



Published in final edited form as:

Clin Pediatr (Phila). 2015 February ; 54(2): 179–182. doi:10.1177/0009922814529363.

Maternal and Child Roles in the Feeding Relationship: What Are Mothers Doing?

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Introduction

One area with strong potential to prevent or treat early childhood obesity is *feeding dynamics*.¹ The concept of feeding dynamics includes 2 central components: caregiver feeding role (how, when, where, and what caregivers feed their children) and child eating behaviors (how much, when, what, and whether to eat of what is offered).

The feeding dynamic approach was initially proposed as the trust model by Ellyn Satter.^{2,3} In this approach, caregivers are responsible for offering nutritious foods and exposing children to new foods, providing structured snack and mealtimes to decrease indiscriminate eating, identifying a designated area for eating or drinking within the home, sitting and eating with children, and keeping the eating atmosphere pleasant. Children are responsible for what to eat and how much (or even whether) to eat from the food provided. Unlike conventional interventions for obesity, the feeding dynamic emphasizes *how* to feed,⁴ placing less weight on conventional intervention areas such as portion sizes and low-fat or low-calorie food options as well as discourages excessively restrictive feeding practices. A growing body of literature reveals a complex relationship between controlling feeding behaviors and the child's weight.⁵⁻⁹ In particular, overly restrictive behaviors significantly reduce a child's ability to self-regulate their energy intake^{5,10-12} and result in weight gain or a higher body mass index (BMI).^{5,6}

In order to examine the potential of a feeding dynamic approach to reduce childhood obesity in young children, it would be useful to know the extent caregivers already perform these roles as well as the relationships between these roles, other maternal feeding and eating practices, concerns about the child being or becoming overweight, and demographic

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Declaration of Conflicting Interests: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

variables. Therefore, the objective of this brief report is to provide this information and a foundation on which a feeding dynamic intervention can be developed.

Methods

A survey was administered to mothers of children 2 to 5 years old. Mothers were chosen because they are typically the primary food preparer in the family.⁵ Mothers were recruited from 3 child care centers (a university/hospital campus, a low-income area, and a semirural area) and an urban primary care pediatric clinic. The clinic was included to increase the number of low-income participants, as 90% of the patients receive public insurance. The study was approved by the hospital institutional review board.

Feeding behaviors were assessed using the Child Feeding Questionnaire (CFQ)¹³ and the Caregiver Feeding Responsibility Scale (CFRS).¹⁴ For the CFQ Restriction, Monitoring, and Pressure to Eat subscales,¹³ higher scores reflect greater levels of the measured feeding behavior. In the current study, Cronbach's α s were .73 for Restriction, .73 for Pressure to Eat, and .82 for Monitoring. The CFRS's items ask caregivers the extent to which they perform their responsibilities (eg, feed their child at regular times, serve meals with a variety of foods) and allow their child to perform their responsibilities (eg, decide what or how much to eat of what has been offered) in the feeding dynamic approach. Higher scores indicating greater adherence to the feeding dynamic approach.¹⁴ The CFRS factor structure is unidimensional, demonstrates an internal consistency reliability ($\alpha = .70$), test-retest reliability ($r = .80$), and construct validity via its negative relationships with restriction and pressuring children to eat.¹⁴ Cronbach's α was .72 in the current study.

Maternal BMI was calculated and categorized as underweight ($<18.5 \text{ kg/m}^2$), normal weight ($18.5\text{-}24.9 \text{ kg/m}^2$), overweight ($25\text{-}29.9 \text{ kg/m}^2$), and obese ($\geq 30 \text{ kg/m}^2$). Child weight status was not calculated because of the poor reliability of parent-reported child weight and height measures.¹⁵ Instead, a CFQ Perceived Child Overweight subscale item was used to assess mothers' perception of their child's current weight, with higher values indicating more overweight. The CFQ Perceived Concern subscale ($\alpha = .79$) was used to assess mothers' level of concern about their child's weight, with higher levels indicating more concern.

The 3 subscales of the Intuitive Eating Scale¹⁶ were used to assess mothers' adaptive eating behaviors. Unconditional Permission to Eat (UPE) measures the tendency to allow oneself to eat enjoyable foods. Eating for Physical Rather than Emotional Reasons (EPR) assesses the tendency to use food to satisfy physical hunger and not for emotional fluctuations and/or distress. Reliance on Internal Hunger/Satiety Cues (RIC) gauges awareness of and trust in hunger and satiety cues to guide eating. Higher values indicate higher levels of each construct. In the current study, Cronbach's α s were .88 for EPR, .76 for each UPE and RIC.

Pearson r correlations, t tests, and analyses of variance were used to examine the associations between mothers' feeding practices, eating behaviors, and demographic variables. Significance was determined at $P < .05$. All analyses were conducted with SPSS 19.0.

Results

Of the 297 surveys administered, the response rate was 63%. Eight participants were excluded because of child age restrictions and incomplete surveys. Mothers obtained from the clinic (14%) had higher levels of public insurance (96% vs 68%) and Asian ethnicity (8.3% vs 0%) than mothers from child care clinics (86%).

Characteristics of the mothers and children are presented in Table 1. Maternal concern about the child's weight was correlated with maternal BMI ($r = .34, P < .01$), restrictive feeding ($r = .26, P < .01$), and monitoring the child's food intake ($r = .15, P < .05$). Mothers with a BMI ≥ 25 kg/m² were more concerned about their child's weight compared with normal weight mothers, $t(179) = 3.01, P < .001$.

Maternal age and number of years of education were negatively related to pressuring their child to eat ($r = -.32, P < .001, r = -.19, P = .01$, respectively). Single, divorced, and separated mothers pressured their child to eat more than married mothers or mothers who lived with a partner, $t(179) = 2.56, P = .011$. Ethnic differences were noted for restriction, $F(2, 169) = 4.85, P = .002$, and pressure to eat, $F(2, 169) = 10.29, P = .002$; Caucasian mothers were less restrictive than Asian mothers ($P = .012$) and less likely to pressure their child to eat when compared with Asian ($P = .002$) or African American mothers ($P < .001$).

In terms of frequency performing their feeding dynamic responsibilities, allowing their child to perform his or her responsibilities, and engaging in other feeding behaviors (Table 2), mothers, on average, indicated that they often provided structured meals and snacks, served meals with a variety of different nutritious foods, ate together as a family, and kept the atmosphere at family meals pleasant. They often allowed the child to eat as much as he or she wanted and to stop eating when full. However, mothers on average did not adhere to the feeding dynamic approach by allowing their child to eat wherever he or she wanted to in the house (eg, in front of the TV), only preparing foods that their child likes, allowing the child to have other foods when he or she does not like what is served, and making their child eat what they think is the right amount. Mothers often restricted and monitored their child's food intake and sometimes pressured their child to eat. Mothers used more restriction and pressure to eat practices with overweight children, and were less likely to allow overweight children to perform their feeding roles (Table 2).

In terms of the associations between mothers' eating behaviors and feeding practices, mothers who give themselves unconditional permission to eat restricted their child's food intake less ($r = .19, P < .05$). Mothers who ate for physical rather than emotional reasons and relied on their internal hunger and satiety cues to guide their eating were more likely to allow their child to carry out their eating responsibility (eg, stop eating when full; $r = .21, P < .05$ and $r = .17, P < .05$, respectively).

Discussion

The results indicate diversity in feeding behaviors, high levels of controlling feeding behaviors (ie, restriction and pressure to eat), and limited use of some feeding dynamic roles, particularly with not having the child eat at a structured place (eg, a kitchen table),

preparing only foods their child likes to eat, allowing their child to have other foods when she or he does not like what is served, and making their child eat a predetermined amount. Mothers with the overweight children were also more likely indicate use of more restrictive and pressure to eat behaviors. Mothers who ate intuitively used less controlling feeding practices with their children. The content of any feeding dynamic intervention will have to address these findings and target maternal eating behaviors that support or hinder implementation, paying close attention to key demographic variables such as maternal BMI, age, ethnicity, education, and marital status. For instance, a feeding dynamic intervention may need to introduce the caregiver roles first and address maternal eating behaviors as mothers fared better with carrying out their own feeding roles and when they had adaptive eating behaviors, respectively. The cross-sectional nature of the study precludes our ability to determine whether the child's weight impacted the use of these behaviors. In addition, the CFRS needs further validation with different populations. In summary, our findings demonstrate limited use of certain feeding roles and provide critical information that will need to be acknowledged when developing any feeding dynamic intervention.

Acknowledgments

We thank Rhyan Mingo for her support with the study.

Funding: The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by The Nationwide Children's Hospital Research Institute Award Number UL1RR025755 from the National Center for Research Resources to Ihuoma U. Eneli.

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Table 1

Characteristics of Study Population.

| Variable | n (%) |
|--|---------------|
| Child | |
| Age in years, mean \pm SD) | 3.4 \pm 1.0 |
| Gender | |
| Male | 95 (52.8) |
| Female | 85 (47.3) |
| Maternal current perception of child weight | |
| Very underweight | 3 (1.7) |
| Underweight | 21 (11.4) |
| Average | 145 (80.7) |
| Overweight | 11 (6.3) |
| Maternal description of child's eating behaviors | |
| Very picky—only likes a few foods | 40 (22.2) |
| Eats pretty well—likes many foods | 94 (52.2) |
| Eats very well—seems to like nearly everything | 38 (21.1) |
| Has a hard time sitting still for meals | 48 (26.7) |
| Eats very fast | 4 (2.2) |
| Eats very slowly | 37 (20.6) |
| Sneaks or hides food frequently | 6 (3.3) |
| Prefers to eat snacks rather than meals | 56 (31.1) |
| Usually eats very little at meals | 29 (16.1) |
| Eats large amounts at meals | 10 (5.6) |
| Dislikes new foods | 26 (14.4) |
| Mother | |
| Age in years, mean (range) | 34.3 (20-48) |
| Race | |
| Caucasian | 127 (70.6) |
| Black | 30 (16.7) |
| Asian | 15 (8.3) |
| Other | 8 (4.4) |
| Marital status | |
| Single, divorced, or separated | 49 (27.2) |
| Married | 114 (63.3) |
| Single and lived with significant other | 11 (6.1) |
| Missing | 6 (3.3) |
| Education | |
| Did not complete high school | 4 (2.2) |
| High school graduate or GED | 49 (27.2) |
| Graduated college | 92 (51.1) |
| Postgraduate (some) | 35 (19.4) |

| Variable | n (%) |
|----------------------------------|--------------|
| Current perception of own weight | |
| Underweight | 3 (1.7) |
| Average | 84 (46.7) |
| Overweight | 37 (20.6) |
| Obese | 38 (21.1) |
| Unknown | 18 (10.0) |

Table 2

Maternal Reported Use of Feeding Dynamic Roles and Behavior.^a

| | Total | Mean Score (SD); Perception of Child's Weight | |
|--|------------|---|--------------------------|
| | | Normal (n = 148) | Overweight (n = 32) |
| Child Feeding Responsibility Scale (CFRS) | | | |
| <i>I feed my child at regular times instead of waiting until he/she asks for food.</i> | 4.02 (0.8) | 4.10 (0.78) | 3.66 (1.04) |
| <i>I allow my child to eat as much as she/he wants to eat from what is offered.</i> | 4.02 (0.9) | 4.14 (0.85) | 3.47 (1.05) ^b |
| <i>I allow my child to stop eating when she/he seems full.</i> | 4.26 (0.7) | 4.34 (0.66) | 3.88 (1.01) ^b |
| <i>My child eats in front of the TV or computer. (reverse scored)</i> | 2.27 (1.1) | 2.22 (1.08) | 2.53 (1.24) ^b |
| I do not use food as a reward. | 3.56 (1.0) | 3.62 (0.98) | 3.29 (1.19) |
| <i>We have pleasant conversations during meals that include everyone.</i> | 3.94 (0.8) | 3.98 (0.74) | 3.78 (0.98) |
| <i>I only prepare food for my child that she/he likes to eat. (reverse scored)</i> | 3.13 (0.8) | 3.06 (0.90) | 3.44 (0.72) |
| <i>My child eats wherever she/he wants to eat in the house. (reverse scored)</i> | 2.15 (1.1) | 2.08 (1.10) | 2.44 (1.19) ^b |
| I avoid serving fattening foods. (reverse scored) | 3.13 (0.8) | 3.12 (0.83) | 3.22 (0.87) |
| I make my child eat what I think is the right amount. (reverse scored) | 3.13 (1.1) | 3.06 (1.14) | 3.44 (0.98) |
| <i>We eat meals together as a family.</i> | 4.09 (0.8) | 4.15 (0.79) | 3.81 (1.06) |
| <i>I allow my child to have drinks other than water between meals. (reverse scored)</i> | 3.38 (1.0) | 3.39 (1.04) | 3.31 (1.00) |
| <i>I allow my child to have other food whenever she/he doesn't like the meal. (reverse scored)</i> | 2.40 (1.0) | 2.37 (1.10) | 2.56 (1.05) |
| <i>I try to make my child eat everything on her/his plate. (reverse scored)</i> | 2.63 (1.2) | 2.62 (0.98) | 2.69 (1.09) |
| <i>My child gets her/his own food when hungry. (reverse scored)</i> | 2.51 (1.0) | 2.39 (1.20) | 3.06 (1.22) ^b |
| <i>I serve meals with a variety of different foods.</i> | 4.06 (0.7) | 4.04 (0.74) | 4.13 (0.75) |
| Total CFRS score | 3.85 (0.5) | 3.90 (0.44) | 3.57 (0.45) ^c |
| Child Feeding Questionnaire (CFQ) | | | |
| Restriction | 3.40 (0.6) | 2.88 (0.61) | 3.28 (0.58) ^c |
| Pressure to eat | 2.75 (0.9) | 2.71 (0.90) | 3.13 (0.97) ^c |
| Monitoring | 4.08 (0.8) | 4.03 (0.81) | 4.06 (0.90) |

^a Italics indicates item on the Caregiver Feeding Responsibility Scale (CFRS).

CFRS item response scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always. CFQ Restriction response scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. CFQ Pressure to Eat response scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. CFQ Monitoring response scale: 1 = never, 2 = rarely, 3 = sometimes, 4 = mostly, 5 = always.

^b Groups are significantly different at $P < .003$ ($P < .05/16$ to correct for Type I error).

^c Groups are significantly different at $P < .05$.