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Leveraging Maternal Nutrition Interventions for Reducing Nutrition-Related NCDs in Bangladesh

Amanda Pomeroy-Stevens
SPRING Project; John Snow Inc.
World Congress on Public Health
Kolkata, February 14th, 2015

OUTLINE





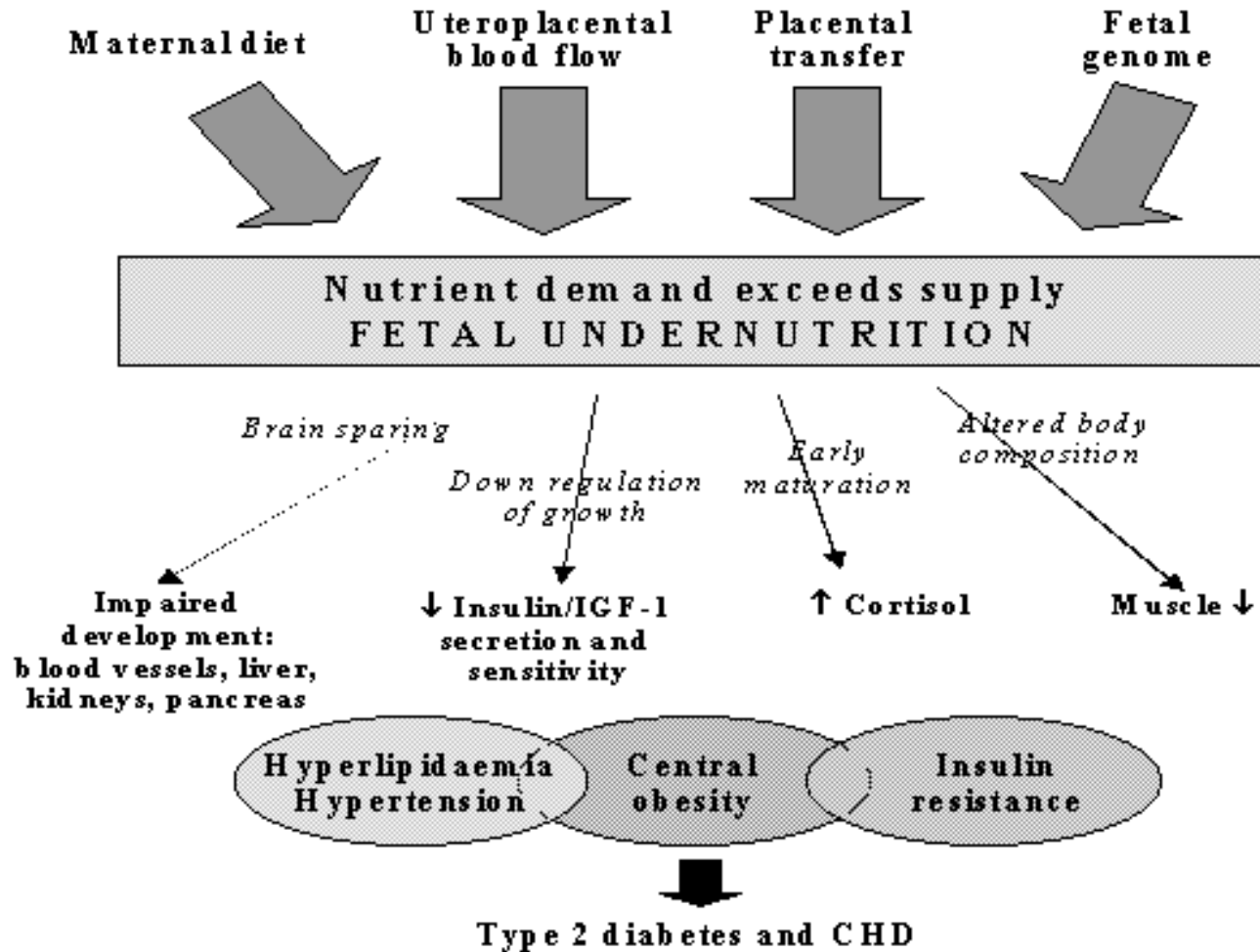
Some Definitions

Noncommunicable disease (NCD): A disease that is not infectious and not transmissible among people. Examples include cardiovascular disease, type II diabetes, asthma, and cancer.

Nutrition-related noncommunicable diseases (N-RNCDs): Noncommunicable diseases resulting from nutrition, including cardiovascular diseases (CVDs), type II diabetes and other metabolic disruptions, and some cancers.

1,000 days: The period between a child's conception and his or her second birthday.

The Life Course Approach to N-RNCD Prevention



Source: Fall, 2003. **The Fetal and Early Life Origins of Adult Disease.** Indian Pediatrics, 40:480-502.

Intervention Points for N-RNCD Prevention

Before disease occurs

Primary

Goal:
prevent disease from occurring

After disease occurs but before patient notices symptoms

Secondary

Goal:
diagnose and treat disease early

After disease occurs and symptoms arise

Tertiary

Goal:
Prevent damage, prevent complications, rehabilitate

CDC EXCITE. Module 13: Levels of disease prevention. <http://www.cdc.gov/excite/skincancer/mod13.htm>.
WHO. 2008-2013 Action plan for the global strategy for the prevention and control of noncommunicable diseases. 2008.



Bangladesh's Current N-RNCD Profile



Bangladesh

- **Rapidly changing epidemiological profile** has accelerated NCD burden
- Among the NCDs, cardiovascular diseases (CVD), diabetes, chronic obstructive pulmonary disease (COPD) and cancers are most prevalent – **60% of disease burden** [1].
- Direct costs of care for diabetes is up to 24.5% of annual income [2]. CVD, DM and Stroke **cost country over 1 billion USD between 2006-15** [4]

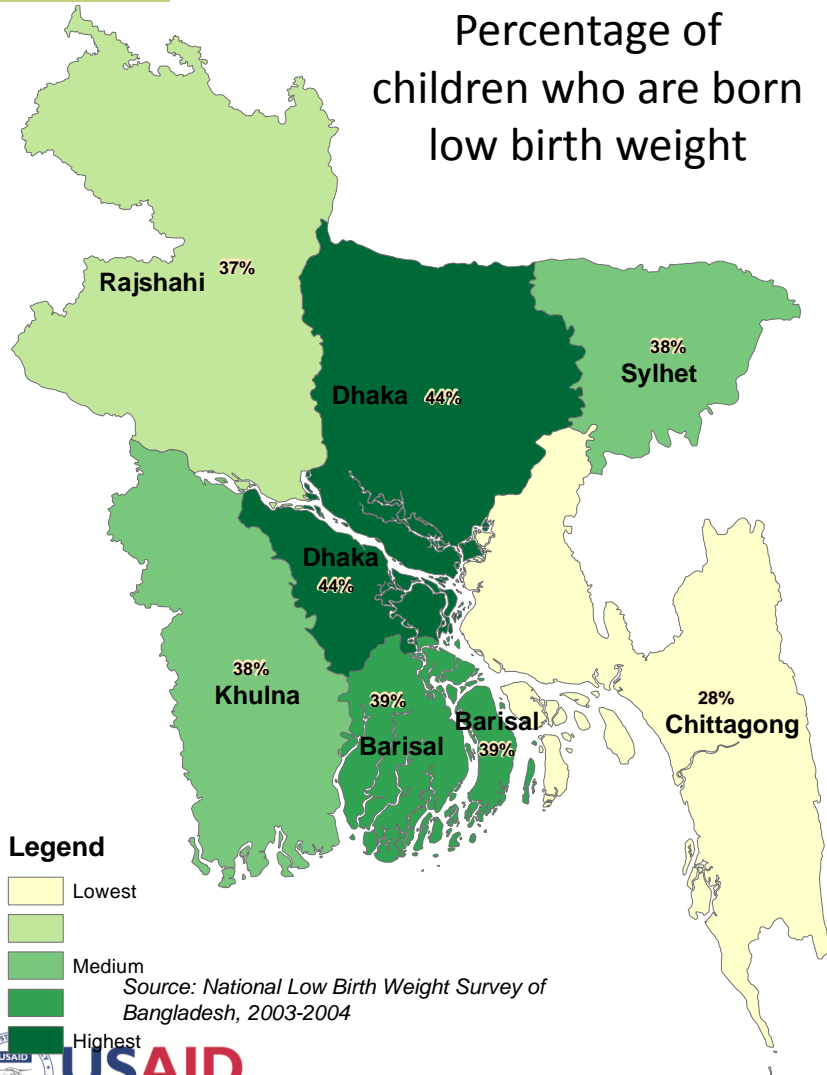
Estimated Adult NCD Prevalence, Bangladesh 2010 [1]

	N-RNCD risk factors (% of Adults)				N-RNCDs	
	Hyper-tension	Raised Glucose levels [10]	Over-weight/ Obese	Raised Chol.	Diabetes	% of Deaths from CVD [10]
Men	19%	8%	13%/2%	-	4%	-
Women	18%	9%	22%/5%	-	4%	-
Total	18%	8%	18%/4%	-	4%	27%

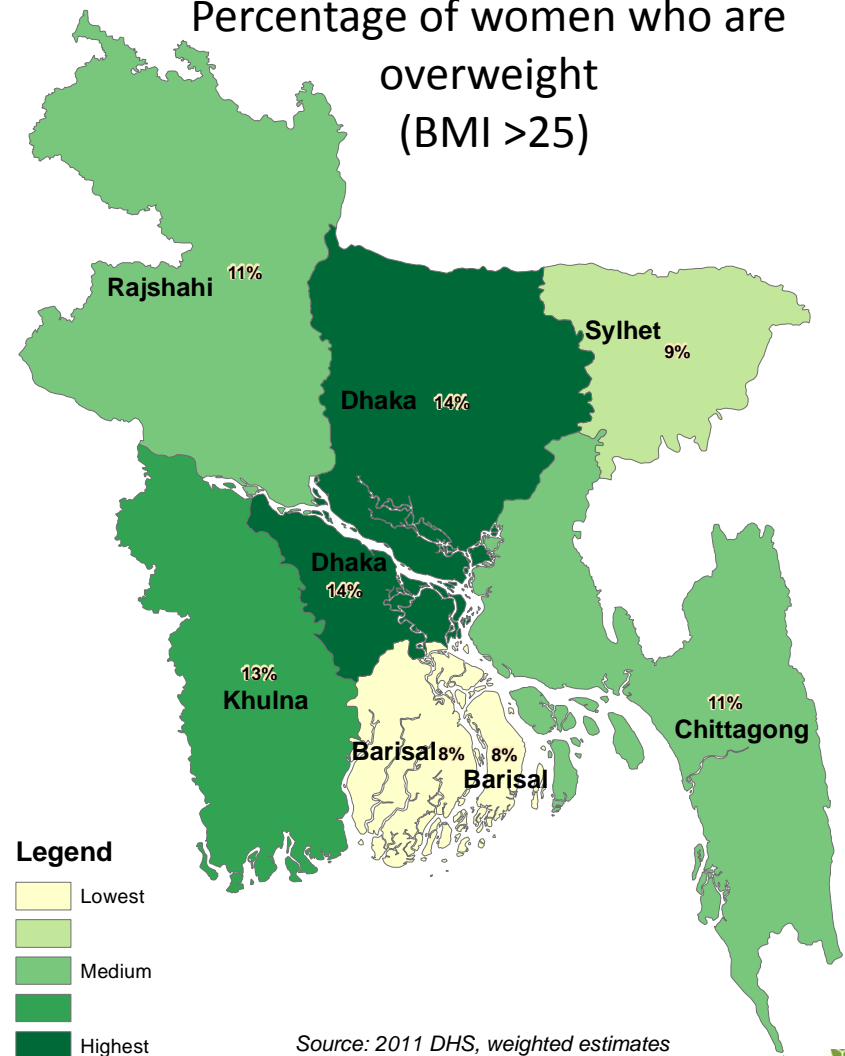
- 99% had at least one NCD risk factor; ~29% had >3 risk factors

Regional Variation in Pre-NCD Conditions [5]

Percentage of children who are born low birth weight



Percentage of women who are overweight (BMI >25)





Modelling Future N-RNCD Risk

<https://www.spring-nutrition.org/technical-areas/systems/n-rncds>



SPRING's Work on N-RNCDs

ELN-NCD Model

- Decision Tree/Markov model to model effect of reductions in adverse birth outcomes on CVD morbidity/mortality

Diabetes Review

- Systematic literature review of LMIC to assess evidence on linkages between adverse birth outcomes and DM

Policy Work & Technical Guidance

- Ongoing support to provide Country and USAID mission guidance on how to better link nutrition and N-RNCD policy

Modifying Future CVD Risk [6]

3% Discount	Cost Effectiveness Ratios (CER)
Long- and Short-Term Benefits	
MMS	\$265 (\$197 – \$723)
BPE	\$795 (\$787 – \$1334)
FP/IPI	\$3361 (\$3320 - \$4688)

WHO threshold for cost effectiveness

Highly cost effective is less than GDP per DALY: \$743

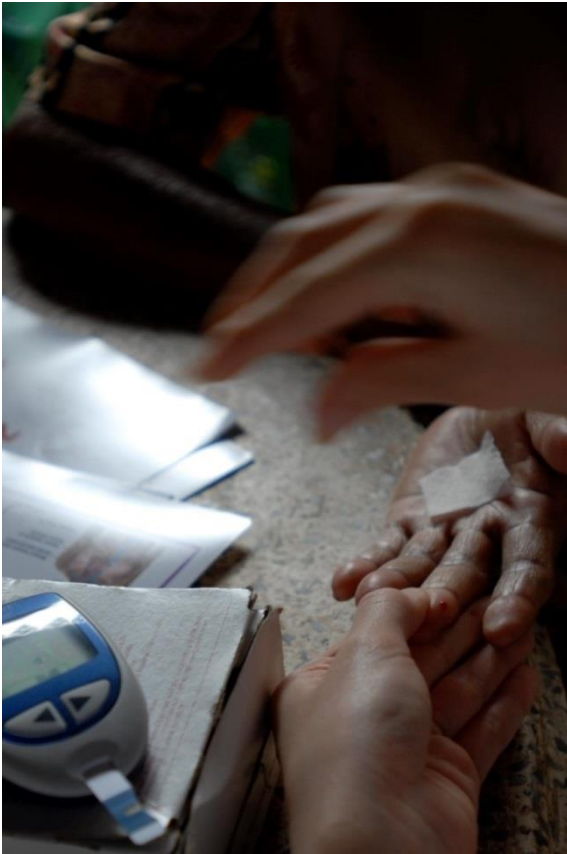
Cost Effective is less than three times GDP per capita per DALY: \$2229

Source: World Bank 2011 GDP per capita for Bangladesh

- While survivorship had a significant confounding effect on mortality results, the results were encouraging:
 - MMS was **highly cost effective**
 - Holding IMR constant, MMS reduced modifiable CVD deaths by ~10%

CERs improve by \$3 to \$49/DALY with the inclusion of long term effects

Future Diabetes Risk [7]



- Inverse relationship between BW and DM
- For BW below 4,000g, **increasing BW by as little as 100g could translate into DM risk reductions of 5 – 10%.**
- Low average BWs in LMICs mean interventions to increase BW will likely decrease DM risk, with relatively little effect on risk for BW > 4,000g
- **Modelling risk reductions for DM difficult**, missing data on affects of sex, GA, ethnicity, weight gain



Policy Implications

Relevant Policy	Time Frame	Linkage to N-RNCD
Health, Population and Nutrition Sector Development Program (HPNSDP)	2011-2016	One of 5 priority areas for health sector challenges in the plan is NCDs [3]
HNP Strategic Investment Plan	2003-2010	Incl. prevention and control of major NCDs, suggests public sector focus on prevention (private sector focus: ICU and tertiary care services)
Strategic Plan for Surveillance and Prevention of Non-Communicable Diseases in Bangladesh	2011-2015	Focuses on three main strategies: Surveillance, health promotion and prevention, and health care services
National Nutrition Services Operational Plan	2011-2016	This is the primary nutrition policy document, and it is contained fully within the HPNSDP.



Policy Actions for N-RNCD Prevention – Population Level

- It is imperative to **identify how existing undernutrition programs can be leveraged** to address N-RNCD prevention as children and adolescents reach adulthood.
- More emphasis on **linking nutrition to N-RNCD programs** is required, both for primary and secondary prevention [3]
- **National stakeholder mapping** needed to increase efficiency, marshal resources and harmonize advocacy
- **More, and more regular, surveillance** of both NCD and birth outcomes is needed to properly target at-risk populations [2,3,8,9]



Policy Actions for N-RNCD Prevention – Provider Level

- Quality – Build on existing nutrition counseling platforms, **ensure messages for under- and over-nutrition harmonized** to avoid conflicts [2,3]
- Reach – Greater **training and support to providers (including CHWs)** on integrating nutrition messaging, screening and intervention into women's and young child PHC visits (Suggestions to revise ESP [2,3, 8])
- **Continuum of care** – educate patients on warning signs for N-RNCDs, about their individual risks, and linkages to secondary prevention [2]



THANK YOU

<https://www.spring-nutrition.org/technical-areas/systems/n-rncds>

Sources

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