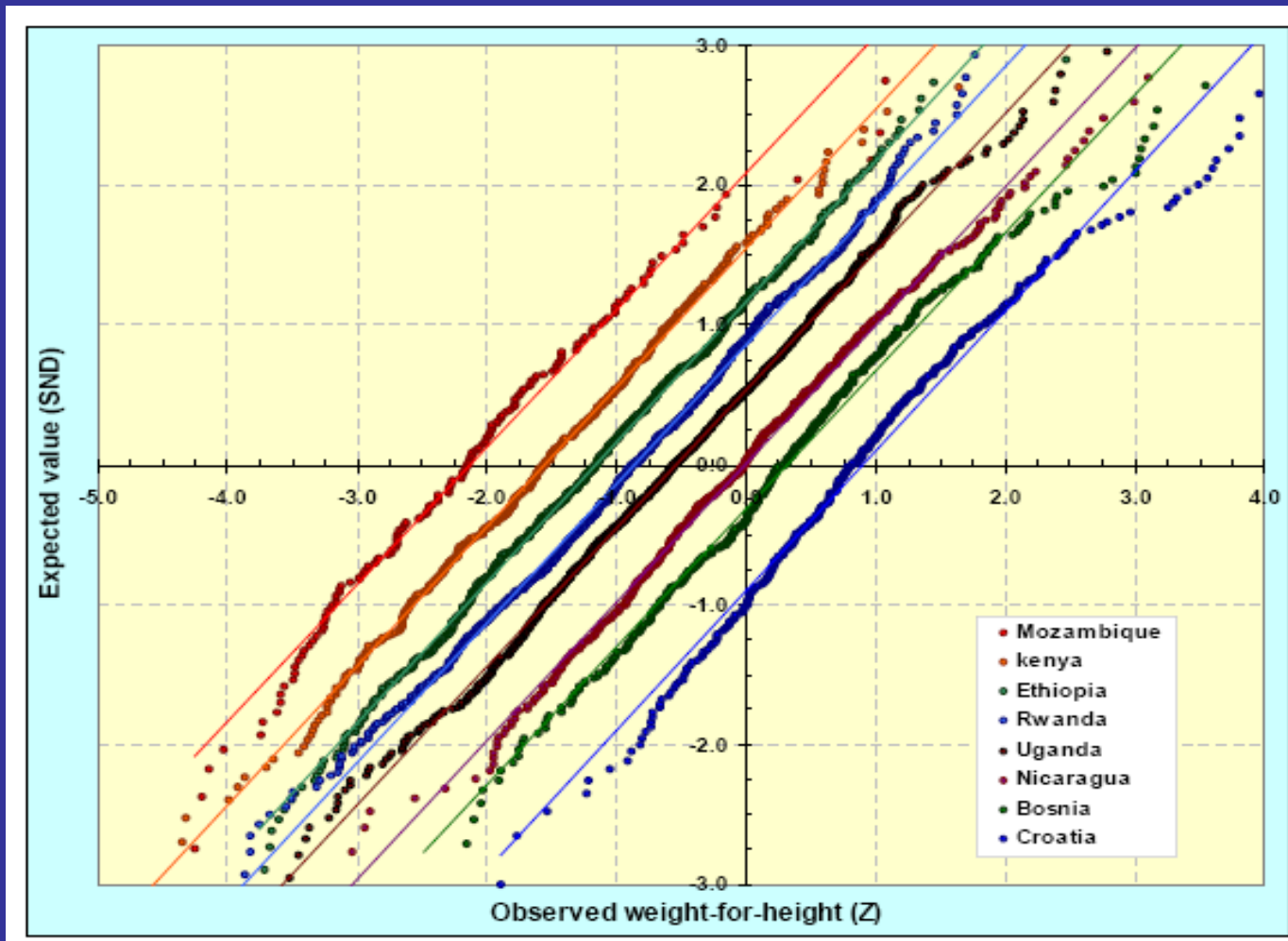
Birth to 2 years (z-scores)



WHO Child Growth Standards

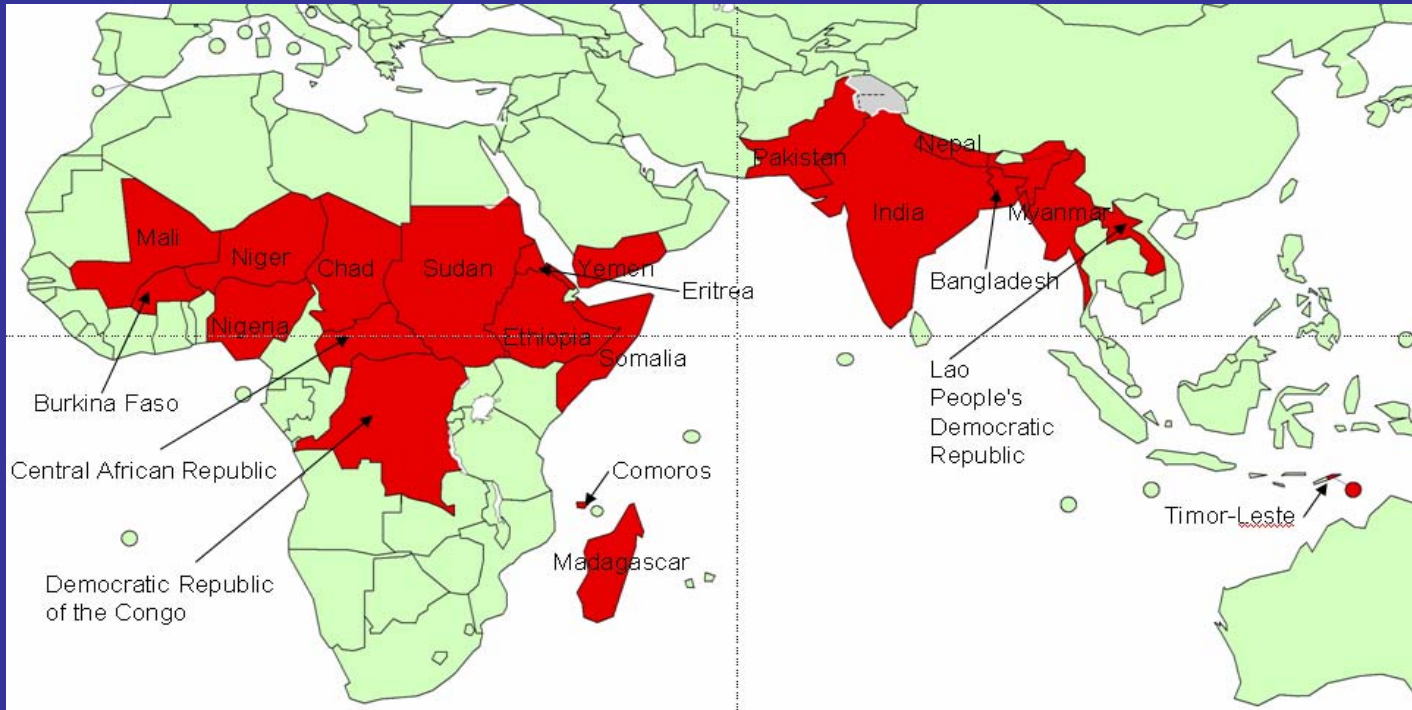
Children classified as malnourished only if they cross the -2 z-score line

WHZ distribution shift – all individuals under their optimal weight



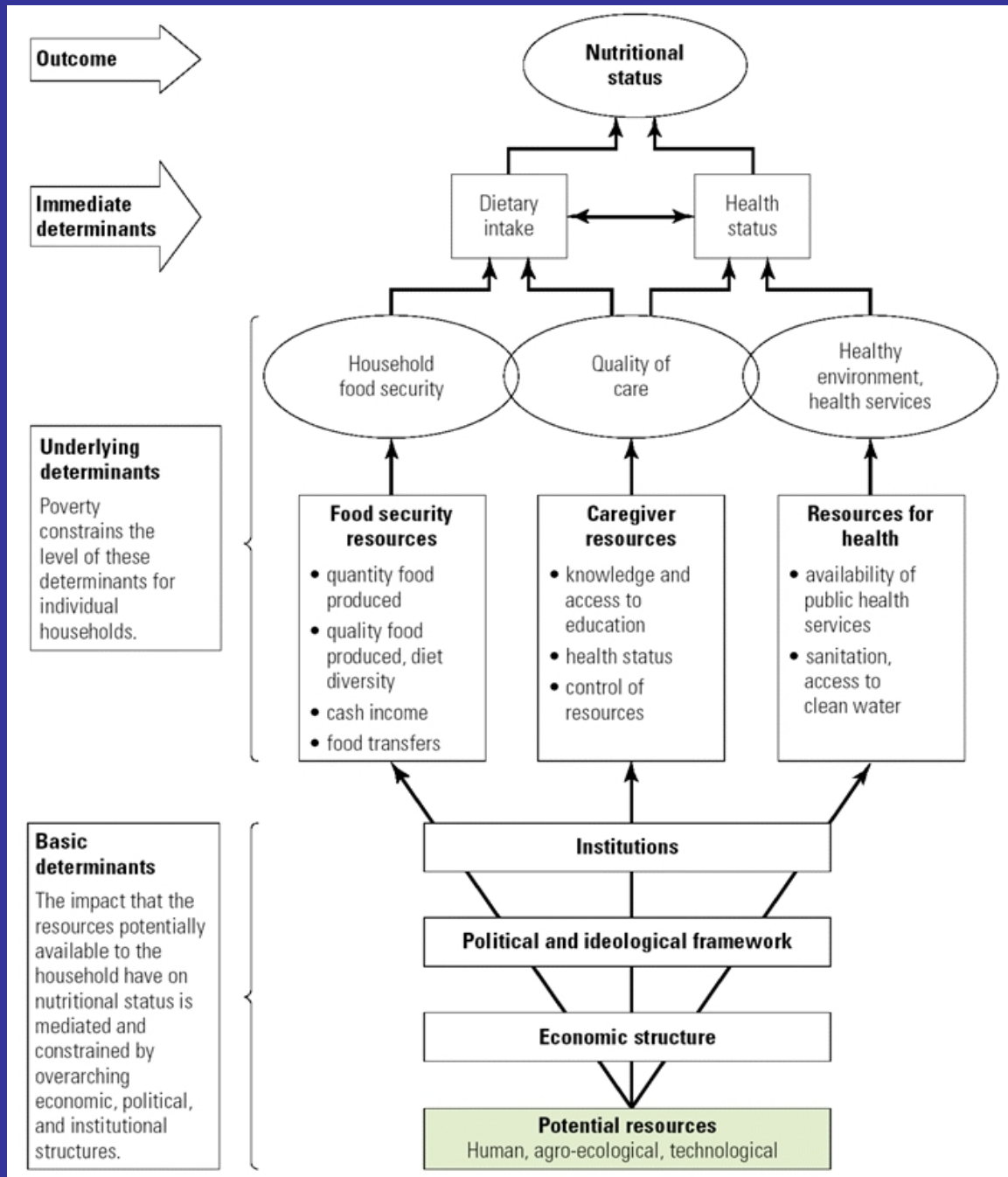
Golden, Grellety 2004

Malnutrition most prevalent in poorest countries



WHO 21 vulnerable countries (wasting > 10% + stunting > 40%)

UNIICEF Framework, 1990



Access to high quality food: the forgotten issue

“We really do believe that most of the areas of the world have sufficient food ...*It (i.e. malnutrition) is not really a poverty issue... It is just a lack of knowledge.*”

Black B, Lead author of the Lancet Series on Undernutrition, Lancet January 19th 2008, p197

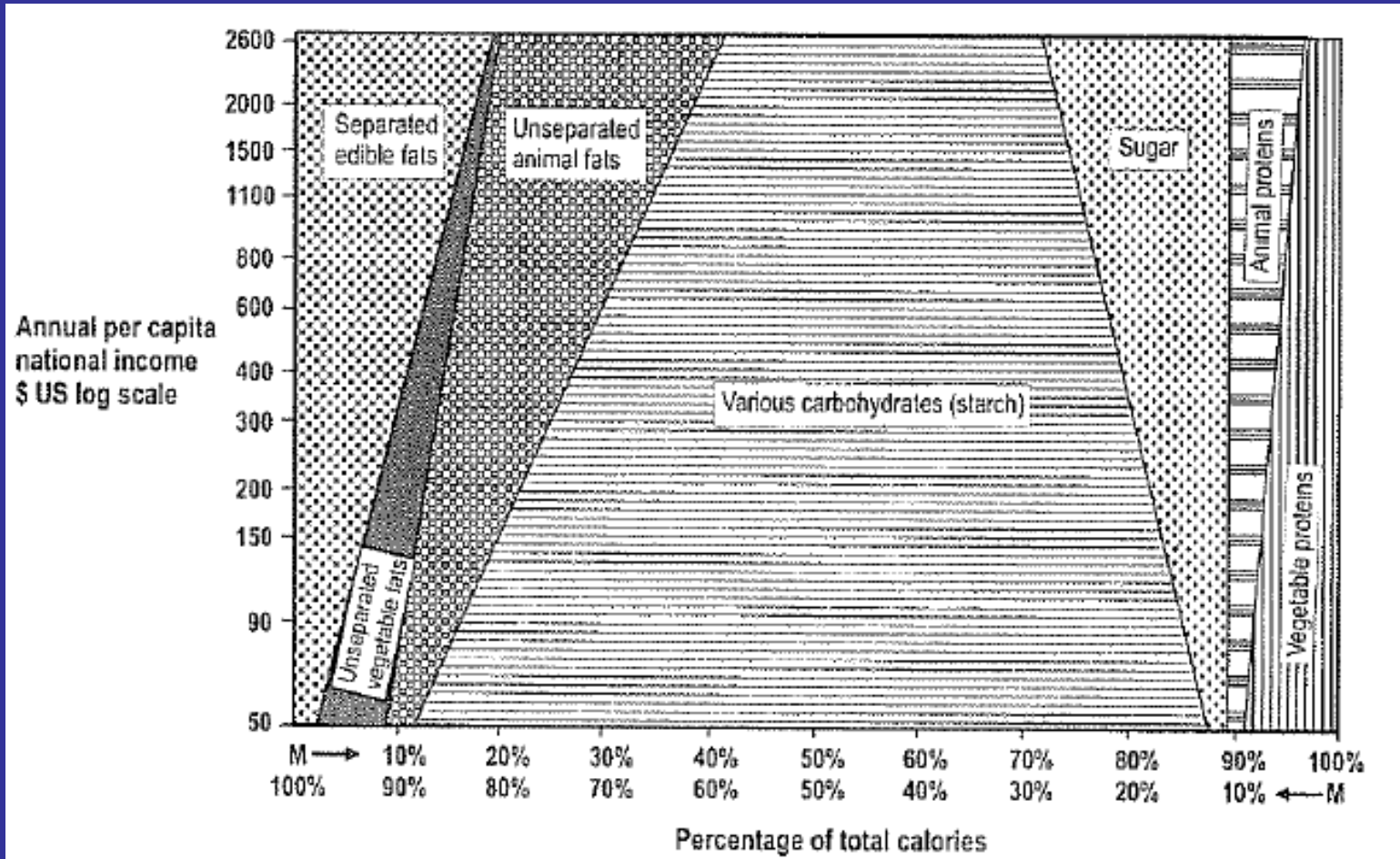
Amartya (Nobel Prize winner, 1998) showed (> 25 y ago) that famines occur not from a lack of food, but from inadequate access to food for the poor.



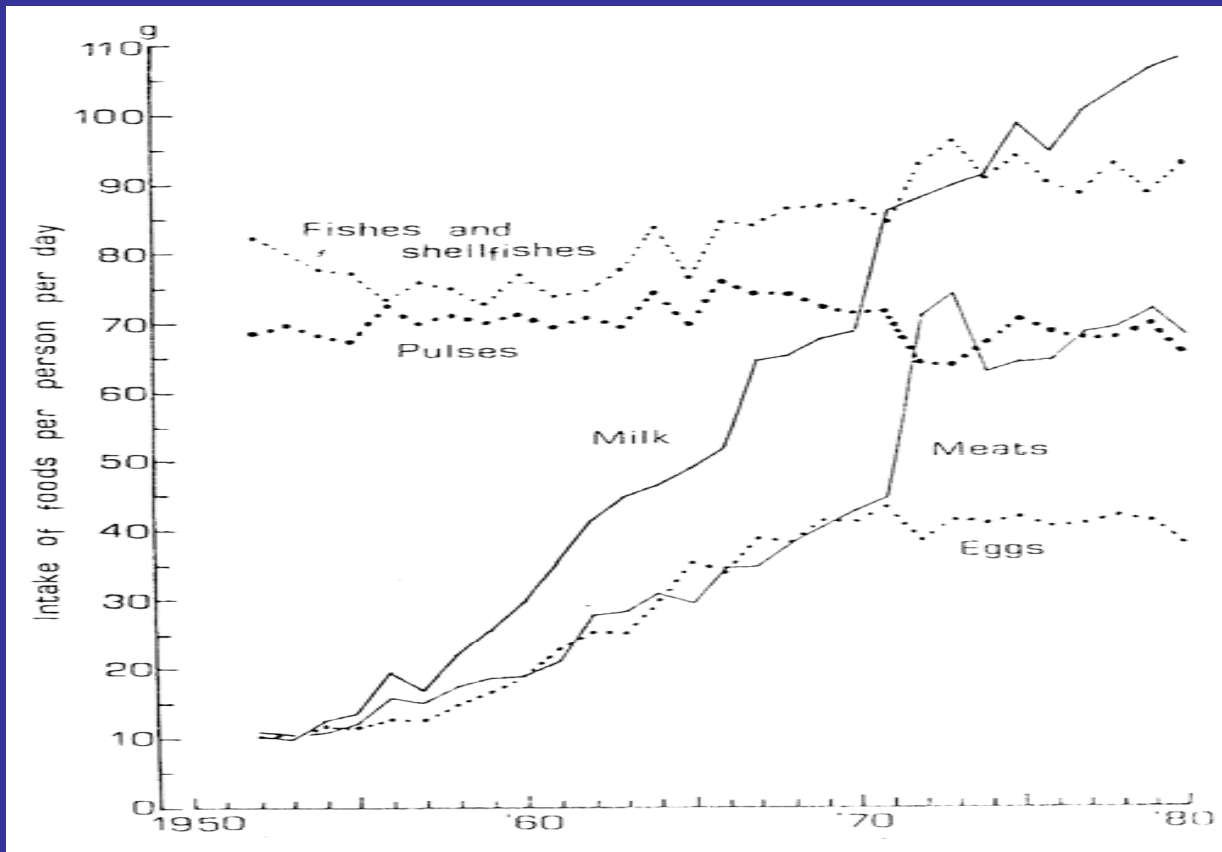
Engels' description of English workers (1844)

"The better paid workers, especially those in whose families every member is able to earn something, have good food as long as this state of things exist, meat daily, and bacon and cheese for supper. Where wages are less, meat is used only 2 or 3 times a week, and the proportion of bread and potatoes increased. Descending gradually, we find the animal food reduced to a small piece of bacon, but up with the potatoes ... until, on the lowest round of the ladder, among the Irish, potatoes form the sole food."

Effect of income on the structure of diet (FAO, 1970)



Evidence from Japan



Takahashi Hum Biol 1984; 56: 427-37.

Animal foods needed by children (\neq adults)

High nutrient content

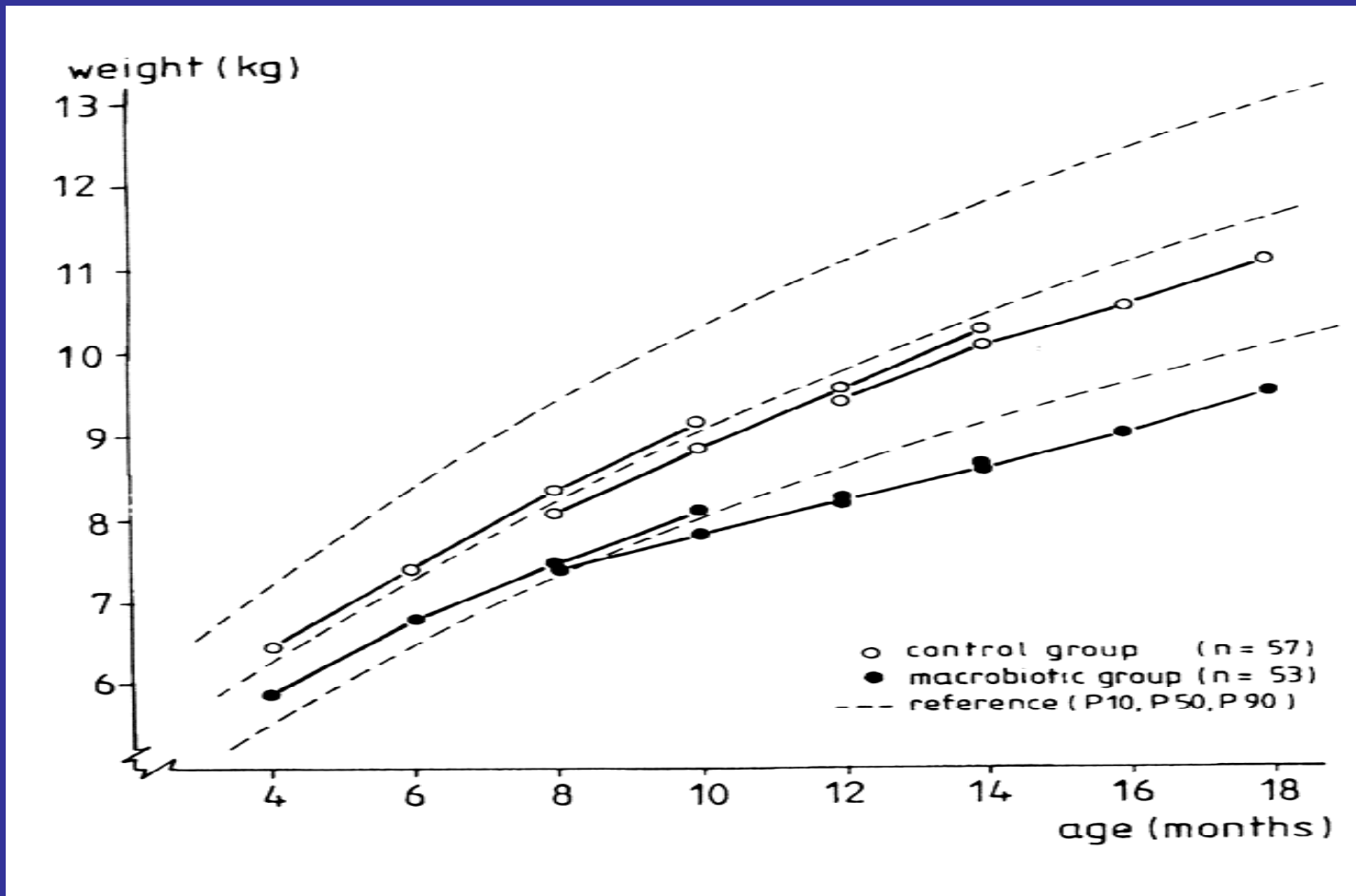
No antinutrients

No fibers

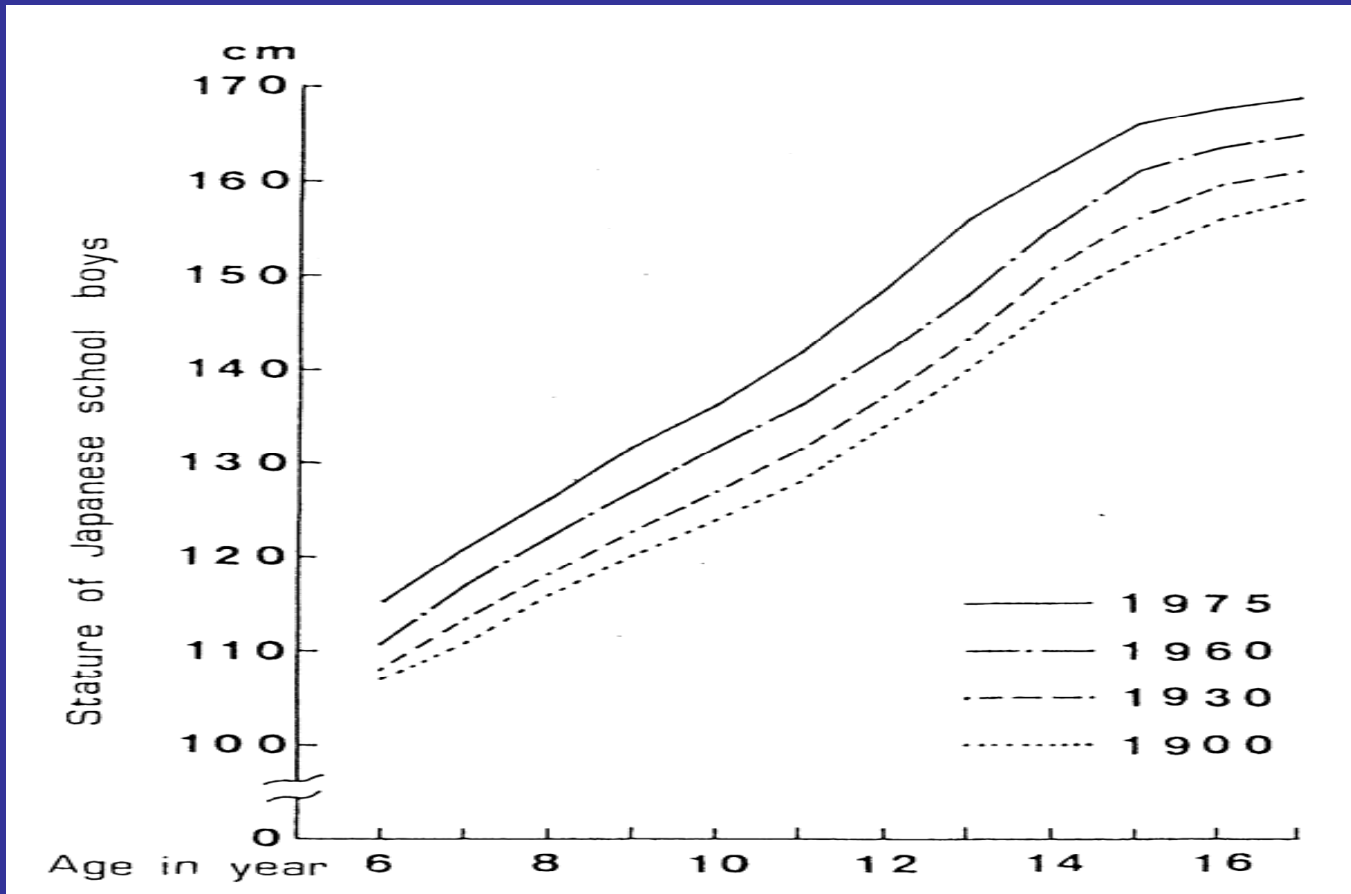
But... animal source foods expensive, and often not accessible to the poor

Macrobiotic diets and growth in Dutch children (no meat, no milk)

Dagnelie et al Eur J Clin Nutr 1994; 48 (Suppl. 1): S103-111



Increase in height in Japan in recent history



Does improved health care have a major effect on growth ? Evidence form Australia.

Berry et al, Med J Aust 1981; 1: 479-82.

Year	Diarrhea deaths /100 000
1973	120
1974	80
1975	30
1976	20
1977	0
1978	20

Persistent growth faltering in Aboriginal children despite major improvement in health care

(Rousham *et al.* Acta Paed Scand 1997; 46-50)

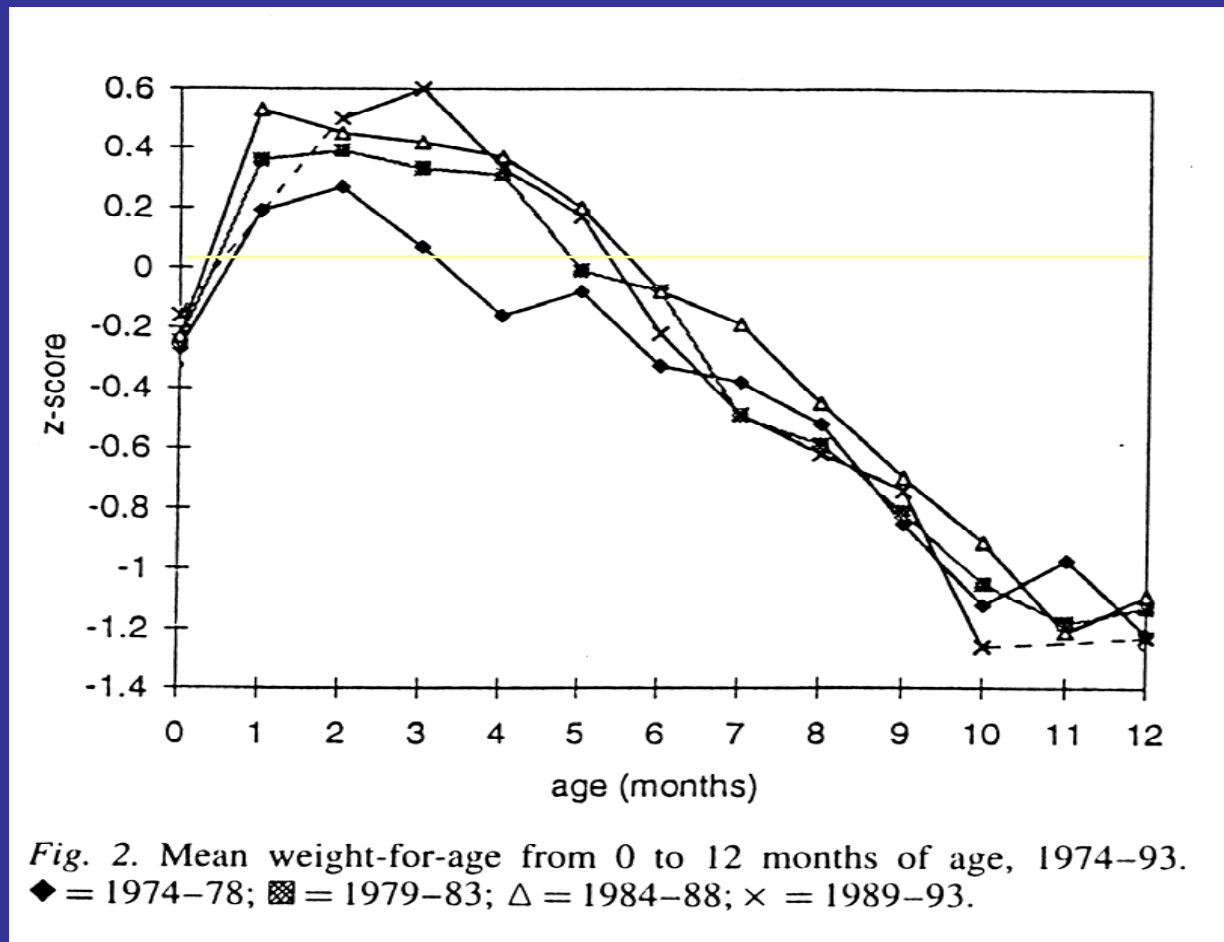


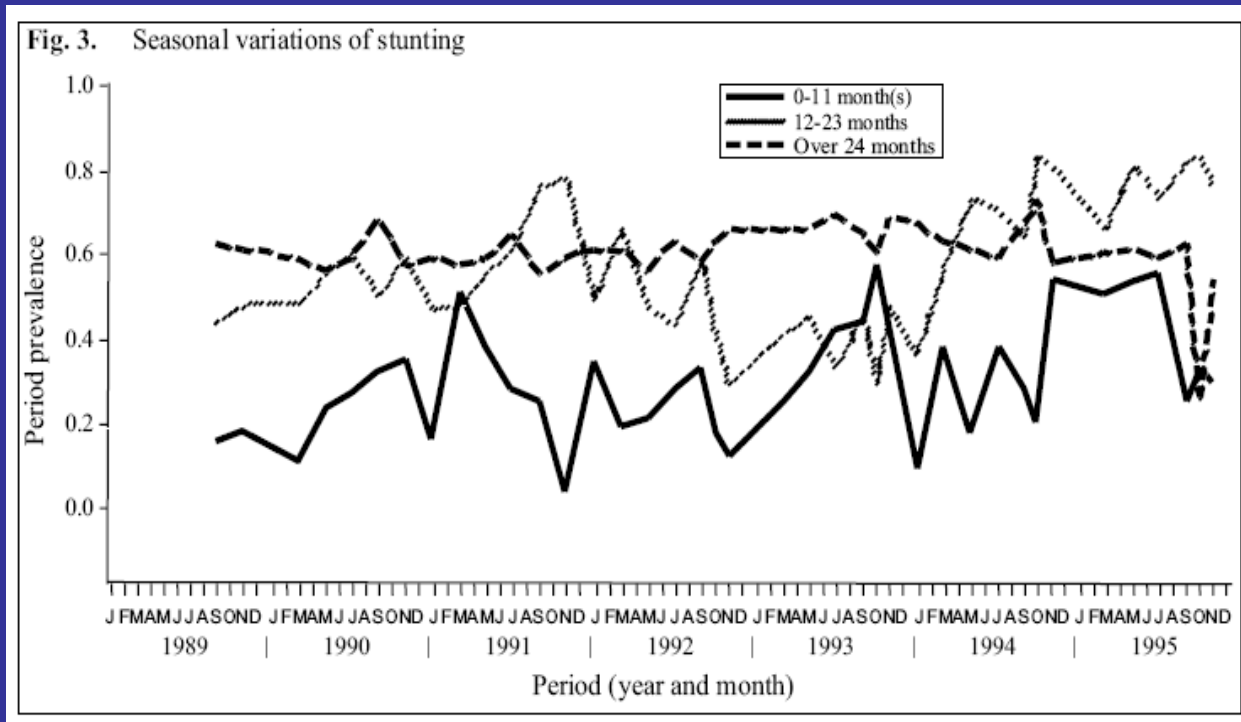
Fig. 2. Mean weight-for-age from 0 to 12 months of age, 1974-93.
◆ = 1974-78; ⊠ = 1979-83; △ = 1984-88; × = 1989-93.

Maternal knowledge and growth

Efficacy of education shown in Peru in an urban setting where families had access to animal food (chicken liver)

Not so clear in areas with limited access to animal foods

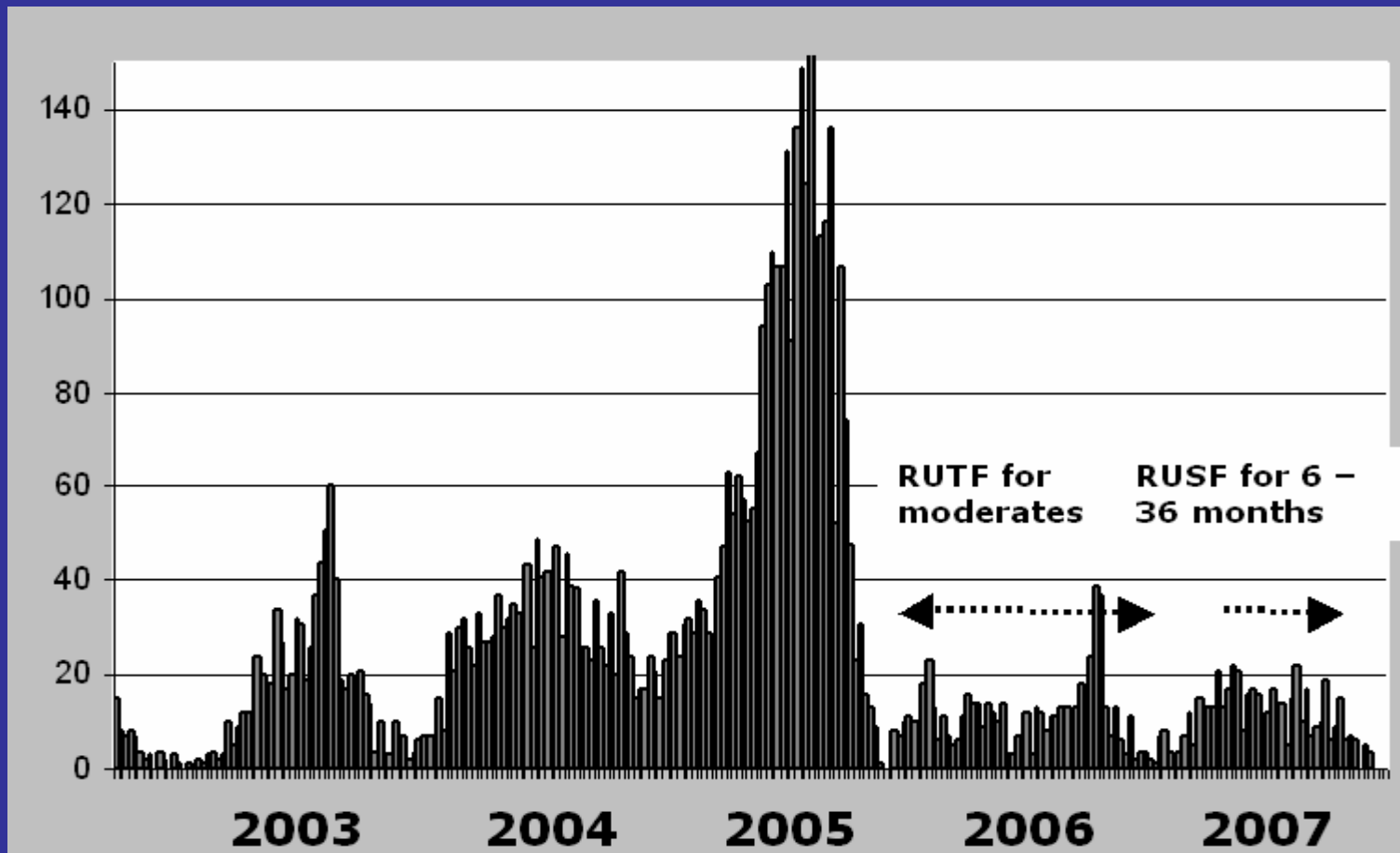
Lack of knowledge does not explain seasonal variations of malnutrition



Lindtjørn B, Alemu T. JHPN, 2002

Effect of a supplementation on seasonal variations of incidence of severe acute malnutrition

MSF MUAC < 110 mm, Niger, 2003-2007



Conclusions

The different determinants of the UNICEF framework do not have the same effect on nutritional status

Access to nutrient dense foods is most important and is currently neglected

Ensuring access of all children to a varied diet with large quantities of nutrient dense foods, especially animal source foods, is essential to prevent malnutrition