INTERNATIONAL SYMPOSIUM ON
Understanding the Double Burden of Malnutrition for Effective Interventions

Responsive Feeding: Evidence on Associations with Child Nutrition Status

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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

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Responsive care

[Source: www.nurturing-care.org]

- 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).

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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

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Strategies caregivers use to overcome feeding challenges at mealtimes

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

[Source: Moore et al., SSM, 2006]

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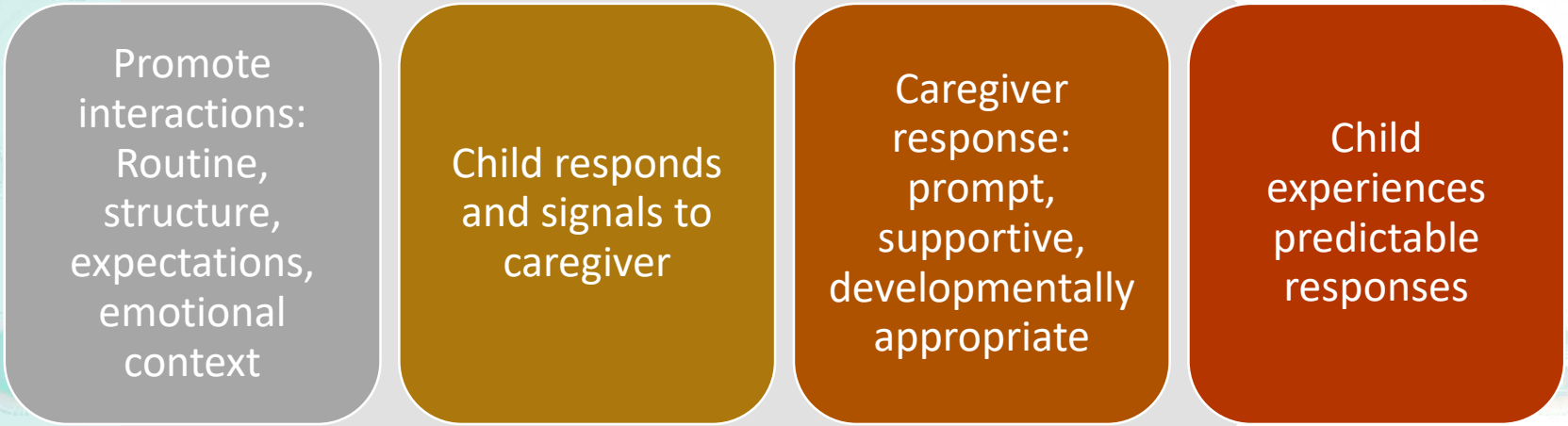
Responsive feeding behaviours in the first 24 months of life

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

[Source: Black & Aboud, J Nutrition, 2011]



[Source: Black & Aboud, J Nutrition, 2011]

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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)

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Child over nutrition

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

Child under nutrition

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

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Feeding skills, food intake, neuro-development, weight gain

Feeding skills	• Maternal knowledge (Bangladesh, USA) • Maternal skills (Bangladesh, USA) • Independent feeding skills (Bangladesh, Malawi)
Food intake	• Nutrient intake when combined with complimentary feeding package (India, USA) • Child acceptance of food (Malawi)
Neurodevelopment	• Cognitive development when combined with early stimulation (India)

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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.

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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

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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)

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THANK YOU!

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