PUBLIC HEALTH NUTRITION AND FOOD SAFETY CHALLENGES IN INDIA

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INDIA TODAY

• More a continent than a single country
• 35 states and union territories significantly larger than European countries
• 1600 dialects
• Rich blend of cultures, traditions, religions
• Remains a vibrant democracy with a highly sophisticated and visionary government.
• Ambitious, “Can Do” attitude reflected in Twelfth Five Year Plan 2013-2018
A LAND OF IMMENSE CONTRASTS

• Very Rich

• Levels of rising “overnutrition”

• World class academies and institutes.

• World class health care facilities and booming health tourism

• Women with education, power and influence

• A third of the world’s poor, nearly 400million living on less than $1/day

• 43.5% of children <5 underweight

• Highest number of illiterate people in the world

• Maternal mortality rate of 212/100,000 live births and the infant mortality rate of 44/1000 live births.

• Sex ratio of 940 females/1000 males

Source: 1) Sample Registration System 2011- Annual Report, Office of the Registrar General, India
2) census of India 2011
3) Department of International Development (DFID)
Chronic Undernutrition in India

Malnutrition in Children: Indian Perspective
www.sikhspectrum.com/112006/zz.htm
Facts and figures

- 7.5% deaths are related to water, sanitation and hygiene as per “Safer Water, better health” (WHO report, 2008)
- Diarrhoeal diseases cause 0.4 million deaths
- Malnutrition accounts for 0.2 million deaths
- India homes to the largest number of undernourished children. (Lancet 2008)
- 30 percent of newborns born with low birth weight
- 52 percent of women and 74 percent of children anaemic.

- Other major nutritional deficiencies
  - Vitamin A deficiency
  - Iodine deficiency

Source: NFHS-3, 2005-06
Malnutrition – The Indian context

• 40% of World’s malnourished children

• 46% under 3 children underweight.

• 11.9% malnutrition in 0-6 month

• Increases to 58.5% in 1-2 year olds

• 70% children in 6-59 months anaemic
Malnutrition – The Indian context

- 55% women anaemic

- 38% 0-36 months stunted (height for age – undernourished for some time)

- 19% wasted (weight for height – recent illness)

- 46% underweight (weight for age)
Why high Malnutrition

**Health Infrastructure**
- Non-availability of health services/low inst. delivery
- Immunization / ANC / PNC/ emergency care

**Human Resource Constraints**
- Absence of community workers/ANMs/Nurses
- Non-access to cheap medicines

**Food insecurity**
- Food availability
- Nutrient in-take
- Seasonality of food
- Nutrition and health education

**Gender**
- Early marriage/ pregnancy
- Non-spacing
- Anaemia among women
- Low Birth Weight Babies

**Weak public health measures against**
- Malaria, Water
- Infections, Diseases
- Diarrhoea, dysentery, fever

**Cultural practices**
- Breast feeding
- Food consumption during pregnancy
- Unsafe and unclean deliveries
## Tamil Nadu

<table>
<thead>
<tr>
<th>Proportion (%) of Anganwadis that have:</th>
<th>Tamil Nadu</th>
<th>Other FOCUS States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own building</td>
<td>88</td>
<td>22</td>
</tr>
<tr>
<td>Kitchen</td>
<td>85</td>
<td>29</td>
</tr>
<tr>
<td>Storage facilities</td>
<td>88</td>
<td>50</td>
</tr>
<tr>
<td>Medicine Kit</td>
<td>81</td>
<td>23</td>
</tr>
<tr>
<td>Toilet</td>
<td>44</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average opening hours of the Anganwadi (according to the mothers)</th>
<th>Tamil Nadu</th>
<th>Other FOCUS States</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 ½ hours a day</td>
<td>6 ½ hours a day</td>
<td></td>
</tr>
<tr>
<td>3 ½ hours a day</td>
<td>3 ½ hours a day</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion (%) of children who attended “regularly”</th>
<th>Tamil Nadu</th>
<th>Other FOCUS States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 0-3</td>
<td>59</td>
<td>19</td>
</tr>
<tr>
<td>Age 3-6</td>
<td>87</td>
<td>60</td>
</tr>
</tbody>
</table>
Andhra Pradesh

Nutrition cum day care centers

317 nutrition centers across all 22 districts

- 236 centers in 14 districts (phase 1)
- 81 in 8 districts (Phase 2)

- 100 % safe deliveries
  - 93% Institutional deliveries
  - 7% home deliveries assisted by trained personnel

- 91 % of normal deliveries & 9% of c-sections

- No record of low birth weight (< 2.5Kgs)
  - 50.4% had > 3Kgs birth weight
  - 49.9% had between 2.7 to 3.00Kgs)

- No record of maternal / neonatal/ infant deaths at the center
The UP-Lalitpur Experiment

- Baby Friendly Health Initiative- Breastfeeding
- Mother Support Groups – Community mobilization
- Training of frontline health workers on early breastfeeding – ASHAs, AWWs, ANMs.
- ANC education of mothers, breastfeeding, sick babies and their referral, growth monitoring.

RESULT: Breastfeeding within one hour went up from 10.9% to 72%. 93% mothers perceived child as healthy as compared to a baseline of 27%.
NRHM - MP’s Initiative - NRCs
Institution for Management of SAM children

150 NRCs – 2000 Beds – 40,000 SAM children Treated

<table>
<thead>
<tr>
<th></th>
<th>2006-07 (39 NRCs)</th>
<th>2007-08 (76 NRCs)</th>
<th>2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of children cured in NRCs</td>
<td>7182</td>
<td>11953</td>
<td>24614</td>
</tr>
</tbody>
</table>

More than 50% NRCs in vulnerable populations
Integrated Child Development Scheme (ICDS) – Revamp

- Thrust on – 0-36 months, adolescent girls, pregnant women
- Flexible food provision – differential needs.
- Nutrition professionals in Blocks.
- Untied funds for local action – common pool for Sarva Shiksha Abhiyan (universal education), National Rural Health Mission (NRHM), ICDS, Public Distribution Scheme (PDS), etc.
- Home visits – creating all women’s team at village level
- Emphasis on Behavior Change Communication
On the Flip side: Overnutrition

More common

- In urban areas
- Among the affluent and educated

<table>
<thead>
<tr>
<th>Urban Hyderabad</th>
<th>males</th>
<th>females</th>
</tr>
</thead>
<tbody>
<tr>
<td>overweight</td>
<td>21.8%</td>
<td>27.4%</td>
</tr>
<tr>
<td>obese</td>
<td>2.1%</td>
<td>8.9%</td>
</tr>
</tbody>
</table>

Table: Visweswara Rao et al. (1995)

Major causes

- Increasing urbanization (Urban housing)
- Sedentary lifestyles
- Changing food habits
- Occupational work patterns
  - Transport
- New stress of working in Call Centers and IT
  - Fast Food
Risks related to obesity

In India, alarming rise of NCDs
• accounting for 53% of the deaths in 2008.
• ICMR India Diabetes (INDIAB) study (2011), with data from three states (Tamil Nadu, Maharashtra and Jharkhand) and one union territory (Chandigarh), representing nearly 18.1% of the nation’s population
• indicates that around 62.4 and 77.2 million people were diabetic and pre-diabetic in 2012 respectively

Source: S. Khandelwal and K. S. Reddy *obesity* reviews (2013) 14 (Suppl. 2), 114–125:
Risks Continued…

• Cardiovascular diseases

Chronic diseases now a leading cause of death in rural India—mortality data from the Andhra Pradesh Rural Health Initiative International Journal of Epidemiology 2006

• Orthopaedic and hepatic problems

• Depression
Food Safety

- Already a concern
- Food Safety and Standards Act – 2006 implementation a priority
- Could become worse due to climate change
- Unfinished agenda (Poor nutrition, sanitation & safe water)
- Emerging Zoonotic Diseases
- Food security
- Antibiotic resistance
- Veterinary & pesticide residue
Food safety laws implementing and controlling authorities in India

**Legislation**
- Food Safety and Standards Authority of India (FSSA, 2006)
- Prevention of Food Adulteration Act-1954.
- Essential commodity Act-1954. It includes various organization and quality standards or laws or acts, which “Implement and control” food laws and acts.

**Voluntary standards**
- Bureau of Indian Standards (B.I.S)
- Directorate of Marketing and Inspection (D.M.I)- “Agmark”
- Eco-Mark,
- I.S.O Standards.
Food Safety Issues in India

- Food borne Illness
- Untrained Food Handlers
- Challenging International Standards
- Inadequate Laboratory and Testing Infrastructure
- Raising consumer awareness
- Fragmented Industry
- Majority food processing units are in small, unorganized sector
- Country’s sheer size, diversity, and complexity of food markets.
Economic Impact of unsafe food

Individuals
- Medical costs
- Missed work and lost wages
- Travel to get care
- Expenses for care taker
- Chronic disease

Society
- Loss of productivity
- Cost of disease investigation
- Loss of revenue due to business closure and product avoidance
- Chronic disease
- Ecosystem changes - more pests, less predators, more vectors for microbes
- Unseasonal rains - humidity and fungus
- Flooding - water & soil contamination
- Higher ocean temperatures - algal blooms - Vibrios in spore like forms, novel strains' eg O139 Bengal
- Changes in aquatic life and formation of marine biotoxins in sea foods
Contaminated water- A matter of ‘serious concern’

- Problems related to hygiene and sanitation continues in the state
- Cases reported are gastroenteritis and cholera
- Polluted water claims lives at Bholakpur
Food Security

• Decreased yield in crop production
  (“India could lose 125 million tons of its rain-fed cereal production, equivalent to 18 percent of its total production.”)

• Increase in food prices
  (The number of hungry people in developing countries will increase by ~1% for every 2-2.5% increase in prices)

• Increase in farmer suicides
  (Farmer suicides in the country since 1997 now total 1,82,936. The worst affected states being- Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh, and Chhattisgarh)

• Increase in migration
  (An estimated 300,000 labourers migrate from drought prone Bolangir District in Western Orissa every year- Deshingkar, 2003)

http://www.indiatogther.org/2008/dec/psa-16k.htm
India Together, Feb 2009.
Allianz: India climate change profile part 3
India has many food schemes

- Employment Generation Programs
  - National Rural Employment Scheme
- Social Safety Net Programs
  - National Old Age Pension Scheme
  - National Family Benefit Scheme
- Entitlement Feeding Programs
  - ICDS
  - Mid Day Meal Scheme (All Primary School children)
- Food Subsidy Programs
  - Targeted Public Distribution System (35 kgs/ month of subsidised food grains)
  - Annapurna (10 kgs of free food grain for destitute poor)
Future Requirements

• Establishing Good Practices in Food Chain
• Risk Assessment and Management
• Monitoring, Sampling, Identifying, Documenting, Alerting, Acting, Tracking Preventing - Safety Net
• Data generation where there are knowledge gaps
• Effective communication mechanisms
• From reaction and response to anticipation and prevention
Good Practices in Food Chain

FROM FARM TO FORK

- GAPS
- Pesticide use
- Manure use
- Harvesting
- Processing
- Packaging
- Storage
- Transport
- Worker Hygiene

HACCP
- Grading and Sorting Tables
- Elevated auction platforms
- Washing and Disinfection
- Washing of Crates
- Worker Hygiene
- Cold Storage

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- Consumer Education
- Consumer Awareness
Key Research/Action themes

• What works in nutrition
• What options for human resources
• How to get the public health thrust
• Funds, functions and functionaries – devolve
• Community institutions/monitoring as focus.
• A worker, an institution and an event in every village.
• Public health thrust – water, sanitation, nutrition
• Building capacities for local action
Way Forward

• Provide an enabling environment to improve nutrition as well as food safety
• Build capacity for professional food hygiene and standards training to international criteria
• Develop an incremental program of training qualifications for food handlers, food supervisors/ managers and food safety officers
• Create and support consumer and business awareness regarding food safety and quality through public education
How can we make a difference…

• Acknowledge the challenges to ensure Public Health Nutrition & Food Safety
• Develop an education strategy and new curricula to further the agenda of food borne disease prevention and control
• Strengthen the training of existing veterinary and public health workforce
• Provide an enabling environment to implement food safety strategy
• Education and training for food handlers, food supervisors and food safety officers
• Create greater public awareness
Acknowledgements

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- Prof. Salman
- Dr. Sangeeta
- All of you
Food is Essential For Life

“What is amazing is the quiet acceptance of the consistent deprivations “
- Amartya Sen