AGRICULTURE, FOOD SYSTEMS AND NUTRITION LINKAGES:
LESSONS LEARNED AND EMERGING PRIORITIES

Suneetha Kadiyala
Associate Professor in Nutrition-Sensitive Development
London School of Hygiene & Tropical Medicine (LSHTM), UK
Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH)
THE BURDEN OF MALNUTRITION

1 in 4 children globally are stunted and will not reach their full physical or cognitive potential.

An estimated 2 billion people worldwide are deficient in key micro-nutrients.

A quarter of all deaths from non-communicable diseases occur under the age of 60.

80% of NCDs deaths in LMICs
HIGH GEOGRAPHIC INEQUITY: 34 COUNTRIES ACCOUNT FOR 90% OF GLOBAL BURDEN OF UNDERNUTRITION
HIGH SOCIOECONOMIC INEQUITIES PERSIST

Source: Global Nutrition Report 2016
CHILD STUNTING PREVALENCE, ORDERED BY THE SIZE OF THE GAP

Source: Global Nutrition Report 2016
POOR DIETS ARE A TOP RISK FACTOR FOR DISEASE
What to do?
INCOME GROWTH DOES REDUCE UNDERNUTRITION

A 10% increase in GDP/PC leads to a 6% reduction in stunting

Source: Ruel and Alderman; Lancet 2013
INCOME GROWTH CAN ALSO HAVE UNINTENDED CONSEQUENCES

A 10% increase in GDP/PC leads to a 7% increase in overweight & obesity

Source: Ruel and Alderman; Lancet 2013
Increased attention to the underlying determinants

Benefits during the life course

- Morbidity and mortality in childhood
- Cognitive, motor, and socio-emotional development
- School performance and learning capacity
- Adult stature
- Obesity and NCDs
- Work capacity and productivity

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)

Source: Adapted from Bhutta et al; 2013
SDG 2: Target 2.2
By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.
THE RAPIDLY CHANGING LANDSCAPE
RAPID CHANGES AFFECTING THE UNDERLYING AND BASIC DETERMINANTS OF NUTRITION STATUS

- Climate change/environmental fragility
- Rapid urbanization and rural transformation
- Changing food system governance, production & distribution
- Shifting grounds for women and men as they respond to evolving risks and opportunities
1. How do we make our agriculture-food systems sustainable and healthy to all people in this rapidly transforming context?

2. How do we make nutritious diets physically and economically accessible in an equitably and just way?
INCREASED MOMENTUM TO INFORM ACTION: LEVERAGING THE ROLE OF AGRICULTURE FOR NUTRITION
1. DEVELOPMENT OF CONCEPTUAL PATHWAYS AND FRAMEWORKS

Agriculture is fundamental to **structural transformation** of economies and **poverty reduction**

But **Pathways to nutrition** are diverse & interconnected

1. Agriculture as a source of food
2. Agriculture as a source of income and expenditures
3. Agricultural policy and food prices
   **Gender dimensions**
4. Women’s status and intra-HH resource allocation
5. Women’s ability to manage young child care
6. Women’s own nutritional status & intergenerational implications for nutrition

Source: Headey, Chiu and Kadiyala, 2012
Limited to subsistence rural farm households models
FOOD PRICES PATHWAY: AN EXAMPLE FROM INDIA

- Dietary diversification >> coarse grains for meat and dairy production >> Rising coarse grain prices

Calculations from USDA 2011 data
Source: Headey, Chiu and Kadiyala (2012); Kadiyala et al (2014)
2. EVIDENCE GENERATION: EMERGING EVIDENCE OF THE IMPACT OF AGRICULTURE INTERVENTIONS

- Impact/correlations on agriculture production, income and diet related outcomes (several)
- Impact on wasting and anemia (Olney et al 2012)
- No impact on stunting
- Markets seem to play a counter-intuitive role (Headey and Hoddinott 2014)
- Ambiguous impacts of women’s time allocation on child nutrition (Johnston et al 2015)
- Better data, methods, metrics and analytics urgently needed
3. INNOVATIONS IN EVIDENCE GENERATION

- Stepping out of disciplinary comfort zones
  - From evaluating homestead food productions to livestock and dairy value chains; innovative agriculture extension systems for nutrition
  - From subsistence based agriculture rural models to food systems based models in rapidly transforming contexts
  - Embracing environmental fragility/change and what this means for nutrition and vice-versa

- Development, testing and validation of innovative conceptual frameworks, methods and metrics
  - Innovative Methods and Metrics for Agriculture and Nutrition Action (IMMANA)
3.1. IMMANA

To accelerate the development of a robust scientific evidence base needed to guide policy investments in agriculture for improved nutrition and health:

1. Engage with the research community to stimulate development of innovative methodological approaches and novel metrics (competitive research grants)

2. Train young researchers in developing and applying cutting-edge methods (early career research fellowships)

3. Facilitate a global research network to strengthen interdisciplinary dialogue, sharing and learning for evidence-based policy making and programme design (Agriculture, Nutrition and Health Academy)

www.lcirah.ac.uk/immana
ANH Academy activities

- An Annual Academy Week
- Technical Working Groups
- A virtual platform for interaction
- Face-to-face and online learning and sharing events

The 1st ANH Academy Week

- 20-24 June 2016 in Addis Ababa
- Approximately 300 participants from 32 countries
- 2 days of face-to-face learning labs
- 3 day research conference

The 2nd ANH Academy Week

Kathmandu, July 9th-13th, 2017

Call for abstracts now open

www.ANH-Academy.org
CONCEPTUAL, METRICS AND DATA NEEDS:
SOME EXAMPLES OF TACKLING THE GAPS
ANH Academy Working Groups:
- Adapting concepts, frameworks and metrics applied in HICs in LMICs
- Sustainable diets
  - Power, influence, values, context
  - Lag in cause and effect
  - Geospatial and temporal scales
- Food environments
  - Static community environments to dynamic activity space
  - What constitutes “personal environment”?
- Food safety
Research motivated by obesogenic environments in high income countries with formal food markets
What is Food Environment?

- Is it just another way of saying “food systems”?
- Is it a part of the food system?
- Is the interface between the food system and the consumer?
- Is it an outcome of the food system?
- At what level is this concept applicable?
  - Macro (global, national)
  - Meso (community/neighborhood; schools, workplaces etc)
  - Micro (household, individual levels)
- Myriad conceptualizations
SOME LIMITATIONS IN CURRENT CONCEPTUALIZATION FOR LMICS

1. Issues defining community in a rapidly urbanizing context

2. Do not account for
   - personal perceptions
   - informal sources of foods
   - socio-spatial mobility and exposure
ANH-ACADEMY FE WORKING GROUP DEFINITION

“The food environment is the interface that mediates the acquisition of foods to consumers within the food system, influenced by physical, economic and socio-cultural domains that shape aspects such as the availability, accessibility, affordability, desirability and convenience of food sources and products.”
OPERATIONALIZING FOOD ENVIRONMENT: DIMENSIONS

**FOOD ENVIRONMENT**

- **External food environment**
  - **Availability**: Presence or not of food sources and products in a given context
  - **Prices**: Cost of products
  - **Convenience**: Including level of processing, shelf-life, packaging, disposal
  - **Desirability**: Quality and marketing of stores and products

- **Personal food environment**
  - **Accessibility**: Geographical distance, space and place, daily individual activity spaces and travel routes
  - **Affordability**: Relative cost of products to consumers
  - **Convenience**: Relative ease of preparing, cooking and consuming a product, time allocation
  - **Desirability**: Food-related preferences, tastes, desires, attitudes, culture, knowledge and skills

**FOOD SYSTEM**

**ACQUISITION/CONSUMPTION**

**HEALTH AND NUTRITION OUTCOMES**

Source: ANH-Academy FE Working Group, draft
"CONVENTIONAL" NUTRITION MEASURES STILL SUFFER FROM METRICS AND DATA PROBLEMS: DIETS

- Coverage and quality of data on food consumption patterns, trends, and dynamics remains poor

- Diet quality metrics beyond dietary diversity needed
  - Caloric and nutrient density, safety
  - Relationship between metrics of food diversity and quality in food system domains with diversity and quality of diets consumed
IN CONCLUSION ...
SUMMARY

- Low quality are the key modifiable risk factor for morbidity and mortality
- We need to demand much more of our agri-food systems to promote health
  - Diet quality is not even an SDG goal!
- We need better tools in our tool box:
  - Better frameworks, data, methodologies and metrics to assess trade-offs, synergies, impacts and pathways should continue to be developed