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

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World Congress on Public Health
Kolkata, February 14th, 2015
OUTLINE

Life Course Approach to NCD Prevention

Bangladesh’s N-RNCD Risk Profile

Modeling Future N-RNCD Risk

Bangladesh Policy Background

Policy Actions for Life Course N-RNCD Prevention
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

Intervention Points for N-RNCD Prevention

**Primary**
- Before disease occurs
- **Goal:** prevent disease from occurring

**Secondary**
- After disease occurs but before patient notices symptoms
- **Goal:** diagnose and treat disease early

**Tertiary**
- After disease occurs and symptoms arise
- **Goal:** prevent damage, prevent complications, rehabilitate

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]

<table>
<thead>
<tr>
<th>N-RNCD risk factors (% of Adults)</th>
<th>N-RNCDs</th>
<th>% of Deaths from CVD [10]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>19%</td>
<td>8%</td>
</tr>
<tr>
<td>Women</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>18%</td>
<td>8%</td>
</tr>
</tbody>
</table>

- 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**

- Rajshahi: 37%
- Dhaka: 44%
- Khulna: 38%
- Barisal: 39%
- Chittagong: 28%
- Sylhet: 38%

**Percentage of women who are overweight (BMI >25)**

- Rajshahi: 11%
- Dhaka: 13%
- Khulna: 14%
- Barisal: 8%
- Chittagong: 8%
- Sylhet: 9%

Legend:
- Lowest
- Medium
- Highest

Source: National Low Birth Weight Survey of Bangladesh, 2003-2004

Source: 2011 DHS, weighted estimates
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]

<table>
<thead>
<tr>
<th>3% Discount</th>
<th>Cost Effectiveness Ratios (CER)</th>
<th>Long- and Short-Term Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMS</td>
<td>$265 ($197 – $723)</td>
<td>Highly cost effective is less than GDP per DALY: $743</td>
</tr>
<tr>
<td>BPE</td>
<td>$795 ($787 – $1334)</td>
<td>Cost Effective is less than three times GDP per capita per DALY: $2229</td>
</tr>
<tr>
<td>FP/IPI</td>
<td>$3361 ($3320 - $4688)</td>
<td>Source: World Bank 2011 GDP per capita for Bangladesh</td>
</tr>
</tbody>
</table>

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


5. SPRING NCD Profiles :https://www.spring-nutrition.org/publications/briefs/nutrition-related-non-communicable-disease


