Community-based Nutrition Interventions

Parul Christian
International Nutrition
Nutrition Programs

- Growth monitoring and promotion
- Breastfeeding and complementary feeding
- Supplementary feeding
- Nutrition education or communications for behavior change or IEC
- Health related services (IMCI, EPI)
- Micronutrient supplementation (vitamin A, iron, iodine, other)
Growth Monitoring and Promotion

Definition -
“the regular measurement, recording and interpretation of a child’s growth in order to counsel, act, and follow-up results”

Yee & Zerfas 1986
Figure I: The Triple A Cycle

ASSESSMENT
of the Situation of
Children and Women

ACTION
Based on the Analysis
and Available Resources

ANALYSIS
of the Causes of the Problems
Need for GMP

- Contribution of mild-moderate malnutrition to child survival is much greater than previously thought
- If severe malnutrition were the only/major threat to child survival GM would not be needed
- Need to identify children experiencing growth faltering in a timely fashion in order to intervene appropriately
Growth Monitoring at a local PHC in Malawi

Photo: Keith West
Salter Spring Balance

A lot of focus on training workers to measure weight correctly

Photo: Keith West
Essential features of a growth chart

- Uses weight for age
- Minimum: 50th and 3rd percentile of standard reference (NCHS)
- Monthly interval of ages
- Health care, immunizations, and illness record
- Teaching aid
Growth Chart used in Indonesia
Flipside of the Indonesian GC
6 fundamental principles of GMP (WHO, UNICEF)

• weighing should be monthly, birth-24 m
• limited to 10-20 mothers/session
• home visits
• CHW training in listening and responding
• CHW supervision and support
• mechanisms in place to support community-based action
Requirements to make GMP successful

• Adequate worker knowledge and skills
• Time, communication skills and motivation of workers
• Discussion between mothers and workers regarding feasible solutions and actions
• Mothers understand messages and TRANSLATE information into action
Indonesian Community Health Worker plotting GC in the presence of the mother and discussing the child’s weight
Evaluation of “good” GM
(George et al, Lancet 1993)

• Community intervention: Villages randomized to two groups:
  – 6 GM villages (GM + NE)
  – 6 non-GM villages (NE)
• In the GM group GC were used to provide NE
• Weight was recorded in both groups every 4-5 mo
## Table I. Coverage of Survey by Geographic Region

<table>
<thead>
<tr>
<th>Geographic Region*</th>
<th>No. of Countries n=202</th>
<th>Response Received n (%)</th>
<th>Growth Charts Received n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>53</td>
<td>50 (94)</td>
<td>46 (87)</td>
</tr>
<tr>
<td>Asia</td>
<td>48</td>
<td>41 (85)</td>
<td>37 (77)</td>
</tr>
<tr>
<td>Europe</td>
<td>42</td>
<td>34 (81)</td>
<td>26 (62)</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>34</td>
<td>30 (88)</td>
<td>23 (68)</td>
</tr>
<tr>
<td>Northern America</td>
<td>3</td>
<td>2 (67)</td>
<td>1 (33)</td>
</tr>
<tr>
<td>Oceania</td>
<td>22</td>
<td>21 (95)</td>
<td>21 (95)</td>
</tr>
<tr>
<td>All Regions</td>
<td>202</td>
<td>178 (88)</td>
<td>154 (76)</td>
</tr>
</tbody>
</table>

* United Nations Regional Classification

Table II. Anthropometric Indexes Used in Monitoring Child Growth (0 to 6 years) by Geographic Region

<table>
<thead>
<tr>
<th>Anthropometric Index</th>
<th>All countries n = 145</th>
<th>Africa n = 46</th>
<th>Asia n = 34</th>
<th>Europe n = 21</th>
<th>Latin America and Caribbean n = 22</th>
<th>Northern America n = 1</th>
<th>Oceania n = 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight for Age</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>141 (97)</td>
<td>46 (100)</td>
<td>34 (100)</td>
<td>17 (81)</td>
<td>22 (100)</td>
<td>1 (100)</td>
<td>21 (100)</td>
</tr>
<tr>
<td>Length/Height for Age</td>
<td>59 (41)</td>
<td>4 (9)</td>
<td>15 (44)</td>
<td>19 (90)</td>
<td>11 (50)</td>
<td>1 (100)</td>
<td>9 (43)</td>
</tr>
<tr>
<td>Weight for Length/Height</td>
<td>33 (23)</td>
<td>4 (9)</td>
<td>7 (21)</td>
<td>9 (43)</td>
<td>8 (36)</td>
<td>1 (100)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Head Circumference for Age</td>
<td>48 (33)</td>
<td>1 (2)</td>
<td>14 (41)</td>
<td>18 (86)</td>
<td>5 (23)</td>
<td>1 (100)</td>
<td>9 (43)</td>
</tr>
<tr>
<td>Others</td>
<td>4 (3)</td>
<td>1 (3)</td>
<td>2 (10)</td>
<td></td>
<td></td>
<td></td>
<td>1 (5)</td>
</tr>
</tbody>
</table>

*United Nations regional classification.

**Head circumference for length, body mass index for age, mid-upper arm circumference for age, weight velocity for age.

<table>
<thead>
<tr>
<th>Problems Encountered</th>
<th>All countries n = 178</th>
<th>Africa n = 50</th>
<th>Asia n = 41</th>
<th>Europe n = 34</th>
<th>Latin American &amp; Caribbean n = 30</th>
<th>Northern American n = 2</th>
<th>Oceania n = 21</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Interpreting Growth Curve</td>
<td>86 (48)</td>
<td>28 (56)</td>
<td>24 (59)</td>
<td>13 (38)</td>
<td>12 (40)</td>
<td></td>
<td>9 (43)</td>
</tr>
<tr>
<td>Inaccurate Plotting</td>
<td>71 (40)</td>
<td>20 (40)</td>
<td>18 (44)</td>
<td>9 (26)</td>
<td>12 (40)</td>
<td>1 (50)</td>
<td>11 (52)</td>
</tr>
<tr>
<td>Understanding Reference Curves</td>
<td>51 (29)</td>
<td>20 (40)</td>
<td>15 (37)</td>
<td>6 (18)</td>
<td>6 (20)</td>
<td></td>
<td>4 (19)</td>
</tr>
<tr>
<td>Lack of Trained Personnel or Equipment</td>
<td>13 (7)</td>
<td>5 (10)</td>
<td>3 (7)</td>
<td>2 (6)</td>
<td>1 (3)</td>
<td></td>
<td>2 (10)</td>
</tr>
<tr>
<td>Other Problems</td>
<td>44 (25)</td>
<td>13 (26)</td>
<td>9 (22)</td>
<td>10 (29)</td>
<td>8 (27)</td>
<td>1 (50)</td>
<td>3 (14)</td>
</tr>
<tr>
<td>No Problems</td>
<td>35 (20)</td>
<td>6 (12)</td>
<td>10 (24)</td>
<td>9 (26)</td>
<td>5 (17)</td>
<td></td>
<td>5 (24)</td>
</tr>
</tbody>
</table>

*United Nations Regional Classification

Table 2. Adequacy of growth monitoring of children in different age categories according to the guidelines of the Integrated Nutrition Programme for South Africa*.

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>N</th>
<th>% Monitored Adequately</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-&lt;1</td>
<td>166</td>
<td>64</td>
</tr>
<tr>
<td>1-&lt;2</td>
<td>154</td>
<td>70</td>
</tr>
<tr>
<td>2-&lt;3</td>
<td>149</td>
<td>76</td>
</tr>
<tr>
<td>3-&lt;4</td>
<td>146</td>
<td>81</td>
</tr>
<tr>
<td>4-&lt;5</td>
<td>127</td>
<td>82</td>
</tr>
</tbody>
</table>

* Guidelines for minimum growth monitoring: 0-12 months, at least five times per year; 1-2 years, at least four times per year; 2-5 years, at least three times per year.

Adapted from: Faber et al; FNB 2003
Community-based GM in rural Kwazulu-Natal, South Africa

- Maternal attitude using focus group:
  - Poor growth was a concern, valued GM
  - Learnt how to better care for children
  - Good communication style of workers
  - Encouraged that children were growing well
  - Strong desire for project to continue

Faber et al, FNB 2003
When can GMP have an impact?

- When employed to take 3 types of actions
  - Recommendations for individual child’s care related to illness and feeding
  - Community level action that can support families to maintain the growth of children
  - Program activities targeted to households with special needs
Community-based Nutrition Interventions
Supplementary feeding
Efficacy trials to improve dietary intake and growth of infants 6-12 mo

Caulfield et al, FNB 1999
Types of feeding programs

Feeding Programs

- Direct Feeding
  - Supplementary Feeding
    - On site
    - Take Home
  - Full Feeding at a Nutrition Rehabilitation Center

- Food related Income Transfers
  - Food stamps
  - Subsidies
  - Food for work
Supplementary Feeding

Purpose
To prevent or to alleviate undernutrition, through reducing the gap between an individual’s actual consumption and requirements
Secondary -
To improve household food security through a food transfer effect
Supplementary Feeding

Definition:
Supplementary feeding consists of a prepared food to be consumed on-site or a food package intended for a particular target individual within a household but given to any member to be taken home.
Supplementary foods

PL480 (Title II foods)
CSM – corn soy milk
MPF – multipurpose food
SFB – soy fortified bulgar
WSB – wheat soy blend
SM – soy milk

Photo: Keith West
On-site vs. take home feeding

ONSITE
• Highly targeted
• Children must be brought to feeding site
• Convenient location for a site
• Trained staff
• Food and operational costs

TAKE-HOME
• Fewer family demands
• Fewer feeding / food centers
• Fewer trained staff
• Less efficient
• Problems measuring “success”
Targeting

• May be geographical, functional, individual
  – Needy areas
  – Population sub-groups (age, physiologic state)
  – Low weight for age or weight gain
• Reduces program cost (trade off between cost of screening and cost of a more expansive program)
• Selection of cut-offs (sensitivity and specificity)
• Cost effectiveness is high
• Self-selection as a means of targeting
Common problems with supplementary feeding programs

• Irregular participation and delivery of food
  – Youngest and most responsive age group 6-24 mo least likely to participate
• Leakages
  – Poor targeting
  – Intrahousehold sharing
  – Substitution of normal diet
• Insufficient quantity and quality of food
• Insufficient calorie density
• Time cost (travel and waiting time)
Community Based Nutrition Interventions
Nutrition Education, Communications for Behavioral Change
Potential use of maternal size in priority setting for combating childhood malnutrition

<table>
<thead>
<tr>
<th>Children’s wt/ht Z score</th>
<th>Mother’s BMI &lt; 18.5</th>
<th>Mother’s BMI ≥ 18.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor &lt; -2.0</td>
<td>Food availability important</td>
<td>PH measures: maternal education</td>
</tr>
<tr>
<td>Adequate ≥ -2.0</td>
<td>Maternal care good despite food deprivation</td>
<td>Low priority</td>
</tr>
</tbody>
</table>

James WPT et al EJCN, 1999
Nutrition Education : Definition

“any set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviors conducive to health and well-being.”

-Contento et al 1995
Theories and models of health behavior change

- **Triple A Model**: Assess, Analyze, Act
- **5 Step Model**:
  - Assessment
  - Planning
  - Development
  - Implementation
  - Evaluation
- **Social learning theory**
FRAMEWORK FOR PLANNING NUTRITION EDUCATION

- NUTRITION ISSUES
- METHODS
- FOOD SUPPLY
- TARGET GROUPS
- KEY SETTINGS AND SECTORS
Food supply

- Traditional role of nutrition education has been to increase the capacity of the household to use existing food resources to maximum advantage
- e.g. nutrition education has focused on
  - breastfeeding
  - weaning
  - dietary practices during infection & disease
  - nutrition during pregnancy and lactation
  - food processing and storage
Nutrition Issues

• Nutritional status assessment
  – Based on national nutritional surveillance and dietary intakes
  – Use of recommended dietary intakes
  – Guidelines for sub-groups
TARGET GROUPS

PRIMARY TARGET GROUPS
POPULATION SUBGROUPS
- LIFE CYCLE APPROACH
- SPECIAL NEEDS

SECONDARY TARGET GROUPS
- TEACHERS, HEALTH WORKERS, AGRICULTURISTS, MEDIA JOURNALISTS, VILLAGE VOLUNTEERS ETC.

TERTIARY TARGET GROUPS
- POLITICIANS, ADMINISTRATORS, DECISION MAKERS
Method : SELECTION OF CHANNEL

- FACE-TO-FACE
  - Either in groups or on one-to-one basis
- MASS MEDIA
  - Based on marketing or communication models
Face-to-face

• **ADVANTAGES**
  – INTERACTIVE
  – RELIABLE
  – PROVIDES SOCIAL SUPPORT
  – ALLOWS FOR PERSONALISING
  – APPROPRIATE SEQUENCING
  – FOLLOW-UP EASY

• **DISADVANTAGES**
  – EXPENSIVE
  – PENETRATION WEAK
  – MAY ENCOURAGE DEPENDENCY
  – MAY NOT BE ACCEPTABLE TO MANY PEOPLE
MASS MEDIA

**ADVANTAGES**
- CHEAP PER CONTACT
- LARGE NUMBERS REACHED
- MORE ACCEPTABLE
- MAY STIMULATE SELF INITIATED CHANGE

**DISADVANTAGES**
- WEAK ENGAGEMENT OF USERS
- UNRELIABLE
- DILUTION OF CONTENT
- FOLLOW-UP DIFFICULT
The *Positive Deviance* approach

- Positive deviance refers to a phenomenon that exists in many resource-poor communities – the finding that a few individuals and families employ uncommon, beneficial practices that allow them and their children to have better health as compared to their similarly impoverished neighbors.
- These behaviors are likely to be affordable, acceptable and sustainable by the wider community because their peers are already practicing them.
The Hearth Model

- Haiti, Vietnam, Bangladesh
- Volunteer mothers trained to conduct feeding sessions (called ‘hearths’) in their homes
- Malnourished children fed one meal every day for 2 weeks
- Mothers observe the improvement in appetite, activity, growth of children
- Evaluations have shown significant improvements in nutritional status
Monitoring NE programs

• Aim: to ensure that things are going well and to make mid-course changes if needed
• Listing variables to be assessed
  – individual program components
  – activities
  – workers
  – media
Evaluation of NE programs

- Program evaluation assesses
  - various program activities and elements
  - the extent of behavior changes (and KA) in the target population as a consequence of the communication strategy
  - impact on health, nutritional status, or other functional indicators
- Designs: Before-After (with or without a comparison group)
Face-to-face: Weaning food intervention-Nigeria

- Formative research to develop a "culturally appropriate" weaning food
- Recipe trials and testing acceptability
- Teaching a recipe to add toasted cowpea flour, red palm oil and sugar to maize or sorghum porridge (eko ilera)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>57</td>
</tr>
<tr>
<td>Trial</td>
<td>48</td>
</tr>
<tr>
<td>Adoption</td>
<td>17</td>
</tr>
</tbody>
</table>
Evaluation of a NE program in the Philippines using incrementally more intensive programs

Control

Program 1
+ Infant feeding course (Weaning Moments Sessions)
  – 7 sessions on specific behaviors

Program 2
+ Home Counseling
  – quarterly home visits by village volunteer

Radio:
– 4 radio spots aired ~4x’s day

“one + three”

“one”=rice

“three”=fish+vegetable+oil

Photos: R. Klem
Feeding demonstration during infant feeding course
Impact on Maternal Knowledge

Percent Correct on Knowledge Test

Enrollment
Visit 2
Visit 5

Control
Program 1
Program 2

* p<0.001

Mean number of food groups added to rice per meal among infants ≥6 mo

<table>
<thead>
<tr>
<th></th>
<th>Enrollment</th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
<th>Visit 4</th>
<th>Visit 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Program 1</td>
<td>0.3</td>
<td>0.5</td>
<td>0.9</td>
<td>1.2</td>
<td>1.5</td>
<td>1.9</td>
</tr>
<tr>
<td>Program 2</td>
<td>0.2</td>
<td>0.4</td>
<td>0.7</td>
<td>1.1</td>
<td>1.4</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* * p<0.05

Mean age at visit, months
- Enrollment: 8.9
- Visit 1: 9.3
- Visit 2: 10.2
- Visit 3: 11.0
- Visit 4: 12.4
- Visit 5: 14.3

Adjusted Daily Intake Frequency by Program
Infants ≥6 months of age relative to Controls

Program 1
Program 2

* p<0.05

## Impact on linear growth

<table>
<thead>
<tr>
<th></th>
<th>Program 1</th>
<th>Program 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>β</em> (95% CI)</em>*</td>
<td><strong>Length, cm</strong> 0.32 (-0.17, 0.81)</td>
<td>0.62 (0.13, 1.12)</td>
</tr>
<tr>
<td><strong>HAZ</strong></td>
<td>0.11 (0.0, 0.36)</td>
<td>0.30 (0.15, 0.45)</td>
</tr>
</tbody>
</table>

*Adjusted for baseline status, age, sex, maternal education, household income, and follow-up time

### Characteristics of selected programs addressing malnutrition

<table>
<thead>
<tr>
<th>Project</th>
<th>Type, Content</th>
<th>Coverage, Target Groups</th>
<th>Resources/Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh Integrated</td>
<td>Community-based nutrition; including</td>
<td>Under 2s, pregnant and lactating women. 8M people (7% of population)</td>
<td>1 mobilizer (community nutrition promoter) per 1,000 population. $14M/yr. About $18/person/yr</td>
</tr>
<tr>
<td>Nutrition Project (BINP)</td>
<td>supplementary food</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall: 10 large programs/service delivery systems are in the country study (most governmental); coverage usually <50 percent, esp. rural areas; in area covered, resources of trained and supported staff low. Expansion of coverage and increased intensity needed.

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Gillespie & Haddad; ADB Nutrition and Development Series No. 4, ADB/UNU 2001
<table>
<thead>
<tr>
<th>Project</th>
<th>Type, Content</th>
<th>Coverage, Target Groups</th>
<th>Resources/Intensity</th>
</tr>
</thead>
</table>
| India
Integrated Child Development Services (ICDS) | By *anganwadi* worker (AGW) in centers in villages; includes supplementary food, health and education services | Children 0-3, 3-6 yr, pregnant and lactating women. In 3,900 of 5,300 blocks (74%). Less coverage of 0-3-yr olds | 1 AGW/1,000 persons i.e. 200 children; 1 supervisor/20 AGWs. Suppl. food takes substantial resources. Nonfood costs about $2/yr |
| Public Distribution System (PDS) | Subsidized food and basics via fair price shops (FPSs) | Poor are targeted, but much leakage. Coverage 85% of areas | 350,000 FPSs, 1/2500. About 20kg/person/yr cereals distributed |
| Tamil Nadu Integrated Nutrition Project (TINP) | Via paid community nutrition workers (CNWs). Feeding for underweight, plus services | Children 6-36 mo, pregnant and lactating women; those with growth failure. 40% of blocks, 20% children participated in 1990. TINP II, 0-6-yr children | $9/person/yr ('85), + $3 on food, was estimated. TINP II supervision ratio 1:10. 1 CNW: 300 children |

Others: many programs, e.g., poverty alleviation (IRDP, NREP-employment guarantee-JRY) are relevant; coverage usually poor for worst-off, and $/head low.

Overall: In a country this size, state level analysis is needed. Generally a considerable number of relevant programs with incomplete coverage (<50 percent often), usually targeted away from the most needy and under-resourced. Some content issues arise, e.g., ensuring that youngest children and pregnant women are reached; food distribution, via ICDS as supplementary, or PDS noon meals, etc., have not been evaluated for cost effectiveness and may not be optimal for nutrition.
<table>
<thead>
<tr>
<th>Project</th>
<th>Type, Content</th>
<th>Coverage, Target Groups</th>
<th>Resources/Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Thripo**sha                 | Supplementary food distribution, fortified via (?) health system               | Pregnant women (2nd+3rd trimester), 6-12 mo, 12-48 mo children meeting eligibility criteria. 32% covered | $2/person/yr  
200 kcals/person/day               |
| Samurdhi                      | Income-support program, with eligibility, countywide; also includes some nutrition work, and could be basis for wider nutrition program | Poor households (hh), from income criteria. Samurdhi workers are in all areas           | Not given, but income support can be around $100/hh/mo |
| Participatory Nutrition Improvement Project (PNIP) | Pilot community-based project, with local mobilizers and external facilitators (EFs); education, referral, community development | All hhs in pilot areas, with focus on preschoolers, pregnant and lactating women       | 1 EF per 300 children;  
1 CF/30 children Evaluation needed of cost-effectiveness |

Overall: Extensive health infrastructure (e.g., 95 percent of babies delivered in facilities) and poverty alleviation (Samurdhi) system give great opportunity for effective nutrition work, which is still much needed even with good services. Pilot exercises need evaluation lessons to be drawn for strengthened program design.
<table>
<thead>
<tr>
<th>Project</th>
<th>Type, Content</th>
<th>Coverage, Target Groups</th>
<th>Resources/Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia Community Action for Social Development (CASD)</td>
<td>Supported by a range of agencies, esp. UNICEF, through village development committees (VDCs); several hundred local programs. Education, food, water, health, protection of women and children, credit, employment</td>
<td>400,000, especially women &amp; children, 20%. 550 villages/2,000</td>
<td>$4M/yr = $11/person/yr</td>
</tr>
<tr>
<td>Project</td>
<td>Type, Content</td>
<td>Coverage, Target Groups</td>
<td>Resources/Intensity</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Viet Nam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Programme of PEM Control for</td>
<td>Community-based with village collaborators (paid). Nutrition education,</td>
<td>Children &lt;5yrs and pregnant women. 53 provinces. 2M children (15%) weighed in GM</td>
<td>1 collaborator/450 children (1994). $0.8/child/yr</td>
</tr>
<tr>
<td>Children (CPCC)</td>
<td>growth monitoring (GM) rehabilitation, referral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot Community-based Child Nutrition Project</td>
<td>More intensive than CPCC, links to micro credit, commune steering committees</td>
<td>14 communes (out of 500). 10,000 covered</td>
<td>15-20 children/mobilizer; $2.6/child/yr</td>
</tr>
</tbody>
</table>
Evaluation of the impact of a $60 m nutrition program in Bangladesh

Table 2. Some characteristics of households in the project and non-project areas (n=6815).

<table>
<thead>
<tr>
<th></th>
<th>Project area (n = 4539)</th>
<th>Non-project area (n = 2276)</th>
<th>Difference in prevalence (95% confidence interval)</th>
<th>Adjusted two sample t-test p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of heads of household who are male (%)</td>
<td>94.1</td>
<td>95.2</td>
<td>1.1 (-0.3 – 2.5)</td>
<td>---</td>
</tr>
<tr>
<td>Proportion of heads of household having some formal education (%)</td>
<td>41.5</td>
<td>43.5</td>
<td>2.0 (-2.3 – 6.3)</td>
<td>---</td>
</tr>
<tr>
<td>Proportion in lowest SES class (%)</td>
<td>71.1</td>
<td>74.5</td>
<td>3.4 (0 – 6.8)</td>
<td>---</td>
</tr>
<tr>
<td>Average bedroom size (square feet)</td>
<td>288.0</td>
<td>299.0</td>
<td>---</td>
<td>p = 0.11</td>
</tr>
<tr>
<td>Average family size</td>
<td>6.3</td>
<td>6.2</td>
<td>---</td>
<td>p = 0.70</td>
</tr>
</tbody>
</table>

Adapted from: Hossain et al; Health Policy & Planning 2005
### Evaluation of the BINP

Table 4. Differences in the knowledge and practice of mothers in the project and non-project areas. All questions were asked about the youngest child in the house (aged more than 6 months).

<table>
<thead>
<tr>
<th></th>
<th>Project (n=3872)</th>
<th>Non-Project (n=1967)</th>
<th>Difference in prevalence (95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Should take rest during pregnancy</td>
<td>77.6%</td>
<td>70.2%</td>
<td>7.4% (4.2 – 10.6)</td>
</tr>
<tr>
<td>Should give colostrum to newborn</td>
<td>63.1%</td>
<td>52.5%</td>
<td>10.6% (5.9 – 15.3)</td>
</tr>
<tr>
<td>Know how long to exclusively breastfeed</td>
<td>78.0%</td>
<td>69.5%</td>
<td>8.5% (5.5 – 11.5)</td>
</tr>
<tr>
<td>Know when to give complementary food</td>
<td>63.9%</td>
<td>64.7%</td>
<td>0.8% (-2.7 – 4.3)</td>
</tr>
<tr>
<td>Know benefits of iodized salt</td>
<td>32.4%</td>
<td>40.1%</td>
<td>7.7% (3.5 – 11.9)</td>
</tr>
<tr>
<td><strong>Practice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Take rest during pregnancy</td>
<td>59.9%</td>
<td>53.5%</td>
<td>6.4% (3.4 – 9.4)</td>
</tr>
<tr>
<td>Take iron tablets during pregnancy</td>
<td>58.7%</td>
<td>23.8%</td>
<td>34.9% (31.1 – 38.5)</td>
</tr>
<tr>
<td>Have iodized salt in the house</td>
<td>70.0%</td>
<td>62.9%</td>
<td>7.1% (2.4 – 11.8)</td>
</tr>
<tr>
<td>Give colostrum to newborn</td>
<td>77.6%</td>
<td>73.1%</td>
<td>4.5% (1.4 – 7.6)</td>
</tr>
<tr>
<td>Exclusively breastfeed for 5/6 months</td>
<td>3.7%</td>
<td>4.8%</td>
<td>1.1% (-0.6 – 2.8)</td>
</tr>
<tr>
<td>Give complementary food at 5/6 months</td>
<td>56.9%</td>
<td>48.5%</td>
<td>8.4% (4.8 – 12.0)</td>
</tr>
<tr>
<td>Attend at least three antenatal check-ups</td>
<td>42.1%</td>
<td>10.3%</td>
<td>31.8% (28.1 – 35.5)</td>
</tr>
<tr>
<td>Dispose of faeces correctly</td>
<td>30.2%</td>
<td>20.6%</td>
<td>9.6% (4.7 – 14.5)</td>
</tr>
</tbody>
</table>

Adapted from: Hossain et al; Health Policy & Planning 2005
## Evaluation of the BINP

Table 3: The prevalence of severe and moderate underweight, stunting, and acute malnutrition in project and non-project areas in children aged 6-23 months (n=2388).

<table>
<thead>
<tr>
<th></th>
<th>Project (n = 1598)</th>
<th>Non-project (n = 790)</th>
<th>Difference in prevalence (95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe low WAZ (&lt; -3 z-scores)</td>
<td>11.4%</td>
<td>12.1%</td>
<td>0.7% (-2.2 – 3.6)</td>
</tr>
<tr>
<td>Moderate low WAZ</td>
<td>35.2%</td>
<td>36.3%</td>
<td>1.1% (-3.3 – 5.5)</td>
</tr>
<tr>
<td>Severe low HAZ (&lt; -3 z-scores)</td>
<td>11.6%</td>
<td>12.4%</td>
<td>0.8% (-2.4 – 4.0)</td>
</tr>
<tr>
<td>Moderate low HAZ</td>
<td>27.5%</td>
<td>27.6%</td>
<td>0.1% (-3.8 – 4.0)</td>
</tr>
<tr>
<td>Severe low WHZ (&lt;- 3 z-scores)</td>
<td>1.0%</td>
<td>1.1%</td>
<td>0.1% (-0.7 – 0.9)</td>
</tr>
<tr>
<td>Moderate low WHZ</td>
<td>13.4%</td>
<td>14.3%</td>
<td>0.9% (-2.2 – 4.0)</td>
</tr>
</tbody>
</table>

WAZ = weight-for-age z-scores; HAZ = height-for-age z-scores; WHZ = weight-for-height z-scores.

Adapted from: Hossain et al; Health Policy & Planning 2005
# Methods of community participation used in 17 nutrition programs

(ACC/SCN 1991)

<table>
<thead>
<tr>
<th>Method</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village committees (created or strengthened)</td>
<td>11</td>
</tr>
<tr>
<td>Local community members as staff</td>
<td>14</td>
</tr>
<tr>
<td>Community contribution of other resources</td>
<td>7</td>
</tr>
<tr>
<td>Linkage to other community organizations</td>
<td>7</td>
</tr>
</tbody>
</table>
Examples

• Nutrition and PHC Program in Thailand:
  – Food production for supplementary feeding is done at village level with proceeds from sale of excess harvest put into a nutrition fund

• Weaning Food Project in Ghana:
  – Village committees run and maintain corn mills and supervise Weanimix preparation

• Family Nutrition Improvement Program in Indonesia:
  – Community responsible for running weighing posts and for GM and record keeping activities
FIG. 4.1. General structure for community-based programs, based on Thailand. Source: adapted from K. Tontisirin, personal communication, 1996; and ref. 9, p. 50
<table>
<thead>
<tr>
<th>Project, Country</th>
<th>Components</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNCHP, Costa Rica</td>
<td>SF, NE</td>
<td>21</td>
</tr>
<tr>
<td>ISHN, The Gambia</td>
<td>GM, SF, NE</td>
<td>55</td>
</tr>
<tr>
<td>TINP, India</td>
<td>GM, SF, NE</td>
<td>9-12</td>
</tr>
<tr>
<td>UPGK, Indonesia</td>
<td>GM, SF</td>
<td>2, 11</td>
</tr>
<tr>
<td>JSNP, Tanzania</td>
<td>GM</td>
<td>17</td>
</tr>
</tbody>
</table>
Cost effectiveness

Should costs be considered in terms of all recipients, the needy (target group) recipients, or recipients in whom a measurable improvement is observed: e.g.

Cost per child per y: US$ 13-94

Cost per needy child (with calorie deficit): US $ 15-112

Cost per malnourished child: US $ 45-290