

Policy and implementation challenges for addressing the double burden of malnutrition among children and adolescents in low- and middle-income countries

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Simultaneously addressing under- and over-nutrition

- “There seems to be ample evidence to suggest that many of the food stamp recipients suffer not from nutritional lack but from nutritional overeating and overweight.
- Instead of receiving an incentive to purchase foods, the obese ought to face some sort of controls or penalties to restrict their purchase of certain obesity-producing foods.”

Raja, AJP, 1974

Food Support Program

- Provided very poor rural households with food or cash transfers in Mexico
- Aimed to lower poverty, increase food intake and nutrition, and improve dietary and health practices
- Compared with control arm, over 23 months, program increased women's weight in:
 - Food basket arm by 0.55 kg
 - Cash arm by 0.42 kg
- Greatest effect in already obese women:
 - Food basket arm by 0.98 kg
 - Cash arm by 0.67 kg

Food-Assisted Maternal and Child Health and Nutrition Program

- Aimed to reduce childhood undernutrition in Guatemala
- Implemented in area with a high overweight and obesity
- Changed food choices by providing food resources and new knowledge and skills related to health and food while reinforcing existing knowledge and beliefs
- Increased women's weight in perinatal period
 - In arm receiving family food ration and corn-soy blend as individual ration, effect of ~0.6 kg at 24 mo postpartum
 - Positive relation between size of family ration and impact on women's weight

Discouraged, food insecure, and overweight Costa Rican women

Intensive arm compared to non-intensive arm at 6 mo:

- Reduced overweight more
 - Lost 1.65 kg more (a total of 2.44 Kg)
 - Reduced obesity prevalence by 12.6 percentage points
 - Reduced waist circumference 2.21 cm more
- Reduced food insecurity 1.35 units more
- Increased psychological empowerment 3.82 units more
- Increased contribution to household support 18% more
- Found a job 21% more (38% of women found a job)
- Used the employability and women's offices more
- Had greater favorable changes in food consumption

Schools as Delivery Platform

- School meal programs
 - Provide food and promote attendance
 - Offer vehicle for fortification (e.g., preventing anemia in Uganda)
 - Potential for harm of children, families, and schools if poorly targeted and delivered (Fram and Frongillo, 2018, 2021)
- Menu modifications can introduce locally grown foods for diet diversity (e.g., Brazil)
- Mexico banned sugar-sweetened beverages in schools and increased the availability of water
- Schools can provide supplements, particularly iron
- Peru used school settings to encourage visits to health centers for weekly iron and folic acid supplements, reaching adolescents who were out of school (India and Ghana with similar programs)

Education for Better Nutrition

- Focus of nutrition in school curricula
 - Choice architecture
 - Dietary diversity
- Few schools include education of caregiving role that most students will have as young adults
 - Life Lab in Southampton piloting program
- School gardens potentially could convey practical knowledge, but impact depends on
 - Appropriate education linked to gardens
 - Training for teachers (often lacking)
 - Some evidence for conveying knowledge but less for influencing dietary habits

Markets and Regulation

- Taxes on sugar-sweetened beverages reduce consumption (e.g., Mexico), with impacts generally larger among those with
 - Lower disposable income, reflecting a greater sensitivity to price
 - Less established patterns of consumption, thus adolescents
- Front of package labeling and advertisement restrictions generally effective (e.g., Chile), but little age-specific evidence
- Manipulating prices through subsidies on nutritious foods can shift diets, but few cost-effective vehicles or scaled programs

Social Protection

- Social safety net programs support families
 - Impact on diets and child nutrition regularly assessed
 - Food Stamp Program improved learning in elementary school girls without weight gain (Frongillo et al., 2006)
- Diets follow regular patterns in demand analysis
 - Food expenditures increase with a shift towards healthy diets
 - Risk of obesity in some settings
- Adolescents seldom targeted (exception: South Africa's Child Support Grant), and impact on adolescents seldom assessed
- Safety nets motivate schooling and delay pregnancy: Bangladesh's Female Secondary Stipend
 - Early conditional cash transfer program
 - Explicitly targeted to adolescent girls
 - Increased years of schooling by 1.2 years
 - Delayed marriage less than half that
 - Increased age at first birth ~0.4 years

Hargreaves et al., Lancet, 2021

Social Interaction:

Social media two-edged sword

- Influences dietary choices, body image, and psychological wellbeing through
 - Advertising and marketing to adolescents
 - Subsequent peer interactions through social network
- Same processes underpin e-health and m-health interventions for overweight and obese adolescents; most focus on management than on prevention
- Media can mobilize political and consumer power of adolescents, for example, Bhalo Khabo Bhalo Thakbo (Eat Well Live Well)
 - Social media campaign led by adolescents
 - Supported by over 5 million people in Bangladesh
 - Promotes individual responsibility: supporters take pledge to buy and eat more healthy food
 - Has system-level goal to change how food is produced, manufactured, and sold

Social Interaction--Common Feature of Adolescent Diets

- Nutritious foods insufficiently accessible
- Unhealthy foods inexpensive and appealing
- How these impact adolescent food choice differs by context
- Autonomy and agency of adolescents differs with traditional, mixed, and modern diets

Adolescent Food Choices in Ghana

- Conceptualized healthy and unhealthy food as food safety, functional aspects of health, and cultural habits and practices
- Informed by food guidance and opinions in social networks
- Portion sizes conceptualized as moderation and having balance
- Ate different portions in different settings or situations (e.g., home, school, and community)
- Reasons for changing amounts eaten mostly due to seeking social acceptance or keeping up appearances
- Exercised some autonomy in food choice within the constraints of their environments (e.g., home vs. school)

Metaphors -- Obesity as:

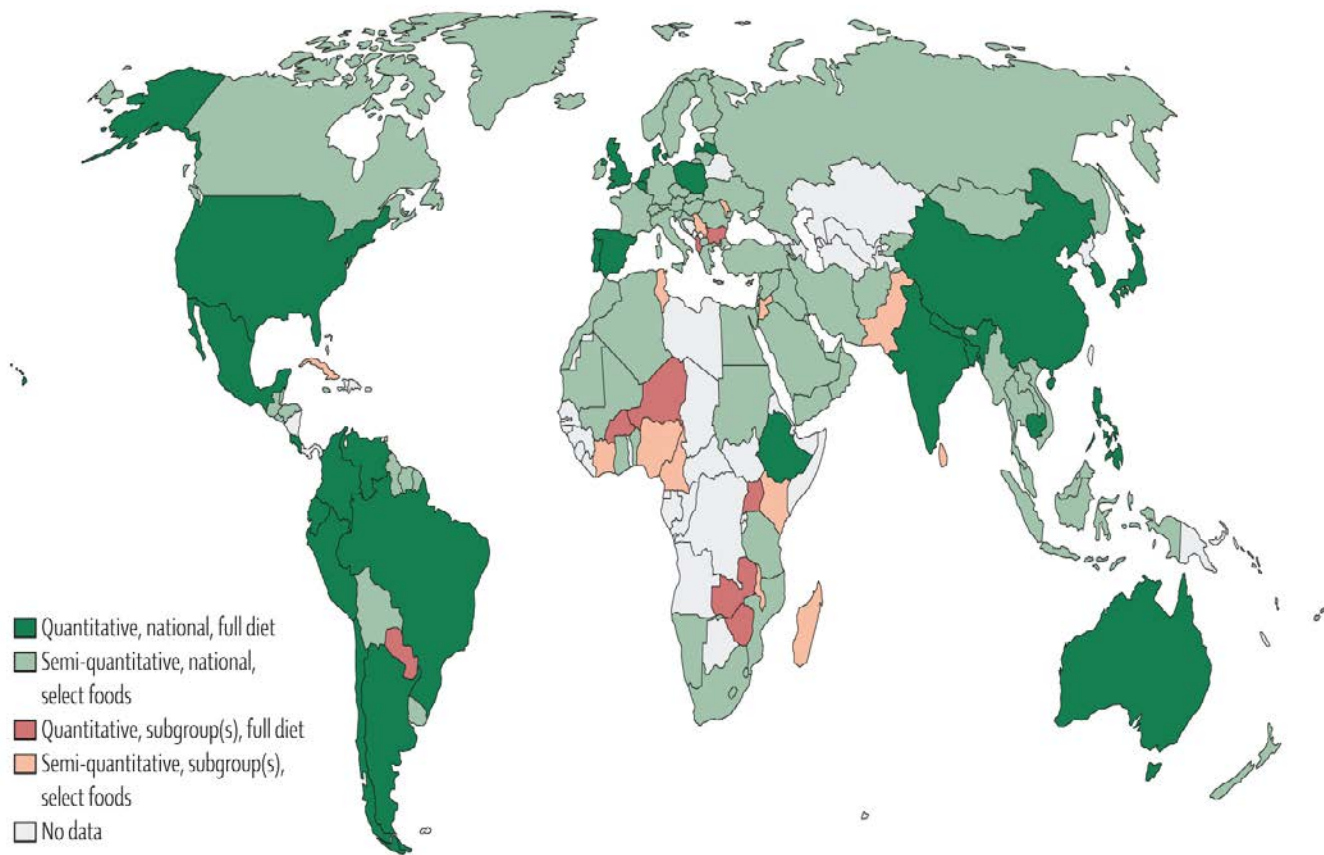
1. Sinful behavior (e.g., sloth, gluttony)
2. Disability
3. Eating disorder
4. Food addiction
5. Time crunch
6. Industry manipulation
7. Toxic food environment

Policy stakeholders in Tamil Nadu, India

- Nutrition-related policies not oriented to addressing the double burden of malnutrition
- Wide variation within the frame of nutrition-related NCDs
- Three challenges evident:
 - Issue not yet a priority or urgent
 - Little coherence about what to prioritize and why, how, and for whom to reduce nutrition-related NCDs
 - Lack of convergence from stakeholder disciplines and agencies to work across sectors to reduce nutrition-related NCDs.

Knowledge Gaps Begin with Basic Data

- Adolescent nutritional problems invisible without established targets or standardized data collection systems to inform action
 - No DHS equivalent with regular assessment of adolescent nutrition
 - WHO Global School-Based Student Health Survey of school-going adolescents
 - Gallup World Poll (15+ years)
 - MICS introduces a new survey venue for school-age children and adolescents
 - Others (see Hargreaves et al., 2021)
- Given their autonomy, assessing diets of many adolescents difficult
 - Potential innovations using machine learning and social media



- Lack of dietary data in many countries
 - Some assess full diet quantitatively
 - Some others assess full or select foods semi-quantitatively
 - Yet some others have no data
- Globally accepted set of measures and indicators of healthy diets only now being developed

Summary

- Simultaneously addressing under- and over-nutrition requires
 - In-depth understanding of children and adolescents being targeted to know root causes, needs, and what actions could work sustainably
 - Careful formative research, design, implementation, and evaluation of proposed actions
- In contrast to undernutrition, societal and policy stakeholder framing and consensus about nutrition-related NCDs nascent in most countries
- Lack of data (and data systems) on diets (and physical activity) of school-age children and adolescents and what actions work