Stunting, Women’s Nutrition and South Asia

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Women’s Nutrition

Major Contributor to Stunting in South Asia
Women's Nutrition and Stunting
Some Evidence Based Facts

- Poor Women Nutrition (poor height, thinness, BMI, anaemia) impacts not only maternal mortality but childhood stunting

- Both direct nutritional and non-nutritional factors influence women’s nutrition

- Poor women nutrition adversely impacts early child care: Contributes to stunting

- Poor women nutrition impairs foetal development - contributes to LBW and increases the risk of stunting (2.1 to 4.3 times)
Low Birth Weight in South Asia

- 52% of global burden
- One in four children born are with LBW
- Burden is high in India, Pakistan and Bangladesh
- IUGR is the main contributor of LBW in countries with LBW >10 percent

Source: UNICEF, 2013
LBW, child stunting and women stature

Highest proportion of linear growth failure <12 months attributed to LBWs

New Delhi Birth Cohort. Sachdev 2011
Stunting: Women’s nutrition through life cycle plays a critical role
Major pathways for women’s nutrition and stunting

Women Nutrition

Life Cycle: Critical Periods

- Inadequate pregnancy care
  - Increase in IUGR rates
  - Poor birth outcome
  - Increase in LBWs
  - Higher prevalence rate of stunting

- Poor child care (0-24 months)
  - Adverse effect on optimum growth-largely irreversible

- Neglected adolescent care
  - Optimum growth constrained, anaemia
  - Reduction in maternal size, short stature (low height/BMI)

- Poor care preconception/newlyweds
  - Optimum weight gain Hindered, anaemia
Stunting and Poor Child Care: 0-24 months

Largely irreversible stunting by 24 months: Poor start to adult maternal stature
Early childhood stunting 0-24 months

Predicts poor adult women stature

New Delhi Birth Cohort. Sachdev 2011)
Neglected adolescent and pre-conception care: (poor maternal stature and anaemia):

Child Stunting
# Maternal Height

## Association with Stunting Prevalence Rate

<table>
<thead>
<tr>
<th>Maternal Height (cm)</th>
<th>Relative Risk of Stunting (95% Confidence interval)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal height per cm increase</td>
<td>0.971 (0.968—0.973)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Maternal height (cm)</td>
<td>1*(reference)</td>
<td></td>
</tr>
<tr>
<td>&gt; 160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>155 -159.9</td>
<td>1.252 (1.152-1.359)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>150 - 154.9</td>
<td>1.506 (1.390-1.632)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>145 - 149.9</td>
<td>1.713 (1.580-1.857)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&lt;145</td>
<td>1.947(1.792-2.116)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

1 cm increase in maternal height was associated with a significant decreased risk of child mortality, underweight, stunting, wasting and anemia.

Source: Subramanian et al, 2009
Low Maternal Height – a risk factor for stunting in children

Maternal Stature Study - 54 Countries (LIC/MIC)**:

- Shorter maternal stature → risk factor → mortality, underweight and stunting in infancy and childhood

**Effect size on childhood stunting:**
- Almost twice that of being the lowest education category
- 1.5 times that of being in the poorest quintile

- Gaining optimum height crucial for ”stop” stunting

**Analysis of 109 Demographic Health Surveys between 1991-2008

Source: Ozaltin et al, 2010
Adolescent Height
Implications of Early Childhood Stunting

Mean Height Between 3-18 years for Rural (India)
Stunted and not stunted at 3 years

Rao et al 2012
Child stunting and height gain in adolescence

- Slower velocity and elongated growth spurt in stunted girls
- Height gain continues for a few years after the onset of menarche in undernourished girls

Source: Rao S et al, 2012
Percentage Girls Married and Birth by 18 Years

Higher risk of child stunting (1.2 to 1.5 times)

Source: UNICEF, 2014
## Maternal Weight and Birth Weight:
Contributes to LBW and Child Stunting

<table>
<thead>
<tr>
<th>Mother weight (Kg)</th>
<th>No.</th>
<th>Mean Birth Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;45</td>
<td>128</td>
<td>2639.6</td>
</tr>
<tr>
<td>45 - 54</td>
<td>251</td>
<td>2779.1</td>
</tr>
<tr>
<td>&gt;55</td>
<td>96</td>
<td>3009.41</td>
</tr>
<tr>
<td>Total</td>
<td>475</td>
<td>2788.0</td>
</tr>
</tbody>
</table>

Source: Ramachandran, 1989
Poor dietary intake in adolescence: Poor adult nutritional status
Women entering pregnancy thin/low BMI and poor micronutrient status

Percentage with daily consumption of food items < 50% RDI

Percentage with daily intake of nutrients <50% RDA

NNMB, 2012
Improvement in Women Body Mass Index (BMI) Reduces LBW (1980s-2000s)

Source: Mason et al, 2012
Poor Women’s Nutrition (BMI) and Child Stunting

- India: Child Stunting 48, Maternal BMI 36
- Bangladesh: Child Stunting 41, Maternal BMI 30
- Nepal: Child Stunting 41, Maternal BMI 24
- Sri Lanka: Child Stunting 17, Maternal BMI 16.2
- Pakistan: Child Stunting 44, Maternal BMI 15.1
- Maldives: Child Stunting 19, Maternal BMI 7.5
Anaemia: Adolescent girls/preconception stage
Anaemia in Adolescent Girls:

- Norway: 4%
- USA: 5.9%
- England: 10.5%
- Thailand: 17%
- Bhutan: 26.4%
- Sri Lanka: 40%
- Bangladesh: 40%
- Myanmar: 45.2%
- Nepal: 46%
- Maldives: 50%
- India: 90%

Percentage (%)
WHO Anaemia Prevention Guidelines for Women in Reproductive Age (WRA):

Pregnancy too short a period for anaemia correction.

WIFS Dosage:
- WRA anaemia ≥ 20%
- 60mg elemental iron and 2.8mg folic acid
- Weekly IFA Supplements (WIFS)
Weekly IFA Supplements (WIFS) Policy for WRA:
Important Investment

- **WIFS and biannual deworming**: Evidence annual anaemia reduction by one third
- **“Fixed Day “ approach**: Facilitates coverage and compliance
- **Social Marketing effective**: Doable long term strategy (Cambodia, Vietnam, Philippines)
- **WIFS Policy in SA countries**: Only exists in India and Bangladesh - as of 2011
- **Comprehensive Anaemia and Folic Acid Deficiency Prevention Policy critical.**
Pregnancy Care and Stunting:

Suboptimum Coverage of ANC, IFA supplement and poor nutrient intake
Dietary/ nutrient Intake: Pregnancy and non-pregnancy stage

Average intake of food stuff

<table>
<thead>
<tr>
<th>Foodstuff</th>
<th>Women</th>
<th>Pregnant Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal &amp; millets</td>
<td>341</td>
<td>354</td>
</tr>
<tr>
<td>Pulses &amp; legumes</td>
<td>28</td>
<td>34</td>
</tr>
<tr>
<td>GLV’s</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Nuts &amp; oilseeds</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

% consumed < 50 % RDA of nutrients

- Dietary folate: Women 46.4%, Pregnant Women 72%
- Calcium: Women 45.1%, Pregnant Women 73.1%
- Iron: Women 68.3%, Pregnant Women 78%
- Vit A: Women 80.7%, Pregnant Women 83.2%
- Protein: Women 15.1%, Pregnant Women 35.7%
- Energy: Women 7.7%, Pregnant Women 13.7%

*States: Kerala, Tamilnadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Madhya Pradesh, Orissa, West Bengal, Uttar Pradesh

Source: NNMB, 2012
Non-Nutrition Factors: Influence Women’s Nutrition and Stunting

Emerging Evidence

Age of conception
Education
Decision making Power
Domestic Violence
# Highest Risk Factors Associated with Stunting in Young Children: India, Nepal and Bangladesh

<table>
<thead>
<tr>
<th>Risk factors for Stunting</th>
<th>India</th>
<th>Bangladesh</th>
<th>Nepal</th>
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</thead>
<tbody>
<tr>
<td>No education of mothers</td>
<td>Domestic violence</td>
<td>Maternal Height</td>
<td></td>
</tr>
<tr>
<td>Maternal Height</td>
<td>Decision making power</td>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>Mothers with no Institutional delivery</td>
<td>Maternal Height</td>
<td>Open defecation</td>
<td></td>
</tr>
<tr>
<td>Households with low standard of living</td>
<td>Secondary education</td>
<td>Born in hospital</td>
<td></td>
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<tr>
<td>Households with no toilet facility</td>
<td>Wealth quintile</td>
<td>ANCs visits- or more</td>
<td></td>
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<tr>
<td>--</td>
<td>---</td>
<td>Maternal education</td>
<td></td>
</tr>
</tbody>
</table>

Mother’s Education Level, Decision Making Power influences Stunting in Children
Women’s education level and child stunting in India

Source: NFHS-3, 2005-06
Mother’s Education and child undernutrition (Pakistan)

Women Status
Positive impact on Child Nutrition Strongest in South Asia

Women’s Decision Making Power relative to:
• Work cash
• Age of marriage
• Age difference
• Years of education difference

Impact on Child Care
• Timely initiation of breastfeeding
• Treatment of illness
• Immunization
• Quality of substitute care taking
• Complementary feeding
  ◆ Timely introduction
  ◆ Quality frequency

Impact on Self Care
• BMI Improvement
• Prenatal – birthing care improvement

Source: Smith et al, 2003

Percentage of underweight in <3 years children drop by about 13 percentage points South Asia*

*Positive impact stronger in South Asia (greatest effect on poorer households). In SSA, decrease estimated to be only 3 percent.
Women’s Decision Making Power:
Impact on Complementary Feeding: 3 Regions

- Whether 6-12 months old receives complementary feeding
- Whether > 6 months old receives high quality food
- Number of times per day > 6 months old eats

Smith et al, 2003, IFPRI
Higher Maternal Education:
Decision Making: Accelerating Problem of Overweight in Women - Child Stunting?

Source: UNICEF, 2014; NFHS-3 (2005-06)
Domestic Violence: Malnutrition

• Evidence limited: association alarming (India, Bangladesh)

• Physical domestic violence/multiple incidents**
  ➢ Determinant of ill health
  ➢ Anaemia women (odds ratio=1.11 )
  ➢ Underweight women (odds ratio1.21)

• Mechanisms not well understood
  ➢ Interferes with decision making/mobility/self-child caring
“Stop Stunting” in South Asia: Improving Women’s Nutrition Imperative
Women Nutrition: Renewed Commitment

- **UNICEF 1992**: GOBI-FFF (Female Literacy, Fertility Control, Food Supplementation)
- **WHA 2012**: Global target 2025 - Prioritizes Stunting and women's nutrition
  - **Target 1**: 40% reduction in global number of stunted children <5yrs
  - **Target 2**: 50% reduction in anaemia in reproductive age group.
  - **Target 3**: 30% reduction in LBW
## Rapid Decline in Stunting in Selected Countries:
Adolescent and Women Care Special Strategy

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<tbody>
<tr>
<td><strong>Decrease in Stunting</strong></td>
<td>39% to 23.7%</td>
<td>57% to 41%</td>
<td>28 to 15%</td>
</tr>
<tr>
<td><strong>Programme Focus</strong></td>
<td>Under twos, IYCF</td>
<td>IYCF</td>
<td>IYCF</td>
</tr>
<tr>
<td><strong>Special Intervention</strong></td>
<td>• ANC - Adequate weight promotion&lt;br&gt; • Monitoring LBWs for “catch up”&lt;br&gt; • Adolescent girls - Nutrition education</td>
<td>• Pregnant women-IFA supplement&lt;br&gt; • Family planning&lt;br&gt; • Health Nutrition Education</td>
<td>• Maternal care&lt;br&gt; • Family/age at first marriage&lt;br&gt; • Secondary education of girls</td>
</tr>
</tbody>
</table>
Stop Stunting: Interventions Across Life Cycle

• **Young Child Nutrition:** First window of opportunity - growth and prevent stunting

• **Adolescence:** Second growth spurt - optimum height gain

• **Preconception** (newly-weds): Entering pregnancy at right age, well - nourished and informed

• **Pregnancy:** Enable optimum foetal growth
We Must Act Now

• **Position women nutrition high in “stop stunting” agenda**
  - Strategic Investment
  - Political commitment for non-nutrition enabling factors (Secondary education/strong legal measures/family planning - delayed pregnancy)

• **Develop and implement women-child nutrition South Asia guidelines on “stop stunting” intervention package**
  - Coupling direct nutrition and non-nutrition interventions
  - Scaling up identified ‘doable’ direct nutrition interventions - conception to 24 months, adolescence and pre-conception stage
  - Universal registration and weighing of newborns - Follow up of LBWs
  - Comprehensive anaemia/multiple micronutrient strategy (diversified diet, pharmaceutical supplements, food fortification, sanitation)

• **Build evidence of good practices - Invest in evaluation, research and documentation**
Thank you!