Nutrition transition in Nepal: *Country experience in nutrition sensitive interventions*

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Nepal- A Small But Diverse Country

IMR ranges from 31 to 62 in highest to lowest wealth quintile

MMR ranges from 153 in Okhaldhunga to 301 in Rasuwa

5 development regions
3 ecological regions

- Mountain
- Hill
- Terai

10 religion
125 caste/ethnic groups
123 languages spoken as mother tongue

60 m above the sea level to highest peak in the world
The Mount Everest-8848 m

Life expectancy ranges from 42 years in Mugu to 75 years in Kathmandu
# Socio-demographic profile (NLSS 2011)

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total population:</strong></td>
<td>26.4 Million [M: 12.8m, F: 13.6m]</td>
</tr>
<tr>
<td>Population growth rate:</td>
<td>1.35 per annum</td>
</tr>
<tr>
<td>Urban population:</td>
<td>17 percent;</td>
</tr>
<tr>
<td>Working age population:</td>
<td>57 percent</td>
</tr>
<tr>
<td>Literacy rate:</td>
<td>65.9 percent [M: 75% vs. F: 57%]</td>
</tr>
<tr>
<td>Female-ownership of fixed assets:</td>
<td>19.7 percent</td>
</tr>
<tr>
<td>Firewood as fuel:</td>
<td>64 percent</td>
</tr>
<tr>
<td>HH having toilet:</td>
<td>62 percent</td>
</tr>
<tr>
<td>Population with improved water source:</td>
<td>80 percent</td>
</tr>
<tr>
<td>Per capita energy supply:</td>
<td>2450 Kcal (FAO, SOFA 2006)</td>
</tr>
</tbody>
</table>

- **25% Population Below Poverty Line**
Significant improvement in reduction of mortality in mother and children

Maternal Mortality Ratio
(per 100,000 live births)

U5MR, IMR and NMR Trend

Nutrition profile: Double burden of malnutrition

TREND OF MALNUTRITION IN WOMEN
- Maternal Under-nutrition
- Maternal Overnutrition

TREND OF UNDER-NUTRITION IN CHILDREN
- Stunting
- Underweight
- Wasting

PREVALENCE OF NCDS
- Diabetes Mellitus
- Cancer
- COPD
- Heart Disease

ANEMIA IN WOMEN
- NHRC 2010

ANEMIA IN CHILDREN 6-59 MONTHS OF AGE

SHARMA ET AL. 2011
- HYPERTENSION - 34%
- DIABETES - 6.3%
- OVER NUTRITION - 28%
- OBESE - 32%
- METABOLIC SYNDROME - 22%
A success story in micronutrient deficiency disorders control programs

Iron and folic acid coverage 1999-2011
Anemia Prevalence High in Children:
The problem is serious among 6-23 months children

Source: NDHS 2011
MARKED INEQUITY: Wealth Quintiles, Ecology, Ethnicity

Nutrition context: trend in stunting prevalence by wealth index

### Top 25 causes of YLLs due to premature mortality from 1990 to 2010

#### Ranks for top 25 causes of YLLs 1990-2010, Nepal

<table>
<thead>
<tr>
<th># YLLs in thousands (%) of total</th>
<th>Rank and disorder 1990</th>
<th>Rank and disorder 2010</th>
<th># YLLs in thousands (%) of total</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,293 (18.9%)</td>
<td>1 Lower respiratory infections</td>
<td>1 Lower respiratory infections</td>
<td>846 (11.7%)</td>
<td>-63</td>
</tr>
<tr>
<td>2,069 (17.1%)</td>
<td>2 Diarrheal diseases</td>
<td>2 Diarrheal diseases</td>
<td>677 (9.4%)</td>
<td>-67</td>
</tr>
<tr>
<td>746 (6.2%)</td>
<td>3 Neonatal encephalopathy</td>
<td>3 Neonatal encephalopathy</td>
<td>407 (5.7%)</td>
<td>-43</td>
</tr>
<tr>
<td>531 (4.4%)</td>
<td>4 Preterm birth complications</td>
<td>4 Preterm birth complications</td>
<td>329 (4.6%)</td>
<td>-35</td>
</tr>
<tr>
<td>387 (3.2%)</td>
<td>5 Tuberculosis</td>
<td>5 Tuberculosis</td>
<td>295 (4.1%)</td>
<td>-23</td>
</tr>
<tr>
<td>330 (2.7%)</td>
<td>6 Congenital anomalies</td>
<td>6 Ischemic heart disease</td>
<td>277 (3.8%)</td>
<td>95</td>
</tr>
<tr>
<td>287 (2.4%)</td>
<td>7 COPD</td>
<td>7 Self-harm</td>
<td>254 (3.5%)</td>
<td>57</td>
</tr>
<tr>
<td>280 (2.3%)</td>
<td>8 Protein-energy malnutrition</td>
<td>8 COPD</td>
<td>249 (3.5%)</td>
<td>-13</td>
</tr>
<tr>
<td>288 (2.4%)</td>
<td>9 Tetanus</td>
<td>9 Neonatal sepsis</td>
<td>239 (3.3%)</td>
<td>-2</td>
</tr>
<tr>
<td>239 (2.0%)</td>
<td>10 Neonatal sepsis</td>
<td>10 Stroke</td>
<td>212 (2.9%)</td>
<td>67</td>
</tr>
<tr>
<td>226 (1.9%)</td>
<td>11 Syphilis</td>
<td>11 HIV/AIDS</td>
<td>209 (2.9%)</td>
<td>&gt; 9,999</td>
</tr>
<tr>
<td>210 (1.7%)</td>
<td>12 Mechanical forces</td>
<td>12 Road injury</td>
<td>180 (2.5%)</td>
<td>13</td>
</tr>
<tr>
<td>255 (2.1%)</td>
<td>13 Measles</td>
<td>13 Mechanical forces</td>
<td>114 (1.6%)</td>
<td>-44</td>
</tr>
<tr>
<td>172 (1.4%)</td>
<td>14 Maternal disorders</td>
<td>14 Cirrhosis</td>
<td>104 (1.5%)</td>
<td>25</td>
</tr>
<tr>
<td>160 (1.3%)</td>
<td>15 Self-harm</td>
<td>15 Maternal disorders</td>
<td>101 (1.4%)</td>
<td>-44</td>
</tr>
<tr>
<td>156 (1.3%)</td>
<td>16 Road injury</td>
<td>16 Congenital anomalies</td>
<td>102 (1.4%)</td>
<td>-71</td>
</tr>
<tr>
<td>142 (1.2%)</td>
<td>17 Ischemic heart disease</td>
<td>17 Diabetes</td>
<td>88 (1.2%)</td>
<td>89</td>
</tr>
<tr>
<td>194 (1.6%)</td>
<td>18 Rabies</td>
<td>18 Syphilis</td>
<td>91 (1.3%)</td>
<td>-59</td>
</tr>
<tr>
<td>126 (1.0%)</td>
<td>19 Stroke</td>
<td>19 Poisonings</td>
<td>88 (1.2%)</td>
<td>-24</td>
</tr>
<tr>
<td>122 (1.0%)</td>
<td>20 Meningitis</td>
<td>20 Typhoid fevers</td>
<td>88 (1.2%)</td>
<td>49</td>
</tr>
<tr>
<td>141 (1.2%)</td>
<td>21 Glomerulonephritis</td>
<td>21 Protein-energy malnutrition</td>
<td>83 (1.2%)</td>
<td>-70</td>
</tr>
<tr>
<td>116 (1.0%)</td>
<td>22 Poisonings</td>
<td>22 Fire</td>
<td>66 (0.9%)</td>
<td>30</td>
</tr>
<tr>
<td>106 (0.9%)</td>
<td>23 Peptic ulcer</td>
<td>23 Peptic ulcer</td>
<td>66 (0.9%)</td>
<td>38</td>
</tr>
<tr>
<td>94 (0.8%)</td>
<td>24 Fire</td>
<td>24 Asthma</td>
<td>67 (0.9%)</td>
<td>-19</td>
</tr>
<tr>
<td>94 (0.8%)</td>
<td>25 Meningitis</td>
<td>25 Meningitis</td>
<td>61 (0.8%)</td>
<td>50</td>
</tr>
<tr>
<td>26 Cirrhosis</td>
<td>26 Cirrhosis</td>
<td>27 Glomerulonephritis</td>
<td>40 (0.6%)</td>
<td>44</td>
</tr>
<tr>
<td>28 Asthma</td>
<td>28 Asthma</td>
<td>44 Malaria</td>
<td>44 (0.6%)</td>
<td>44</td>
</tr>
<tr>
<td>30 Typhoid fevers</td>
<td>30 Typhoid fevers</td>
<td>47 Rabies</td>
<td>47 (0.6%)</td>
<td>47</td>
</tr>
<tr>
<td>33 Diabetes</td>
<td>33 Diabetes</td>
<td>48 Measles</td>
<td>48 (0.6%)</td>
<td>48</td>
</tr>
<tr>
<td>110 HIV/AIDS</td>
<td>110 HIV/AIDS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Major staple food of Nepali population

- Rice and wheat in terai (plain areas)
- Maize and millets in the hills
- Millet, maize, and barley in the mountains

An increase in rice consumption in hill and mountain districts (Import from outside and transportation by GoN to remote districts)

Consuming vegetables is a common practice

Diverse set of food consumption patterns depending on the region, caste, and food availability

Energy from cereal – 75%
Trend of agricultural production

Index of major agricultural production

Production, requirement and surplus/deficit of Food in the last 21 years in Nepal

Source: MoAD 2012, MSNP Vol III
# Programs to improve food security and nutrition

<table>
<thead>
<tr>
<th>Programs</th>
<th>Food security components aimed</th>
<th>Pathway to nutrition</th>
<th>Funding Source/Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUUAHARA</td>
<td>Availability, Access Utilization</td>
<td>Consumption and income</td>
<td>USAID</td>
</tr>
<tr>
<td>NAFSP</td>
<td>Production, Availability, Access Utilization</td>
<td>Consumption and income</td>
<td>World Bank</td>
</tr>
<tr>
<td>Golden 1000 days</td>
<td>BCC, utilization</td>
<td>Consumption and income</td>
<td>World Bank</td>
</tr>
<tr>
<td>Feed the Future</td>
<td>Increase Ag. Production and technologies</td>
<td>Reduce hunger and poverty and improve nutrition</td>
<td>USAID</td>
</tr>
<tr>
<td>Flood Recovery Program</td>
<td>Access, Availability</td>
<td>Mainly income</td>
<td>USAID</td>
</tr>
<tr>
<td>Education for Income Generation</td>
<td>Access, Availability</td>
<td>Mainly income</td>
<td>JICA, SCI, PF</td>
</tr>
<tr>
<td>Action Against Malnutrition through Agriculture</td>
<td>Availability, Access Utilization</td>
<td>Consumption and income</td>
<td>USAID/HKI</td>
</tr>
</tbody>
</table>
# Programs to improve food security and nutrition

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<th>Funding Source/Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Facility in Nepal</td>
<td>Availability, Access, Utilization</td>
<td>Mainly home food consumption and income</td>
<td>EU</td>
</tr>
<tr>
<td>HMRP</td>
<td></td>
<td>Mainly from consumption and income</td>
<td>USAID</td>
</tr>
<tr>
<td>Commercial Agriculture Development Program</td>
<td>Improve market efficiency of Ag product</td>
<td>Income</td>
<td>ADB</td>
</tr>
<tr>
<td>Food aid (Conditional in-kind transfer through food and cash)</td>
<td>Access</td>
<td>Improve utilization</td>
<td>DFID, WB, WFP</td>
</tr>
<tr>
<td>School meal programmes</td>
<td>Access, utilization</td>
<td>Improve health and nutrition status of school children</td>
<td>WFP</td>
</tr>
<tr>
<td>Child Protection Grant</td>
<td>Access to nutritious food</td>
<td>Improve IYCF</td>
<td>GON</td>
</tr>
<tr>
<td>Karnali Fortified Food Distribution Program</td>
<td>Access to nutritious food in remote areas to children</td>
<td>Reduce undernutrition</td>
<td>GON</td>
</tr>
</tbody>
</table>
Policy and programs especially for nutrition sensitive interventions

- Inclusion of food sovereignty as a fundamental right in the interim constitution and priority to food security in three year plans
- Multi-sectorality in food security and nutrition
  - Agriculture: Food Security
  - Health: Nutrition Specific Intervention
  - Education: Nutritional Knowledge and Behavior
  - Water supply and sanitation: Behavior and Access on Water and Sanitation
  - Local governance: Social Security and Governance
  - Women, child and social welfare: Social Mobilization for Women and Children
Multi-sectoral Nutrition Plan

The intergenerational transmission of growth failure: When to intervene in the life cycle

- Child growth failure/death
- Low Birthweight baby
- Early pregnancy
- Low weight & height in teenagers
- Small adult woman
- Small adult man

Ministry of Health and Population
MIYC micronutrient and feeding, SAM, Diarrhoea Treatment

Ministry of Education
Nutritional awareness and behaviours change, Nutritional status and Quality Life through Educational Performance

Ministry of Physical Planning and Works
sanitation facilities, hand wash, treated drinking water

Ministry of Agriculture Development
availability of animal foods, income generation, consumption of animal foods and Reduced workload of women

Ministry of FA and Local Development
Social Protection, Governance and Local Fund Management

National Planning Commission
Multi-sectoral resources, Nutritional information management, Nutrition capacity Enhancing
Organization of MSNP

Three Volumes:


Vol II: Logical frames, Interventions and Action Plan in each sector with costing for five years

Vol III: Causality Analysis: Stunting in Nepal
Nutrition Sectoral Review Reports of all key sectors
(MoHP, MOAC, MoE, MoLD, MOPPW)
How?

Nutrition specific interventions: feeding and care practices and protection from illnesses aimed at individuals, mainly through health sector.

Nutrition sensitive interventions: food availability, affordability and access, quality, utilization aimed at families and communities mainly through non-health sectors i.e. agriculture, education, local development, water supply and sanitation sectors.
Major Outcomes and Outputs

**Outcome 1: Policies, plans and multi-sectoral coordination improved at national and local levels**

1.1: Policies and plans updated/reviewed to incorporate nutrition specific indicators at national and local government levels

1.2: Multi-sectoral coordination mechanisms functional at national and local government levels

**Outcome 2: Practices that promote optimal nutrition behaviors improved**

2.1: Maternal and child care service utilization pattern changed

2.2: Adolescent girls’ education, life skills and nutritional status improved

2.3: Reduced episodes of diarrheal diseases and ARI among mothers, adolescents and IYC

2.4: Feeding behaviors improved with increased availability and access to appropriate food (in quality, quantity, frequency and safety)

**Outcome 3: Strengthened capacity of central and local governments on nutrition to provide basic services in an inclusive and equitable manner**

3.1: Capacity of national and local government enhanced to provide appropriate support to improve maternal and child nutrition

3.2: Multi-sectoral nutrition information updated and linked both at national and local government level
## Tentative Costing for MSNP/Sector

<table>
<thead>
<tr>
<th>Output</th>
<th>Total (USD in Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>60</td>
</tr>
<tr>
<td>Agriculture</td>
<td>21</td>
</tr>
<tr>
<td>Education</td>
<td>16</td>
</tr>
<tr>
<td>MoLD</td>
<td>5</td>
</tr>
<tr>
<td>WASH</td>
<td>23</td>
</tr>
<tr>
<td>Overarching /NPC</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total USD (Million)</strong></td>
<td><strong>127</strong></td>
</tr>
</tbody>
</table>
SUAAHARA/USAID Project: Overview

Integrated nutrition initiative

Working in 20 most vulnerable districts

Funded by USAID/Nepal

Aug 2011- Sept 2016
Improve the nutritional status of women and children < 2 years of age

6 Impact indicators

- Children
  - Stunting: overall indicator of success
  - Wasting
  - Underweight
  - Anemia

- Women
  - BMI
  - Anemia
Focus

- Health & Nutrition Behaviors
- Use of Health & Nutrition Services
- Production & Consumption of Nutritious Foods
- Multi-sectoral Network & Coordination
On-going efforts of nutrition sensitive agriculture

- Nutritional Security Plan of Action
- Agriculture Prospective Plan (1998-2013)
- National Agriculture Policy 2004
- Agricultural Development Strategy (ADS) (in process of development)
  - Increase the production and productivity in small holding areas
  - Emphasize diversified food production and consumption
  - Promote the crop where it is feasible is to be followed
  - Local crops are to be prioritized
  - Emphasize three things for production of nutritious food
    - Seed, Breed, and Market

Nepal has become the first country in South Asia to have mandatory legislation for fortification at roller mills

Multi Year Water and Sanitation Master Plan (1997-2017)
Priority research activities

- Improving the dietary intake (quality and quantity) of poor/malnourished women and children
- Dietary factors in the home that improve nutritional conditions
- Contextual factors that influence dietary adequacy
- Home food production, storage and processing factors that affect dietary adequacy
- Market factors that affect home food security
- Agricultural factors that affect market prices, availability and household access
- Information on agricultural contribution in malnutrition reduction and what are these?
- Varietal trial and improvement of local variety and improved traditional foods to make it more nutritious.

POSHAN Project by Nutrition CRSP (Johns Hopkins and Tufts)
Thank you!

Namaskar