



# Center for Research in Nutrition and Health

## Centro de Investigación en Nutrición y Salud CINyS



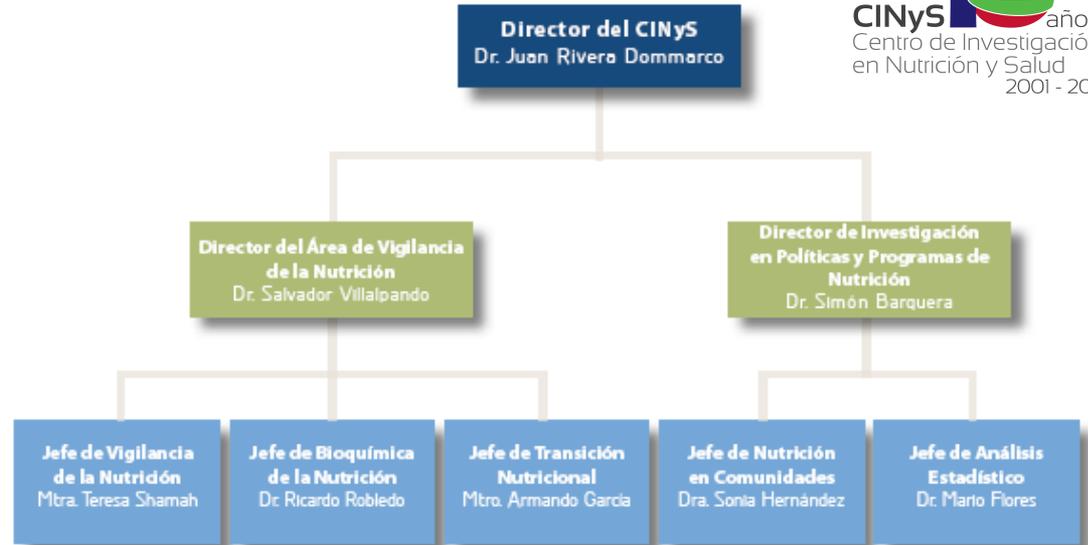
# CINyS

- ❖ Created in 2001 to identify population health problems resulting from under-and over-nutrition and to design and evaluate food and nutrition programs and policies.
- ❖ CINyS research focuses on the causes of malnutrition for specific groups of the Mexican population, the design, implementation and evaluation of nutrition programs, and the effects of the nutrition transition on physical growth, obesity and chronic disease.



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- ❖ Personnel:
  - 107 persons of which 35 are professors/investigators; 25 supported with Federal funds and 10 with project funds (soft money)





# CINyS Personnel

Type of personnel	Federal Funds	Project Fonds	Total
Directors and Department Heads	8		8
Professors / Investigators	17		17
Research Assistants	3	10	13
Field supervision, programming and informatics		17	17
Lab Pesonnel	8	2	10
Administrative staff and secretaries	14	28	42
Total	50	57	107



# Mission Oriented Research

- The development of a research effort to modify some aspect of reality through the production of knowledge and technology
- The mission is the modification of reality
- Mission Oriented research in public health places its efforts on improving the health conditions of the population through the application the scientific method
- Multi-disciplinary approach to generate relevant knowledge to solve public health challenges



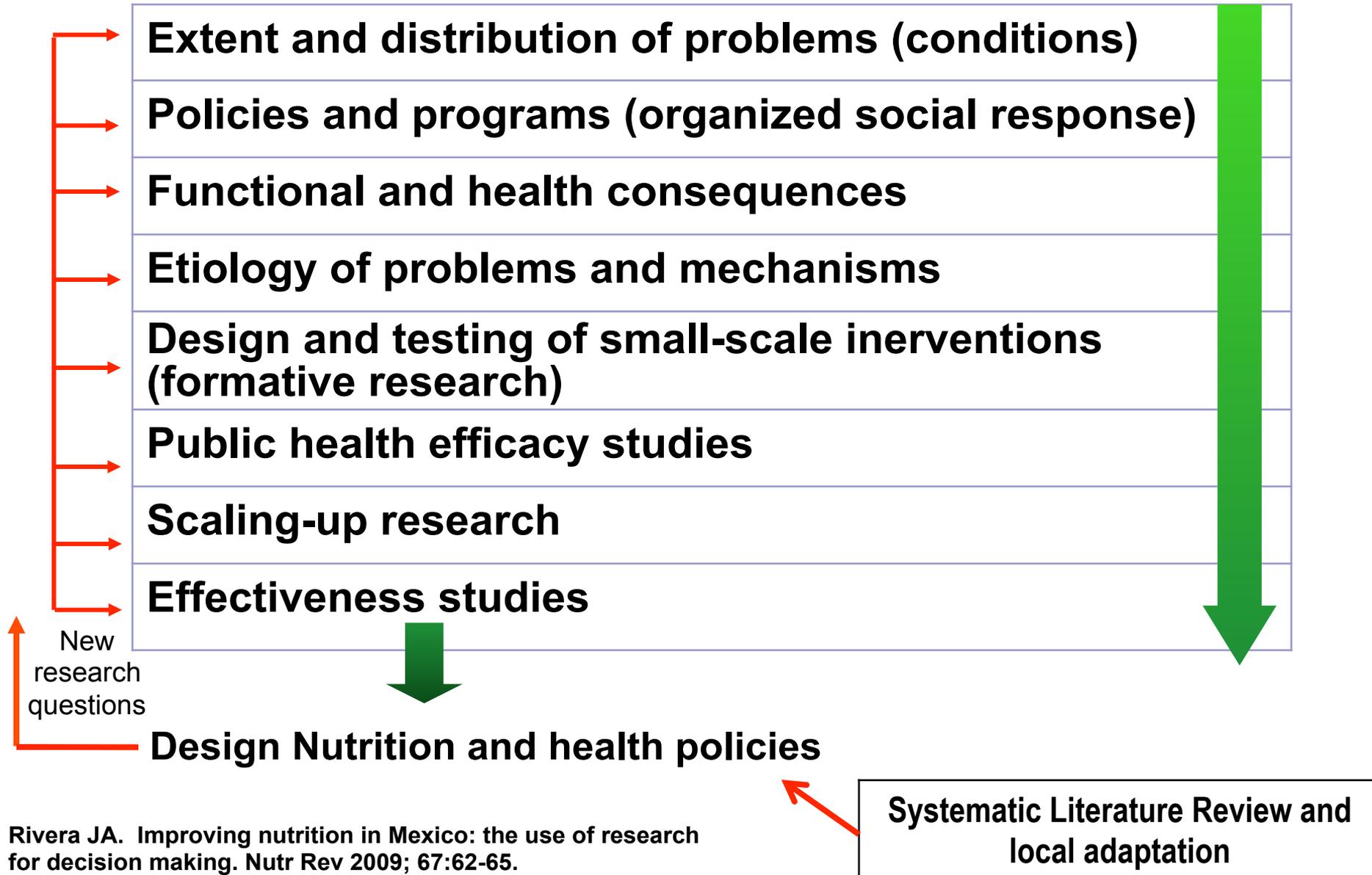
\*Frenk J. La salud de la población. Hacia una nueva salud pública. 3a Edición. México: FCE, SEP, CONACYT, 2003.



# Mission Oriented Research

- Objects of analysis:
  - Health conditions (magnitude and distribution of disease) and
  - Organized social response (policy and programs)
  
- Levels of analysis:
  - sub-cellular particles (molecular biology)
  - tissues and organs
  - individuals (clinical research)
  - populations (epidemiological research) and
  - systems (health systems research)

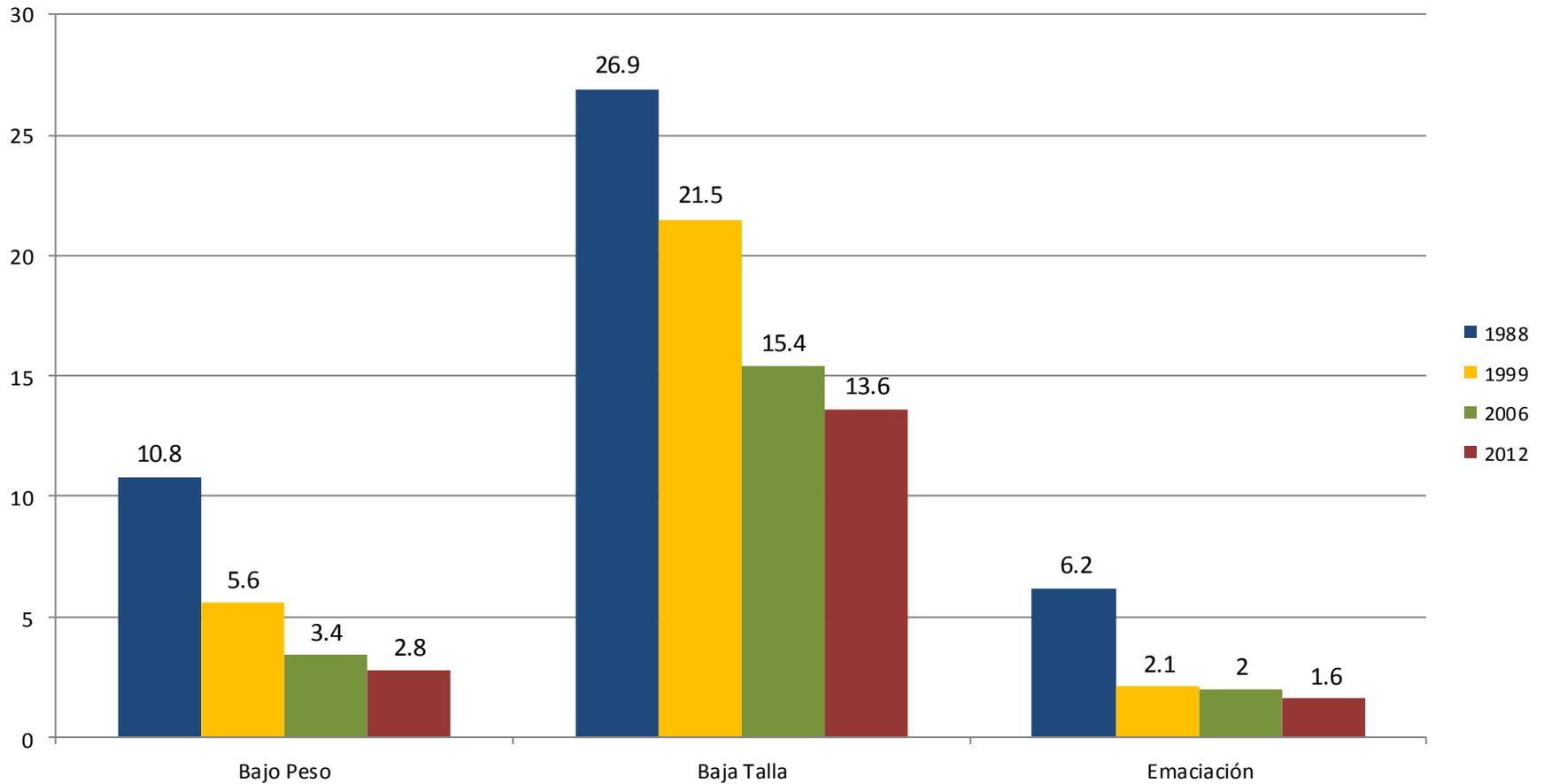
# Phases in the mission oriented research process at the Nutrition and Health Research Center



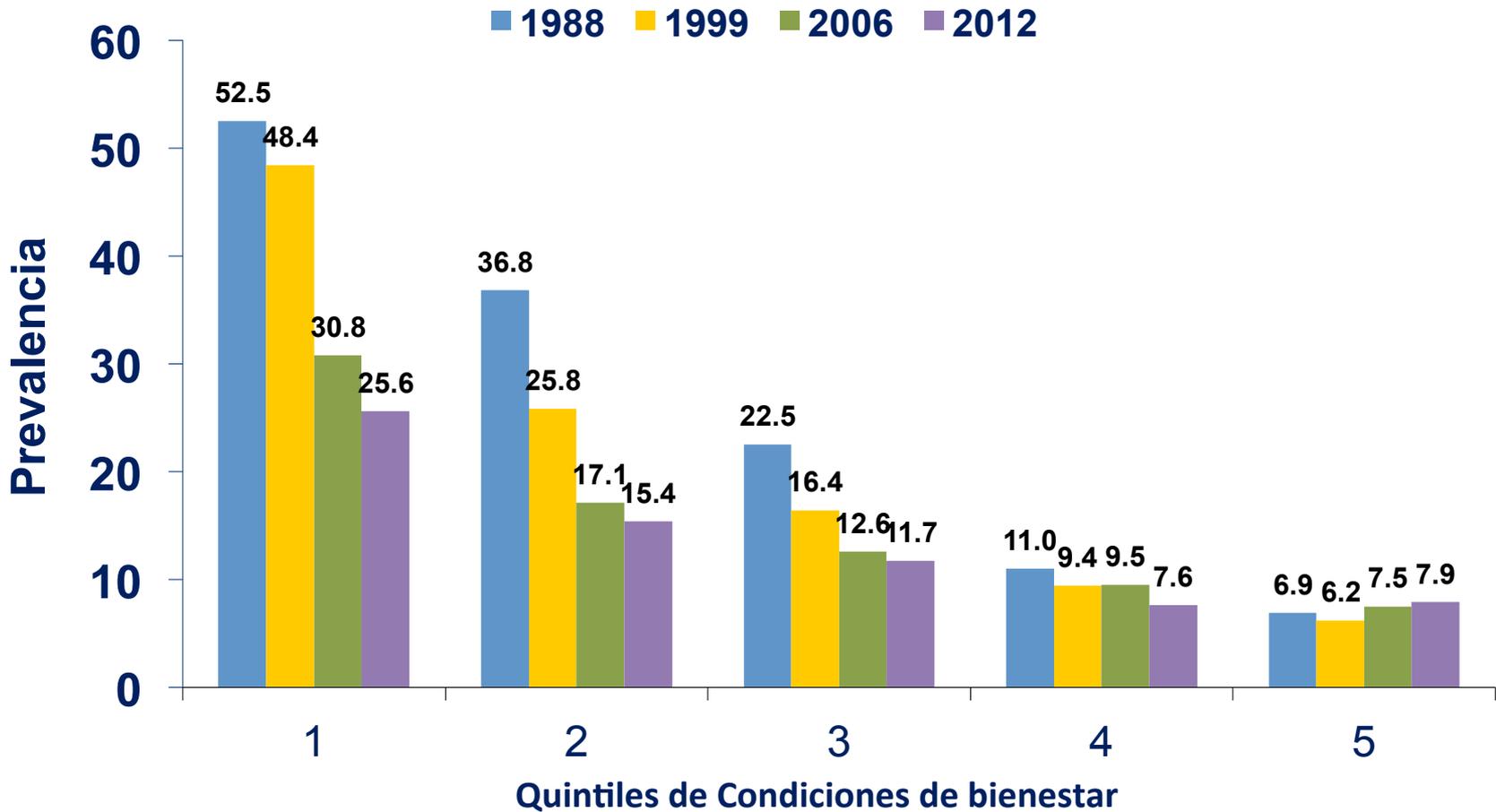
## Examples of type of research conducted at CINyS

Extent and distribution of problems (conditions)	<ul style="list-style-type: none"> <li>National Nutrition and Health Surveys (1988, 1999, 2006, 2012)</li> </ul>
Policies and programs (organized social response)	<ul style="list-style-type: none"> <li>National Nutrition and Health Surveys (1988, 1999, 2006, 2012)</li> <li>Analysis of food and nutrition policies</li> </ul>
Functional and health consequences	<ul style="list-style-type: none"> <li>Long term effects of early undernutrition</li> </ul>
Etiology of problems and mechanisms	<ul style="list-style-type: none"> <li>Effect of micronutrient supplementation on growth</li> </ul>
Design and testing of small-scale actions	<ul style="list-style-type: none"> <li>Pilot studies of interventions in schools for obesity prevention</li> </ul>
Scaling-up research	<ul style="list-style-type: none"> <li>Scaling up an infant feeding promotion strategy in the Oportunidades Program</li> </ul>
Public health efficacy studies	<ul style="list-style-type: none"> <li>Effects of zinc supplementation on diarrhea and growth</li> </ul>
Process Evaluation	<ul style="list-style-type: none"> <li>Regulation of foods in schools</li> </ul>
Impact evaluation	<ul style="list-style-type: none"> <li>Impact evaluation of large scale programs (Oportunidades, fortified milk distribution, PAL)</li> </ul>

# Prevalence of undernutrition in children < 5 años in 1988, 1999, 2006 y 2012



# Prevalence of stunting in children < 5 y by quintiles of living conditions inn 1988, 1999, 2006 and 2012

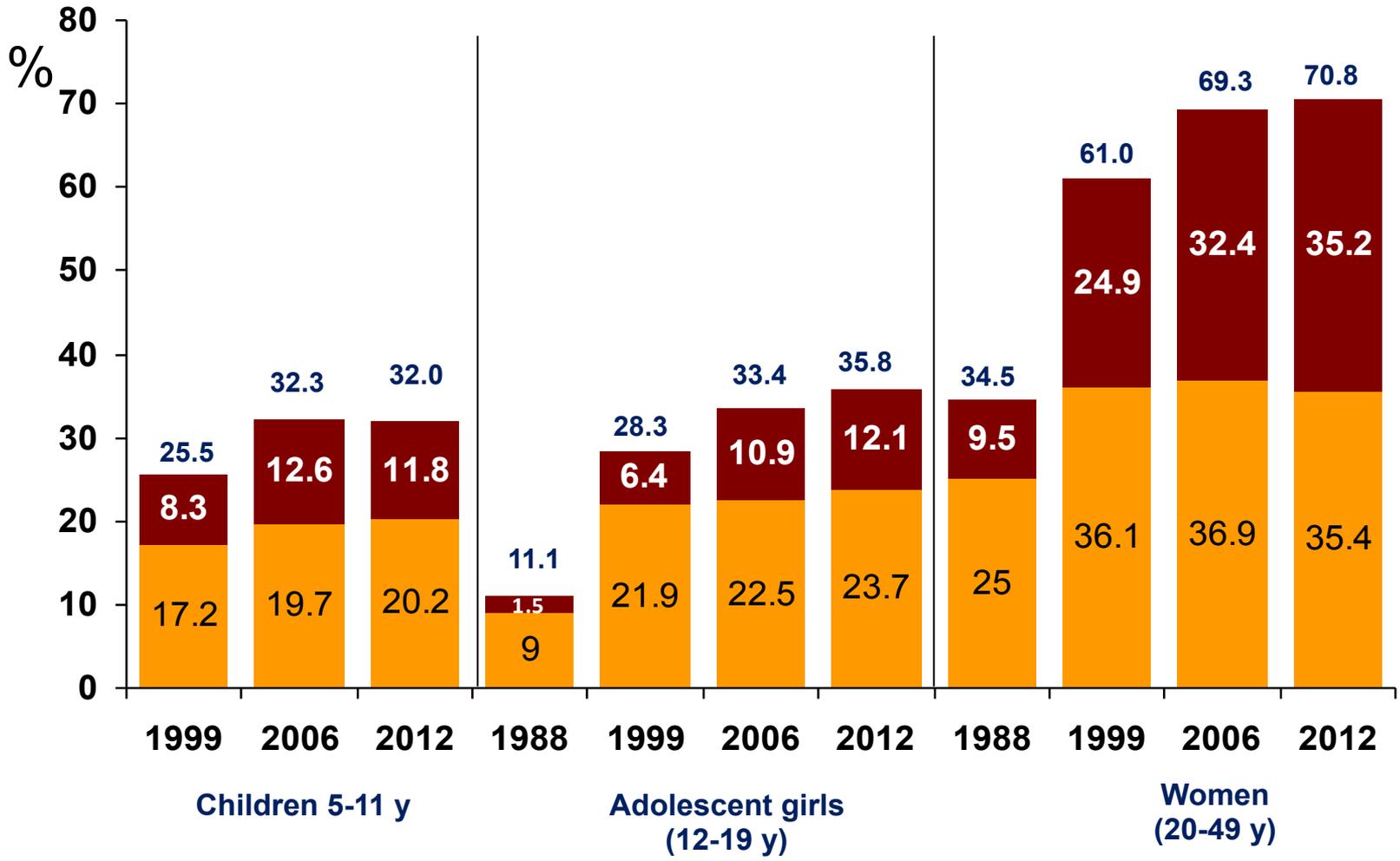


Fuente: Rivera JA, Irizarry L, González Cossio, T. Salud Publica Mex (2009)



# Prevalence of overweight and obesity \* in children 5-11 y, adolescent girls and women (1988 a 2012)

Overweight Obesity



\* Classification system proposed by WHO using the 2006 growth norms

# Effectiveness of a Federal Program (Oportunidades) on linear growth and anemia without increasing overweight

## Impact of the Mexican Program for Education, Health, and Nutrition (Progresa) on Rates of Growth and Anemia in Infants and Young Children A Randomized Effectiveness Study

Juan A. Rivera, PhD  
 Daniela Sotres-Alvarez, MS  
 Jean-Pierre Habicht, PhD  
 Teresa Shamah, MS  
 Salvador Villalpando, MD

**Context:** Malnutrition causes death and impaired health in millions of children. Existing interventions are effective under controlled conditions; however, little information is available on their effectiveness in large-scale programs.

**Objective:** To document the short-term impact of a large-scale, incentive-based development program in Mexico (Progresa), which included a nutritional component.

**Design, Setting, and Participants:** A randomized effectiveness study of 347 communities randomly assigned to immediate incorporation to the program in 1998 (intervention group; n=205) or to incorporation in 1999 (crossover intervention group; n=142). A random sample of children in those communities was surveyed at baseline and at 1 and 2 years afterward. Participants were from low-income households in poor rural communities in 6 central Mexican states. Children (N= 650) 12 months of age or younger (n=373 intervention group; n=277 crossover intervention group) were included in the analyses.

**Intervention:** Children and pregnant and lactating women in participating households received fortified nutrition supplements, and the families received nutrition education, health care, and cash transfers.

**Main Outcome Measures:** Two-year height increments and anemia rates as measured by blood hemoglobin levels in participating children.

**Results:** Progresa was associated with better growth in height among the poorest and younger infants. Age- and length-adjusted height was greater by 1.1 cm (26.4 cm in the intervention group vs 25.3 cm in the crossover intervention group) among infants younger than 6 months at baseline and who lived in the poorest households. After 1 year, mean hemoglobin values were higher in the intervention group (11.12 g/dL; 95% confidence interval [CI], 10.9-11.3 g/dL) than in the crossover intervention group (10.75 g/dL; 95% CI, 10.5-11.0 g/dL) who had not yet received the benefits of the intervention (P=.01). There were no differences in hemoglobin levels between the 2 groups at year 2 after both groups were receiving the intervention. The age-adjusted rate of anemia (hemoglobin level <11 g/dL) in 1999 was higher in the crossover intervention group than in the intervention group (54.9% vs 44.3%; P=.03), whereas in 2000 the difference was not significant (23.0% vs 25.8%, respectively; P=.40).

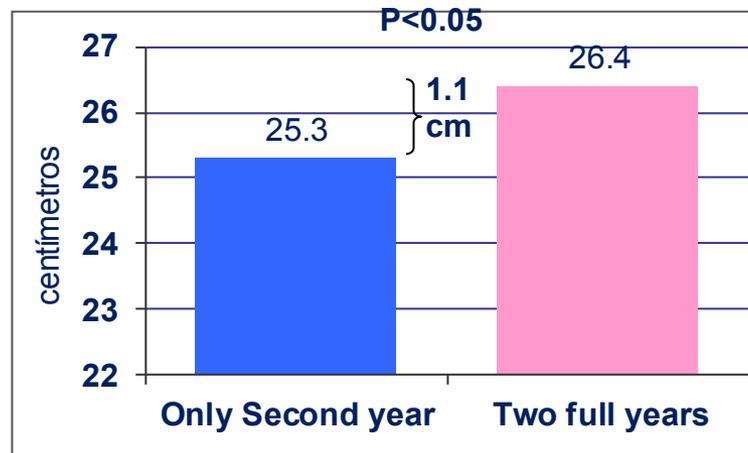
**Conclusion:** Progresa, a large-scale, incentive-based development program with a nutritional intervention, is associated with better growth and lower rates of anemia in low-income, rural infants and children in Mexico.

JAMA. 2004;291:2563-2570

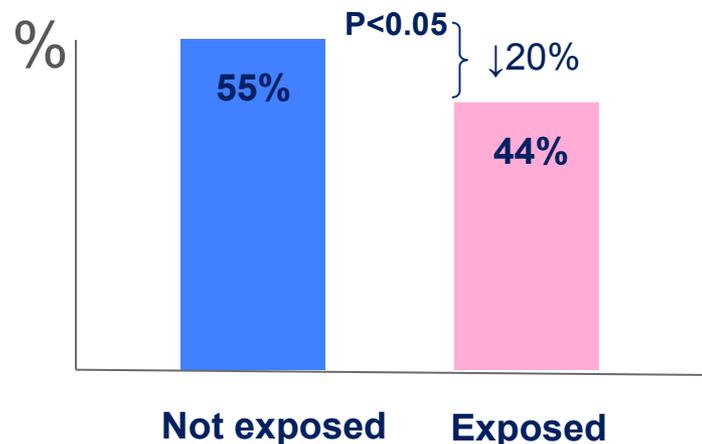
www.jama.com

**M**ORE THAN HALF OF THE yearly 10.8 million deaths of children younger than 5 years are attributed to malnutrition,<sup>1</sup> as assessed by underweight ( $\geq 2$  SDs below the weight expected for that age, according to the international reference recommended by the World Health Organization [WHO]<sup>2</sup>). These deaths are not caused by higher frequency of common childhood diseases but by higher case fatality rates<sup>3,4</sup> and would not occur if the children were not malnourished. Malnourished children who survive have a high risk of impaired health and function throughout life, which contributes to the intergenerational continuation of poverty.<sup>5</sup> In developing countries more than one quarter of all children younger than 5 years, about 150 million total, are estimated to be malnourished.<sup>6</sup> Available nutritional interventions and technologies have proven, under controlled conditions, to be efficacious in preventing and controlling malnutrition.<sup>7,8</sup>

### Effects on height after two years of program exposure in lower SES 6 mo old children



### Effects on anemia after one year of exposure



Rivera JA, Sotres-Alvarez D, Habicht JP, Shamah T, Villalpando S. JAMA 2004;291:2563-2570

# Publications

	Peer Review Articles					Book Chapters	Books	Total
	I	II	III	IV	V			
2001	<u>0</u>	<u>0</u>	<u>3</u>	<u>2</u>	<u>0</u>	<u>10</u>	<u>1</u>	<u>16</u>
2002	<u>3</u>	<u>0</u>	<u>7</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>12</u>
2003	<u>1</u>	<u>0</u>	<u>13</u>	<u>9</u>	<u>0</u>	<u>26</u>	<u>0</u>	<u>49</u>
2004	<u>4</u>	<u>0</u>	<u>5</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>16</u>
2005	<u>3</u>	<u>0</u>	<u>7</u>	<u>2</u>	<u>0</u>	<u>9</u>	<u>0</u>	<u>21</u>
2006	<u>1</u>	<u>0</u>	<u>4</u>	<u>3</u>	<u>1</u>	<u>15</u>	<u>2</u>	<u>26</u>
2007	<u>1</u>	<u>0</u>	<u>14</u>	<u>4</u>	<u>0</u>	<u>7</u>	<u>4</u>	<u>30</u>
2008	<u>7</u>	<u>0</u>	<u>16</u>	<u>2</u>	<u>7</u>	<u>14</u>	<u>3</u>	<u>49</u>
2009	<u>3</u>	<u>0</u>	<u>25</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>4</u>	<u>37</u>
2010	<u>4</u>	<u>0</u>	<u>11</u>	<u>6</u>	<u>5</u>	<u>19</u>	<u>4</u>	<u>49</u>
2011	<u>1</u>	<u>0</u>	<u>12</u>	<u>9</u>	<u>3</u>	<u>2</u>	<u>6</u>	<u>33</u>
2012	<u>3</u>	<u>0</u>	<u>9</u>	<u>2</u>	<u>0</u>	<u>6</u>	<u>3</u>	<u>23</u>
<b>TOTAL</b>	<u><b>31</b></u>	<u><b>0</b></u>	<u><b>126</b></u>	<u><b>43</b></u>	<u><b>18</b></u>	<u><b>114</b></u>	<u><b>29</b></u>	<b>361</b>



# Training Programs

- ❖ Master in Public Health in Nutrition
- ❖ Master in Clinical Nutrition (with the Perinatology Hospital in Mexico City)
- ❖ Master in Sciences in Nutrition
- ❖ PhD in Public Nutrition (“Sandwich” Program with US Universities)
- ❖ Summer Courses
- ❖ On line short Courses



# CINyS Personnel

