

Maternal and Child Nutrition New Learnings and Implications for Development Agencies

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USAID Brown Bag
Washington DC, June 2nd 2014

Talk Outline

- Implication of global obesity epidemic
- Life course framework for childhood obesity prevention
- How children learn to eat?
- How taste preferences get established?
- Food insecurity-obesity
- Implications for development agencies

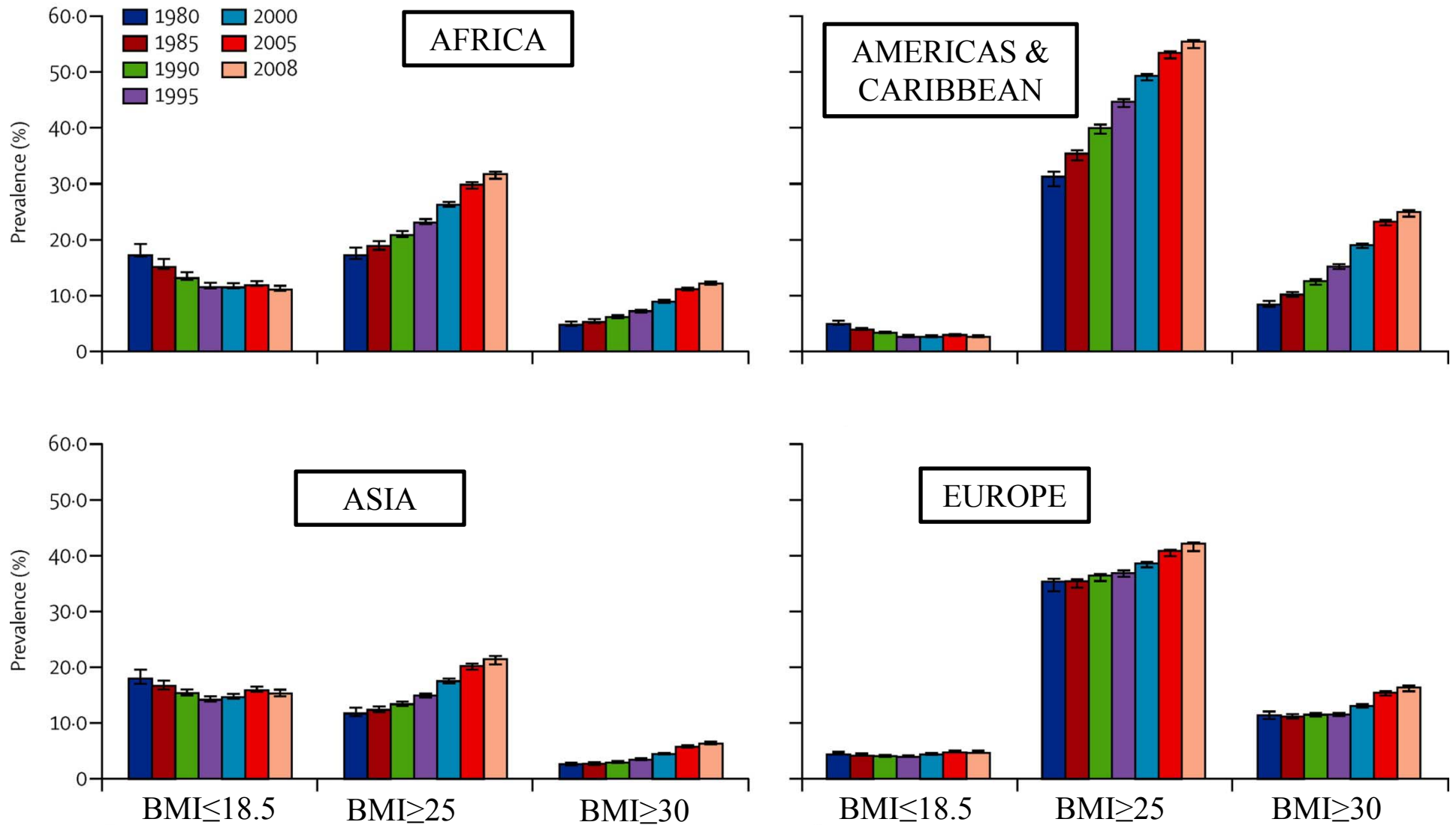
Non-communicable Diseases (NCDs)

The Global Picture

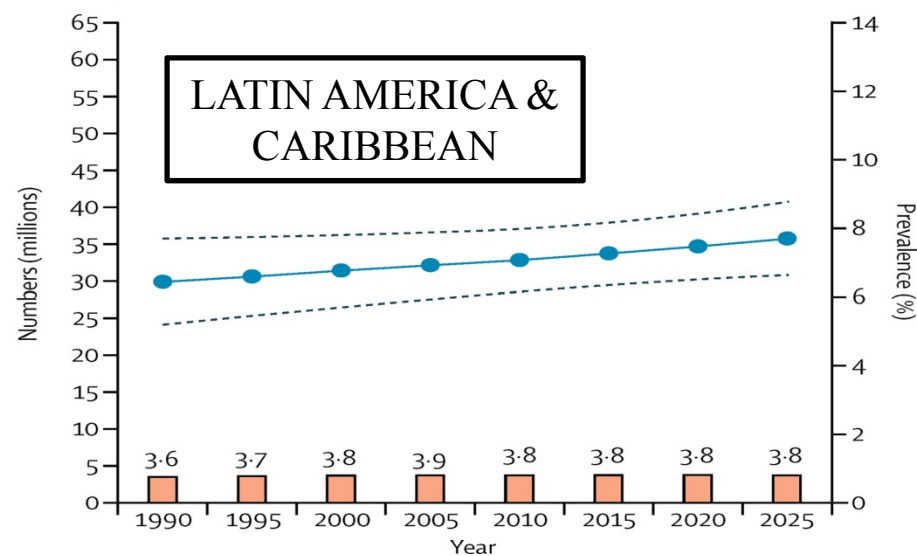
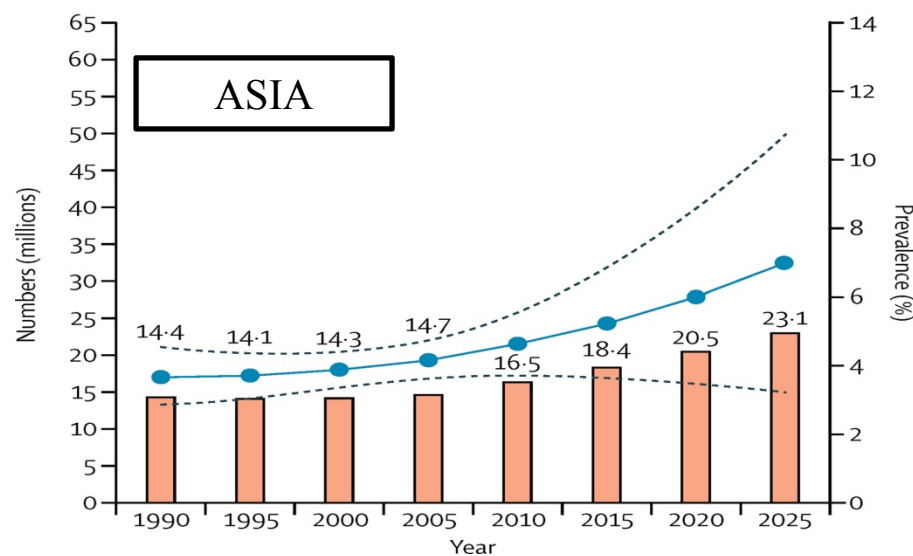
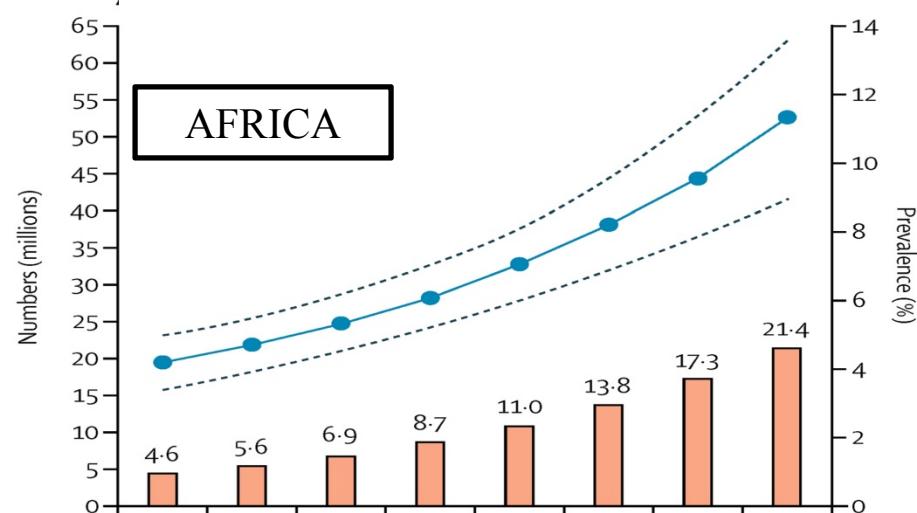
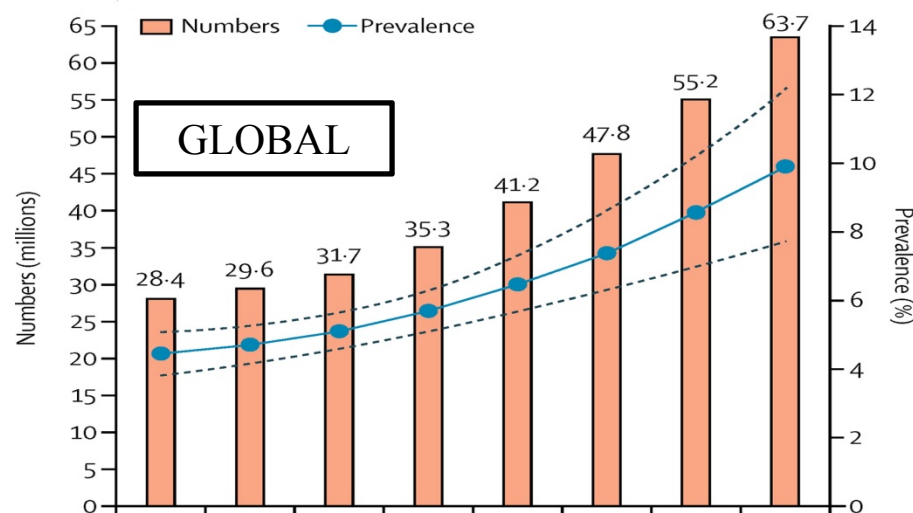


- Annual cost to global economy of NCDs: Over US\$1 trillion
 - If current trends persist experts forecast \$35 trillion in economic output loss from 2005 to 2030 (*Bloom 2013*)
 - Due to diabetes, heart disease, breast cancer, and COPD (*Bloom 2013*)
- NCD's risk factors include: Tobacco use, obesity, unhealthy diet, physical inactivity, and alcohol
 - Context: aging of the population and negative effects of urbanization, international trade and marketing
- Eight out of ten NCDs deaths occur in low- and middle-income countries
 - 30 % of NCDs deaths in people < 60
 - If current trends continue by 2030 52 million people will die of an NCD annually (*WHO 2011*)

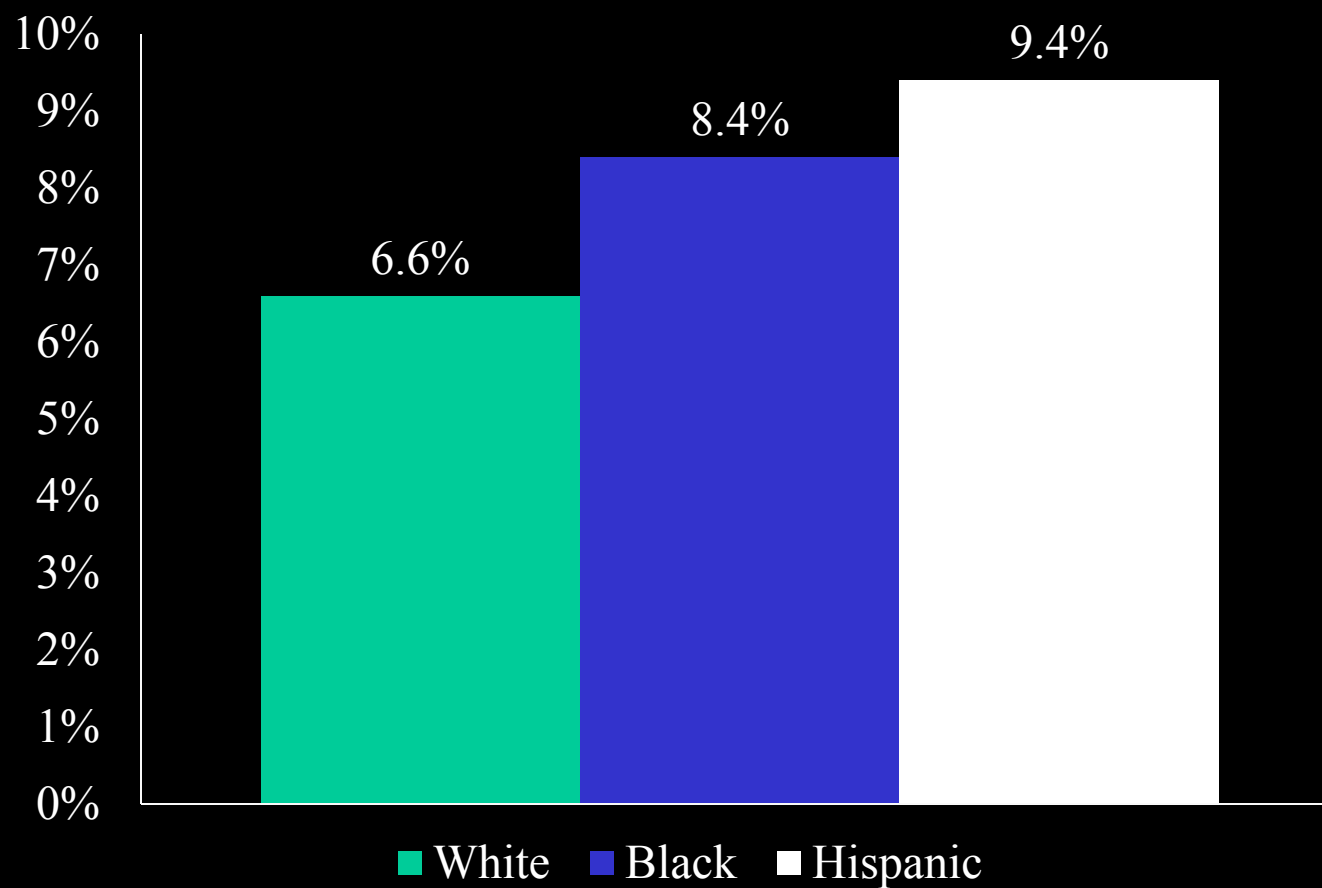
BMI trends among 20-49 y old women: 1980-2008



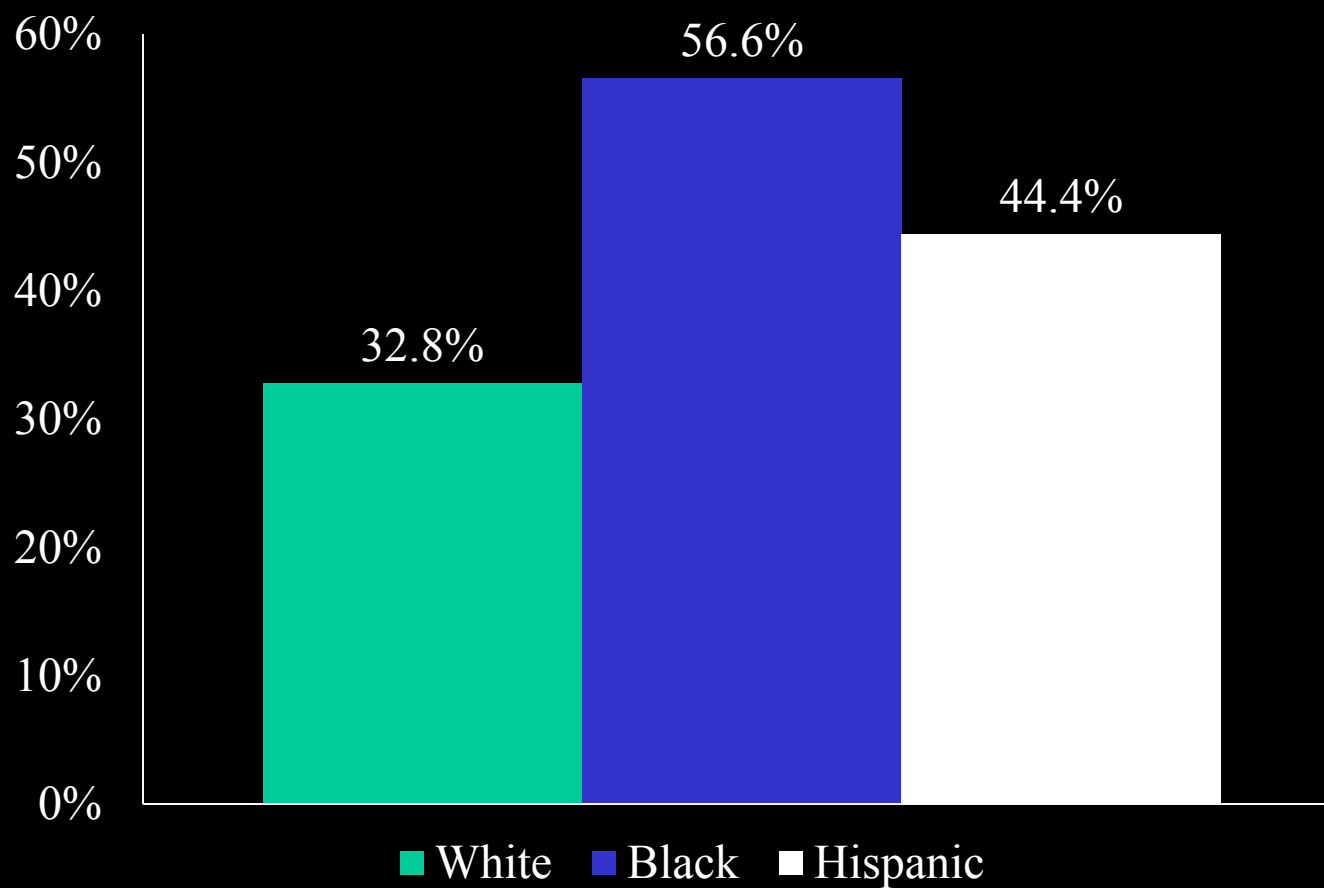
Trends in prevalence and numbers of children with overweight (WHZ>2) , by selected UN regions and globally, 1990–2010, and projected to 2025



Prevalence of Weight for Recumbent Length > 95th %ile among US Children From Birth to 2 Years of Age, 2011-2012



Prevalence of BMI > 30 among US Women >19 Years of Age, 2011-2012



Disparities in Early Nutrition: Where the Problem Begins?

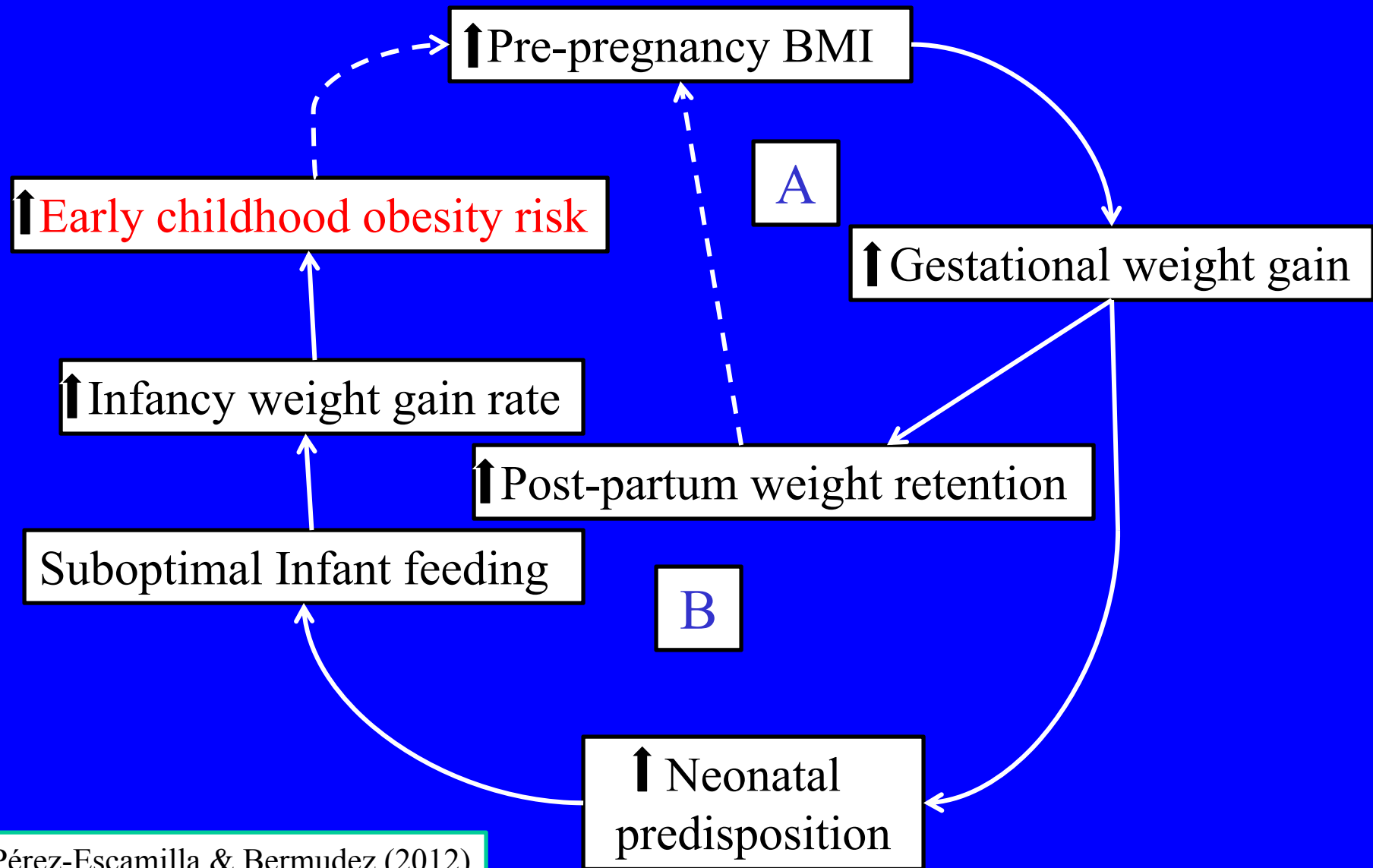
ASN Symposium
Experimental Biology Meetings
Tuesday April 12, 2011
Washington DC

Chair: R. Perez-Escamilla, Yale University

Co-Chair: O. Bermudez, Tufts

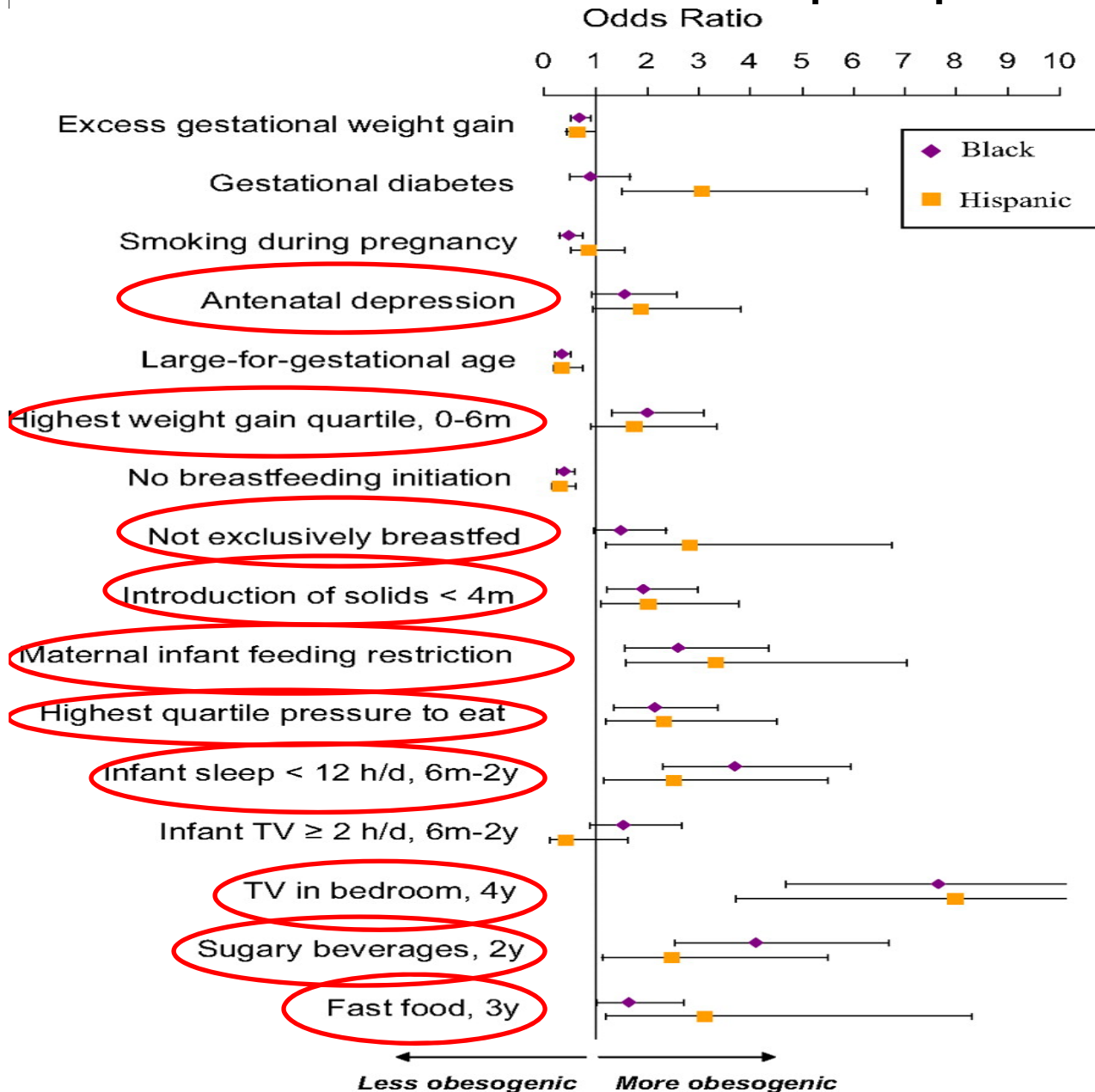
Advances in Nutrition (2012)

Childhood obesity life course framework

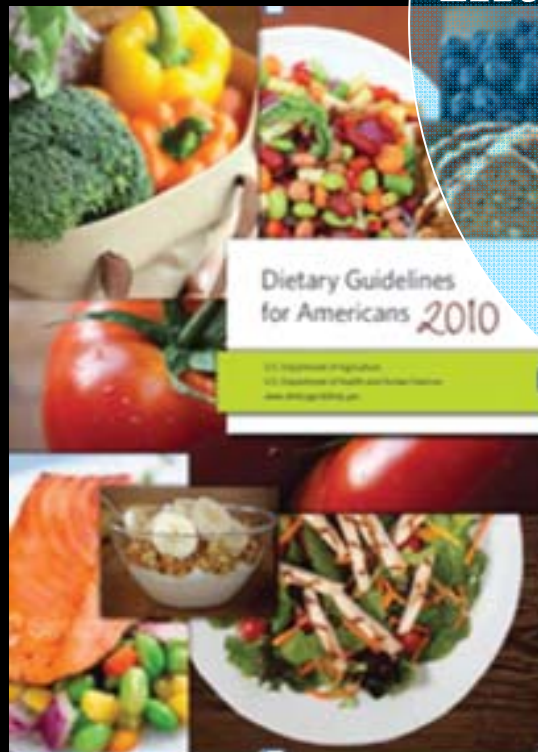
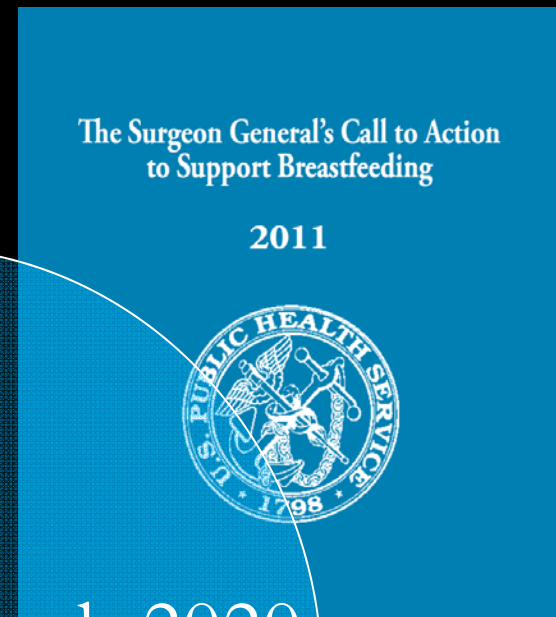


Pérez-Escamilla & Bermudez (2012)

Odds of each childhood obesity risk factor in black and Hispanic participants, relative to white participants*



*Odds ratios adjusted for maternal age, education, parity, and prepregnancy BMI; paternal BMI; household income; and child gender..



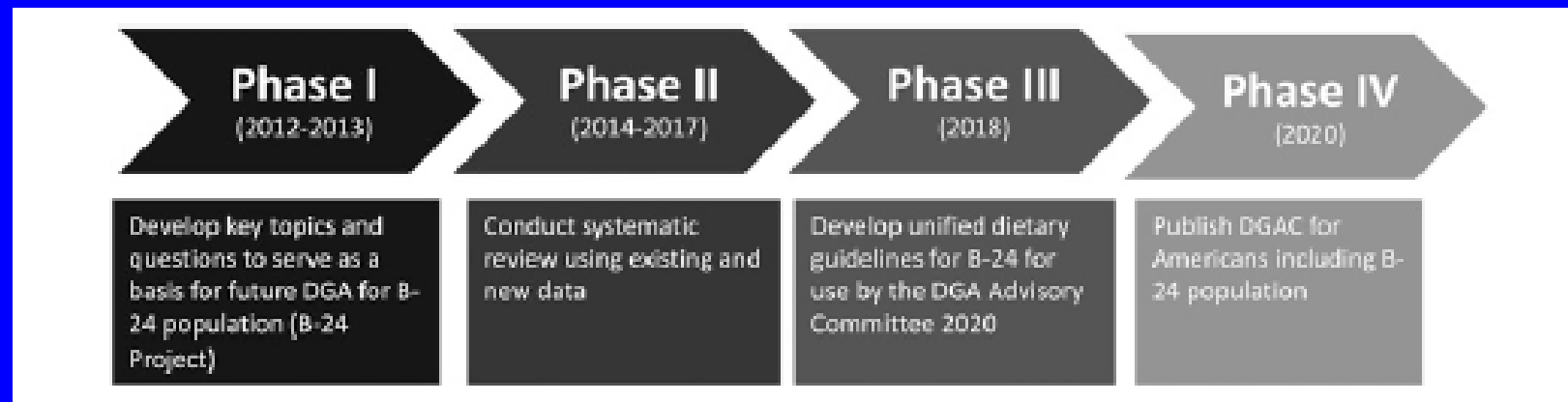
Integrate through 2020 USA Dietary Guidelines?



Executive summary: evaluating the evidence base to support the inclusion of infants and children from birth to 24 mo of age in the *Dietary Guidelines for Americans*—“the B-24 Project”^{1–3}

Daniel J Raiten, Ramkripa Raghavan, Alexandra Porter, Julie E Obbagy, and Joanne M Spahn

- **WG1: 0-6 months**
- **WG2: 6-12 months**
- **WG3: 12-24 months**
- **WG4: Caregivers**



Framework for actions to achieve optimum fetal and child nutrition and development

Benefits during the life course

↓ Morbidity and mortality in childhood

↑ Cognitive, motor, socioemotional development

↑ School performance and learning capacity

↑ Adult stature

↑ Work capacity and productivity

↓ Obesity and NCDs

Optimum fetal and child nutrition and development

Breastfeeding, nutrient-rich foods, and eating routine

Feeding and caregiving practices, parenting, stimulation

Low burden of infectious diseases

Food security, including availability, economic access, and use of food

Feeding and caregiving resources (maternal, household, and community levels)

Access to and use of health services, a safe and hygienic environment

Knowledge and evidence

Politics and governance

Leadership, capacity, and financial resources

Social, economic, political, and environmental context (national and global)

Nutrition specific interventions and programmes

- Adolescent health and preconception nutrition
- Maternal dietary supplementation
- Micronutrient supplementation or fortification
- Breastfeeding and complementary feeding
- Dietary supplementation for children
- Dietary diversification
- Feeding behaviours and stimulation
- Treatment of severe acute malnutrition
- Disease prevention and management
- Nutrition interventions in emergencies

Nutrition sensitive programmes and approaches

- Agriculture and food security
- Social safety nets
- Early child development
- Maternal mental health
- Women's empowerment
- Child protection
- Classroom education
- Water and sanitation
- Health and family planning services

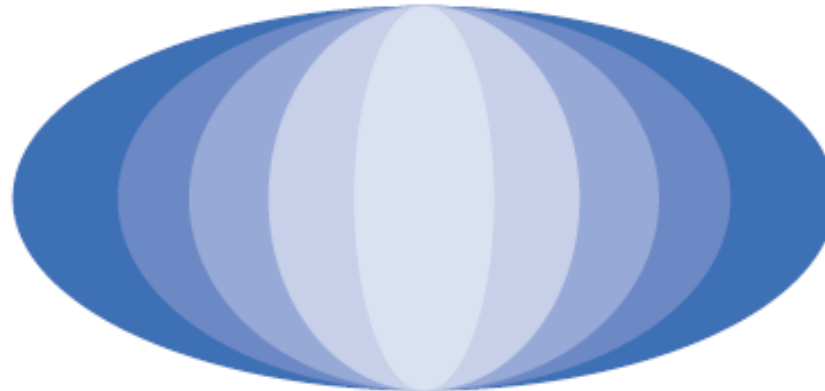
Building an enabling environment

- Rigorous evaluations
- Advocacy strategies
- Horizontal and vertical coordination
- Accountability, incentives regulation legislation
- Leadership programmes
- Capacity investments
- Domestic resource mobilisation

Volume 3 Supplement 1 June 2013

www.nature.com/ijosup

International Journal of **Obesity** SUPPLEMENTS

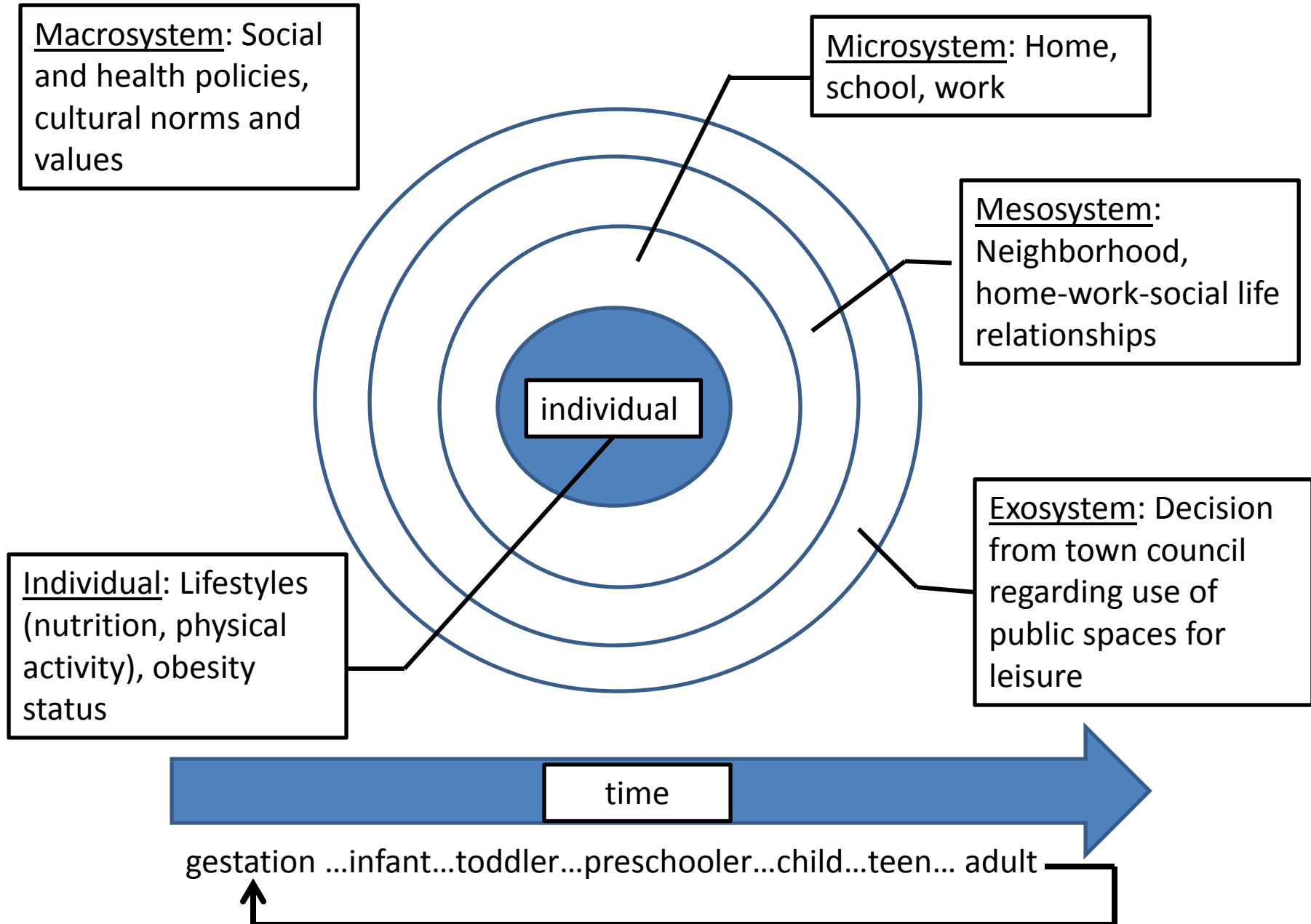


**Preventing Childhood Obesity In the Americas:
The Life-Course Framework**

**Guest Editors: Dr. Rafael Pérez-Escamilla and
Dr. Gilberto Kac**

iaso

nature publishing group 



Child Mortality Due to Nutritional Disorders

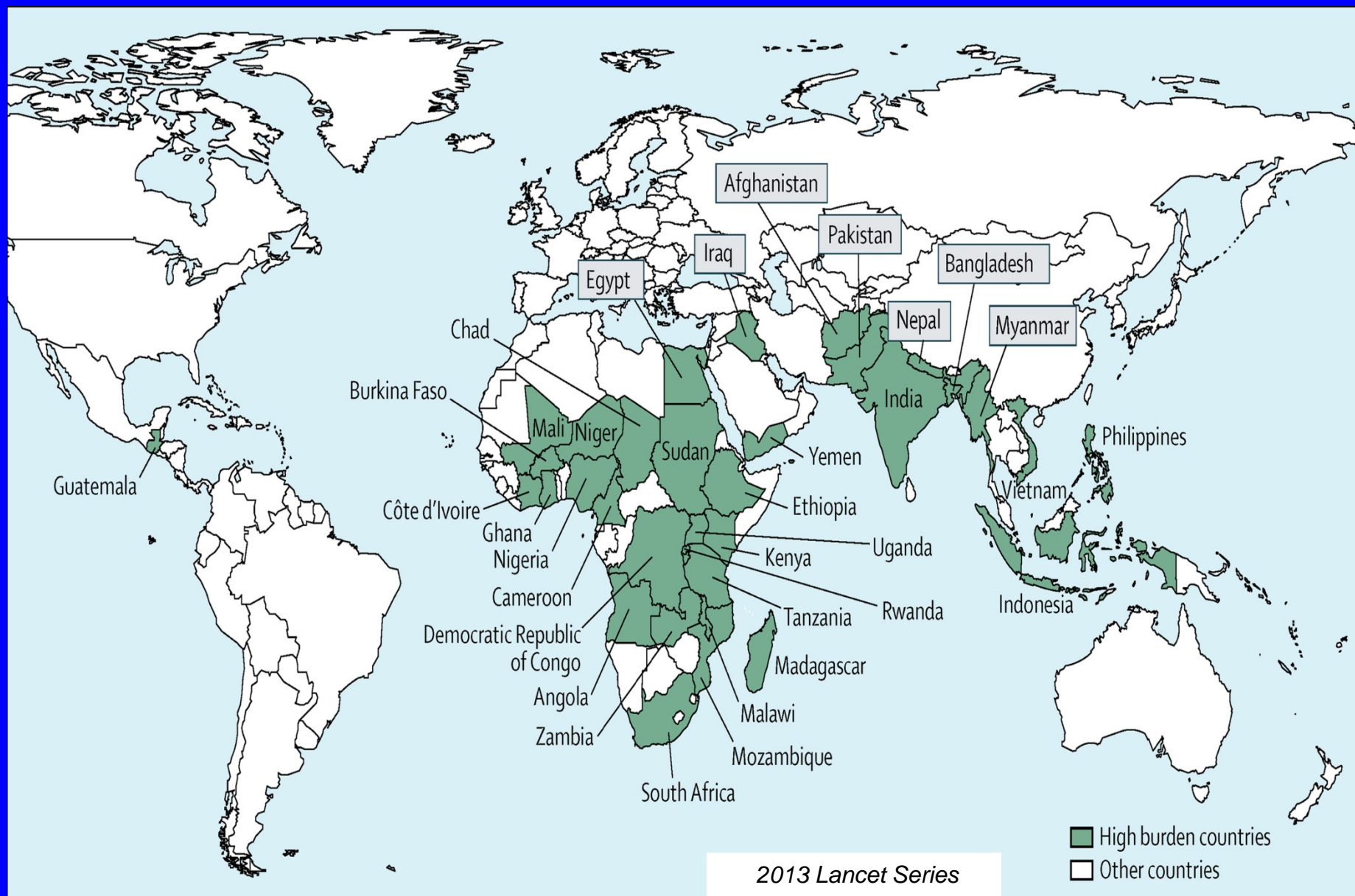
2013 Lancet Series

Nutritional Disorders	Attributable deaths with UN prevalences*	Proportion of total deaths of children younger than 5 years
Fetal growth restriction (<1 month)	817,000	11.8%
Stunting (1-59 months)	1,017,000*	14.7%
Underweight (1-59 months)	999,000*	14.4%
Wasting (1-59 months)	875,000*	12.6%
Severe Wasting (1-59 months)	516,000*	7.4%
Zinc deficiency (12-59 months)	116,000	1.7%
Vitamin A deficiency (6-59 months)	157,000	2.3%
Suboptimum breastfeeding (0-23 months)	804,000	11.6%
Joint effects of fetal growth restriction and suboptimum breastfeeding in neonates	1,348,000	19.4%
Joint effects of fetal growth restriction, suboptimum breastfeeding, stunting, wasting, and vitamin A and zinc deficiencies (<5 years)	3,097,000	44.7%

Data are to the nearest thousand. *Prevalence estimates from the UN.

SGA also linked with obesity and NCD risk later on in life

Countries with the highest burden of malnutrition
These 34 countries account for 90% of the global burden of malnutrition



Learning to eat: birth to age 2 y¹⁻⁴

Am J Clin Nutr 2014;99(suppl):723S-8S

Leann L Birch and Allison E Doub



PHOTO ILLUSTRATION/THINKSTOCK

Learning to eat: birth to age 2 y¹⁻⁴

Am J Clin Nutr 2014;99(suppl):723S–8S

Leann L Birch and Allison E Doub

- Familiarization
 - Repeatedly offer healthy foods such as vegetables to young children
- Associative learning
 - Food preferences develop based on the context and psycho-emotional atmosphere in which it's offered
- Observation learning
 - Children may also establish food preferences by observing what their caregivers eat

**The toddlerhood and preschool periods
represent a major sensitive period for the
development of food preferences**



The Journal of Nutrition

Symposium: Responsive Feeding—Promoting Healthy Growth and Development for Infants and Toddlers

Responsive Feeding and Child Undernutrition in Low- and Middle-Income Countries^{1,2}

Margaret E. Bentley,^{3*} Heather M. Wasser,³ and Hilary M. Creed-Kanashiro⁴

³Nutrition Department, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, NC, 27516; and ⁴Instituto de Investigacion Nutricional, La Molina Lima 12, Perú

J. Nutr. 141: 502–507, 2011

- Positive caregiver verbalizations during feeding may increase child acceptance of food
- Need consensus on what responsive feeding is
- Prospective studies needed

Ontogeny of taste preferences: basic biology and implications for health¹⁻⁵

Julie A Mennella

Am J Clin Nutr 2014;99(suppl):704S–11S

- Flavors passed from mother to fetus through amniotic fluid
- Flavors passed from mother to infant through breast milk
- Breastfed babies accept more easily fruits and vegetables than children who were formula fed.
 - However, formula fed infants can end up accepting food low in sugar, salt and bitter tasting if the mothers are advised on repeatedly exposing the infants to them
 - Promoting the consumption of complementary foods low in salt and sugar is likely to have a positive influence on dietary choices, growth and weight outcomes later on in life

Conclusions

- Integrate **preconceptional**, **gestational**, **post-partum** and **infancy and early childhood** as part of national childhood obesity prevention strategies
- Social-ecological model
- Social marketing framework
 - Generate political support
 - Mass media
 - Inter-sectoral initiatives/programs

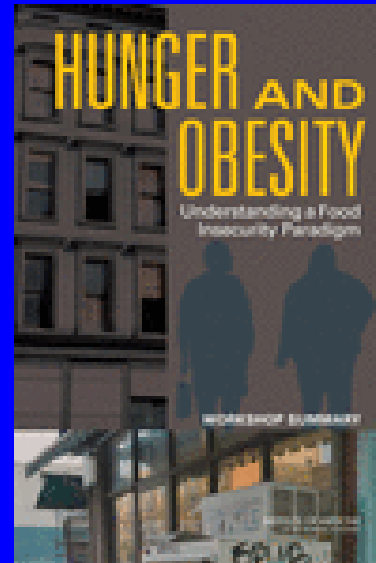


Implications for Development Agencies

- Prenatal care
- Infant and Young Child feedings programs
- Parenting programs
- Early Child Development programs
- Youth programs
- Food security programs
 - Conditional cash transfer programs

Challenge: Requires strong coordination between health, education, and social development sectors

Hunger and Obesity: Understanding a food insecurity paradigm. IOM Workshop Report, 2011.



Household food insecurity and excess weight/obesity among Brazilian women and children: a life-course approach

Michael Maia Schlüssel¹

Antonio Augusto Moura da Silva²

Rafael Pérez-Escamilla³

Gilberto Kac¹

Cad. Saúde Pública, Rio de Janeiro, 29(2):219-241, fev, 2013

Dietary Energy Density and Body Weight in Adults and Children: A Systematic Review

Rafael Pérez-Escamilla, PhD; Julie E. Obbagy, PhD, RD; Jean M. Altman, MS; Eve V. Essery, PhD; Mary M. McGrane, PhD; Yat Ping Wong, MLS, MPH; Joanne M. Spahn, MS, RD, FADA; Christine L. Williams, MD, MPH

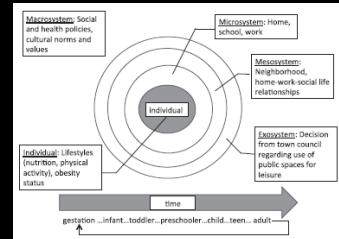
J Acad Nutr Diet. 2012;112:671-684.

The need for global visionary leadership to prevent childhood obesity

Past Results



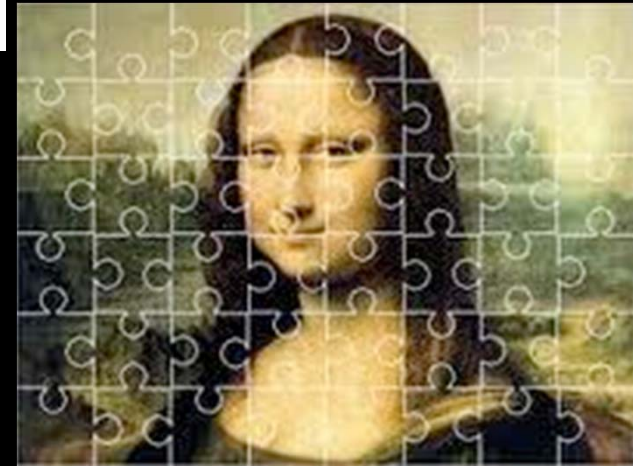
Silo approach



Framework



Future Results



Interdisciplinary, multi-level, multi-sectorial collaborations

Impact of new paradigm should be much more than the sum of silos' results

Monitoring & Evaluation

Multi-component maternal-child “life course” indicator

-e.g., proportion of women who:

- enter pregnancy with appropriate weight
- gain weight during gestation within recommendations
- return to pre-pregnancy weight by 6 months post-partum
- breastfeed their babies exclusively for 6 months
- introduce nutritious complementary foods at 6 months
- continue breastfeeding until child is two years old

Thank you!

