Responsive Feeding: Evidence on Associations with Child Nutrition Status

Aisha K. Yousafzai, PhD
Associate Professor of Global Health
Department of Global Health and Population
Harvard T.H. Chan School of Public Health
Outline

• The theoretical framework of responsive care and responsive feeding.
• Observational studies: Evidence on associations between responsive feeding behaviours and children’s nutrition status.
• Intervention studies: Responsive feeding interventions and children’s outcomes.
• Measurement of responsive feeding.
• Summary of evidence
Responsive care

- Sensitive and responsive caregiving are fundamental caregiving skills.
- Ability of the caregiver to recognize child’s cues (e.g., hunger) and to respond promptly in a developmentally appropriate manner.
- Associated with beneficial outcomes for early child development (ECD), early literacy, academic attainment, decreased hospitalizations and increased well-baby visits (Eshel et al., Bull. of the WHO, 2006).
Responsive feeding

• Responsive feeding
  • Provides healthy food on a regular schedule in a setting conducive to eating
  • Caregiver reads infant cues of hunger/satiety
  • Responds to infant quickly
    • Direct & Nurturant
    • Builds regulatory skill

• Unresponsive feeding
  • Controlling, indulgent, or uninvolved/distracted
  • Force feeding
Strategies caregivers use to overcome feeding challenges at mealtimes

<table>
<thead>
<tr>
<th>Strategy reported (n=34)</th>
<th>%</th>
<th>Strategy observed (n=54)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversion</td>
<td>22.2</td>
<td>Verbal direction</td>
<td>42.6</td>
</tr>
<tr>
<td>Follow child with food</td>
<td>20.5</td>
<td>Focus attention</td>
<td>38.9</td>
</tr>
<tr>
<td>Force feed</td>
<td>17.7</td>
<td>Question</td>
<td>29.6</td>
</tr>
<tr>
<td>Doctor/vitamin</td>
<td>11.8</td>
<td>Divert momentarily</td>
<td>16.7</td>
</tr>
<tr>
<td>Beat</td>
<td>5.9</td>
<td>Talk about food</td>
<td>14.8</td>
</tr>
<tr>
<td>Take a break</td>
<td>5.9</td>
<td>Model</td>
<td>5.6</td>
</tr>
<tr>
<td>Threaten</td>
<td>2.9</td>
<td>Increase food variety</td>
<td>3.7</td>
</tr>
<tr>
<td>Increase choices</td>
<td>2.9</td>
<td>Praise</td>
<td>1.9</td>
</tr>
<tr>
<td>Wait for child to open mouth</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No solution</td>
<td>22.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Source: Moore et al., SSM, 2006]
### Responsive feeding behaviours in the first 24 months of life

<table>
<thead>
<tr>
<th>Age</th>
<th>Caregiver preparation</th>
<th>Child skills &amp; signals</th>
<th>Responds to child’s signals</th>
<th>What child learns</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6m</td>
<td>Prepare to feed when child is hungry</td>
<td>Signals hunger thro’ voice, facial exp and actions</td>
<td>Feeds when hungry, stop with satiety</td>
<td>Caregiver will respond and meet her needs</td>
</tr>
<tr>
<td>6-12m</td>
<td>Ensure child is comfortable, establish mealtime routine</td>
<td>Sit, chew and swallow semi-solids, self-feed with fingers</td>
<td>Increase variety, textures, tastes. Positive response to self-feeding effort</td>
<td>Self-feeding, experience new tastes/texture, Enjoyable mealtimes</td>
</tr>
<tr>
<td>12-24m</td>
<td>Offer 3-4 healthy options, offer 2-3 healthy snacks/day, offer food that can be picked up, chewed and swallowed</td>
<td>Self-feed range of foods, use baby safe utensils, use words to signal requests</td>
<td>Recognizes and acts on signals of hunger/satiety Positive response to self-feeding effort</td>
<td>Try new foods, do things for herself, asks for help, trust caregiver will respond</td>
</tr>
</tbody>
</table>

[Source: Black & Aboud, J Nutrition, 2011]
Promote interactions: Routine, structure, expectations, emotional context

Child responds and signals to caregiver

Caregiver response: prompt, supportive, developmentally appropriate

Child experiences predictable responses

[Source: Black & Aboud, J Nutrition, 2011]
• The theoretical framework of responsive care and responsive feeding.

• **Observational studies**: Evidence on associations between responsive feeding behaviours and children’s nutrition status.

• Intervention studies: Responsive feeding interventions and children’s outcomes.

• Measurement of responsive feeding.

• Summary of evidence
Feeding skills and food intake

Feeding skills
- Shaping maternal perceptions of child hunger (USA)
- Preventing feeding difficulties/challenges (Australia, Brazil)

Food intake
- Acceptance of food (Australia)
- Mouthfuls eaten (Ethiopia)
- Nutrient intake (Ethiopia)
- Increased duration of breastfeeding (Global review)
## Child over nutrition

<table>
<thead>
<tr>
<th>Review</th>
<th>No of Studies</th>
<th>Context</th>
<th>Study Design</th>
<th>Key Findings</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurley et al., J. Nutrition, 2011</td>
<td>31</td>
<td>High-income countries (USA-low-income, n=22)</td>
<td>Cross-sectional (n=25) Longitudinal (n=3) Repeated measures (n=1)</td>
<td>Non-responsive feeding associated with over weight/obesity, WHZ, BMI Z score</td>
<td>Comparison of tools to assess responsive feeding is challenging Causal pathways not understood</td>
</tr>
<tr>
<td>Lindsay et al, Env Res and Pub Health, 2017</td>
<td>14</td>
<td>SE Asia 2-12yrs</td>
<td>Observational (n=14)</td>
<td>Non-responsive feeding associated with risk of obesity</td>
<td></td>
</tr>
</tbody>
</table>
## Child under nutrition

<table>
<thead>
<tr>
<th>Review</th>
<th>No of Studies</th>
<th>Context</th>
<th>Study Design</th>
<th>Key Findings</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentley et al, J Nutrition, 2011</td>
<td>21</td>
<td>Low &amp; middle income countries &lt;36 mth</td>
<td>Intervention (n=10) Observation (n=11)</td>
<td>Association with WAZ or HAZ (4/6 obs studies and in 9/10 int) Promising evidence on child’s food acceptance, maternal verbalization</td>
<td>Among intervention studies, not possible to isolate responsive feeding component in the package. Variation in responsive feeding assessment</td>
</tr>
</tbody>
</table>
Outline

• The theoretical framework of responsive care and responsive feeding.

• Observational studies: Evidence on associations between responsive feeding behaviours and children’s nutrition status.

• **Intervention studies:** Responsive feeding interventions and children’s outcomes.

• Measurement of responsive feeding.

• Summary of evidence
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding skills</td>
<td>• Maternal knowledge (Bangladesh, USA)</td>
</tr>
<tr>
<td></td>
<td>• Maternal skills (Bangladesh, USA)</td>
</tr>
<tr>
<td></td>
<td>• Independent feeding skills (Bangladesh, Malawi)</td>
</tr>
<tr>
<td>Food intake</td>
<td>• Nutrient intake when combined with complimentary feeding package (India, USA)</td>
</tr>
<tr>
<td></td>
<td>• Child acceptance of food (Malawi)</td>
</tr>
<tr>
<td>Neurodevelopment</td>
<td>• Cognitive development when combined with early stimulation (India)</td>
</tr>
</tbody>
</table>
Outline

• The theoretical framework of responsive care and responsive feeding.

• Observational studies: Evidence on associations between responsive feeding behaviours and children’s nutrition status.

• Intervention studies: Responsive feeding interventions and children’s outcomes.

• Measurement of responsive feeding.

• Summary of evidence
Measurement

• Variety of tools used, including caregiver report and direct observations.
  • No standardized tools
  • No consensus on core items to measure

• Opportunity to modify/adapt caregiver-child interaction tools used in other contexts (e.g., book reading, play, responsive-talk) for responsive feeding.
Outline

• The theoretical framework of responsive care and responsive feeding.
• Observational studies: Evidence on associations between responsive feeding behaviours and children’s nutrition status.
• Intervention studies: Responsive feeding interventions and children’s outcomes.
• Measurement of responsive feeding.
• Summary of evidence
What we know?

- Eating behaviours and dietary habits are shaped early in life.
- Influenced by a number of factors including access to healthy foods, caregiver modeling and responsive behaviours.
- Evidence on the association of responsive feeding and feeding skills (caregiver and child), food acceptance, reduction of feeding difficulties is promising.
- Evidence on association of non-responsive feeding and risk of over-weight/obesity is found in observational studies.
- Evidence on association of responsive feeding combined with other intervention components and under weight is observed in intervention studies from low and middle-income countries.
Evidence gaps

• Informing intervention packages that include responsive feeding:
  • Qualitative studies to understand socio-cultural perceptions of responsive feeding.
  • Predictors of responsive care and responsive feeding include maternal stress (e.g., Elias et al., Childhood Obesity, 2016) and maternal executive functions (e.g., Fuglestad et al., Pediatric Obesity, 2017).

• Evidence from intervention studies is limited:
  • Not able to isolate the effects of responsive feeding from the intervention package.
  • Casual pathways are not investigated.
  • Implementation strategies are not reported (e.g., behaviour change techniques)
INTERNATIONAL SYMPOSIUM ON
Understanding the Double Burden of Malnutrition for Effective Interventions

THANK YOU!