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## Early Childhood Feeding: Assessing Knowledge, Attitude, and Practices of Multi-Ethnic Child-Care Providers

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## **Early Childhood Feeding: Assessing Knowledge, Attitude and Practices of Multiethnic Childcare Providers**

Marjorie R. Freedman and Karina P. Alvarez; *Journal of the American Dietetic Association*, 2010; 110:447-451.

**Key words:** Childcare feeding practice, Division of responsibility

### **ABSTRACT**

Early childhood is a critical period for shaping and influencing feeding and lifestyle behaviors that have implications regarding future weight and health. With more women in the workforce, families have become reliant on childcare. Thus, the child-feeding relationship has become a shared responsibility between the parent and childcare provider. Little is known about the impact of childcare providers on development of early childhood feeding behaviors and subsequent risk for obesity, especially in the Hispanic ethnic group. This research examined child-feeding attitudes, practices and knowledge of multiethnic home-based and center-based childcare providers. Questionnaires were completed by a convenience sample of 72 providers, 50 of which completed a pre- and posttest on child feeding knowledge after receiving a 90-minute class based on Satter's division of responsibility feeding model during the spring of 2008. Results indicate many providers had practices consistent with this model. However, significant differences were reported by Hispanic providers, who were statistically more likely to encourage children to finish meals before dessert, prepare foods they perceived well-liked by children, coach children to eat foods perceived as appropriate, and not eat with children during mealtime. A significant increase in knowledge from 73% correct at pretest to 82% at posttest was noted, with significant increase in knowledge on five of 13 questions. However, knowledge was not always congruent with behavior. This study points to differences among providers based on ethnicity, and strongly recommends recruiting Hispanic childcare providers to participate in educational programs and community efforts to prevent obesity.

### **INTRODUCTION**

Currently, 24% of children ages two to five and 33% of children ages six to 11 are overweight or obese (1), putting them at risk for adolescent and adult obesity and co-morbid disease (2,3). Particularly at risk are Mexican-American children, for whom elevated body mass indices are found in 30% of two to five year olds and in 43% of six to 11 year olds (1). Treatment of obesity is challenging, and long-term success modest (4). Consequently, preventative approaches should start in early childhood, a critical period for shaping and influencing feeding and lifestyle behaviors that impact future weight and health (5-11). Environmental factors can modulate feeding behaviors in children as young as two years of age (5,12,13). Parents and other role models who define the early childhood environment will influence a child's choices, preferences and quantities of food consumed (13-19).

With more women in the workforce (20), up to 60% of children below six years of age spend at least 29 hours a week in a childcare setting (2,21,22). This suggests that children routinely eat several meals away from home each day. Childcare settings can support healthful feeding behaviors (23,24), and preschool is an optimal time to teach and practice healthful feeding habits (24). Little is known, however, about the impact childcare providers have on development of early childhood feeding behaviors and the subsequent risk for obesity.

This pilot study had two purposes: (1) to examine early childhood feeding attitudes and practices of childcare providers from a variety of ethnic backgrounds; and (2) to increase the

nutritional knowledge of childcare providers by exposing them to a class on the division of responsibility in the feeding paradigm (10,17). This paradigm, supported by the American Dietetic Association (25), may help prevent feeding struggles and be an effective tool in preventing childhood obesity (26).

## **METHODS**

### **Participants and Study Design**

Three hundred and twenty childcare providers were recruited from the Choices for Children database via e-mail, newsletter, and flyers in English and Spanish. Choices for Children is an organization that provides support and services to families and childcare providers (27). The target population of childcare workers was defined as individuals  $\geq 18$  years of age who take care of  $\leq 90$  children in a licensed or un-licensed center-based or family-based setting. In spring of 2008, all eligible participants attended one 90-minute interactive class on the division of feeding responsibility (10,17).

Prior to the class, respondents' confidentiality was assured, and written informed consent was obtained. Coded personal information was separated from coded questionnaires assessing attitudes and practices. Utilizing a pretest-posttest design, a child feeding knowledge test was administered immediately before and after each class, and was presented by the same bilingual registered dietitian in English or Spanish. The San José State University's Institutional Review Board for human subjects approved the study protocol.

### **Instrument Development and Scoring**

A practice and attitudes questionnaire and a knowledge test were developed for this research. Questions were modified from the Stanford Child Feeding Questionnaire (28) and the Hughes Caregiver Feeding Styles Questionnaire (29). Questions regarding frequency of feeding behaviors related to the division of responsibility model (10) were also asked. Pre- and posttests were given one point for each correct answer and a total score was calculated by summing individual scores. Missing values were scored as zero.

Readability was assessed by the Flesch-Kincaid method (30) at a sixth-grade level. All questions were translated from English into Spanish and back translated (31). Both the attitudes and practices questionnaire and the knowledge test were pre-tested for face and construct validity using 27 childcare providers of similar characteristics.

### **Statistical Analysis**

Analysis was conducted using SPSS 16.0 for Mac (SPSS Inc, Chicago, IL, 2008). Descriptive analysis was used for questions assessing providers' attitudes and practices. Paired-sample *t*-tests determined differences between pre- and posttests for normally distributed data. Wilcoxon signed ranks test determined differences for non-normally distributed data, based on skew and kurtosis. Cross tabulation ( $\chi^2$ ) examined relationships between individual questions and ethnicity, education, and provider type. Statistical significance was set at  $P < .05$ .

## RESULTS AND DISCUSSION

### Participant Characteristics

Questionnaires were completed by a convenience sample of 72 providers (23% response rate). Of these, 50 completed the knowledge tests. Providers who only completed questionnaires were not different from those completing tests (data not included). All providers were female ( $48.8 \pm 12.5$  years of age); the majority cared for  $\leq 15$  children between the ages of six months and five years. Ethnicity was reported as Hispanic (59%), Asian (22%), Caucasian (14%), and other (4%). Ninety-one percent were licensed childcare providers; 54% (n=39) were family-based; 46% (n=33) were center-based. Most (76%) family-based providers were Hispanic and 50% of center-based providers were Asian. More than half (54%) had some college or a two-year degree, 14% completed college, and 17% completed high school.

### Childcare Practices

**Table 1** illustrates the many positive attitudes and practices of childcare providers (e.g. “I turn the TV off during mealtimes”), regardless of ethnicity, education or provider type. However, it also indicates areas needing improvement. For example, only 24% of Hispanic providers reported eating meals together with children, compared to all Caucasians and most Asians (86%) ( $\chi^2(4,65) = 3.04, P < 0.05$ ). Those with at least some college education were more likely to eat with children ( $\chi^2(3,65) = 8.06, P < 0.05$ ). These differences are important because eating is a daily event that provides an opportunity for children to observe adults modeling positive eating behaviors, which may influence their own food preferences and behaviors (14,19,32). Research supports teacher modeling as an effective way to encourage children to try new foods (18), and food preferences and acceptance patterns have been linked to adiposity (14). Since Hispanic childcare providers in this sample rarely reported eating meals with children, this is a lost opportunity to model positive eating behaviors and influence later eating habits.

Table 1. Attitudes and Practices of Childcare Providers

<i>To help children become a happy and healthy eater ...</i>	<b>Correct response</b>	<b>N</b>	<b>% Correct</b>
I let the children eat <b>wherever</b> he or she wants.	No	70	90
We eat meals together.	Yes	69	51
I serve the children the same food as the rest of the children.	Yes	70	91
I make the children eat foods I think are good for him or her.	No	66	24
I let the children decide whether he or she wants a second helping.	Yes	69	86
I (we) only cook food I know the children will like.	No	70	46
I insist on the children finishing their food before he or she leaves the table.	No	68	68
I let the children eat <b>whenever</b> he or she wants.	No	67	82
I leave food out on the table so the children can finish later on.	No	69	91
I let the children decide how much he or she should eat.	Yes	70	61
I encourage the children to eat what I think he or she should.	No	67	5
I make the children finish all his/her meal before he/she can have dessert.	No	68	41
I let the children choose foods that he/she wants from what is served at a meal.	Yes	70	59
I let the children eat snacks whenever he or she wants.	No	70	90
I serve meals at about the same time every day.	Yes	70	99
I turn the TV off during mealtime.	Yes	70	89

Although more than 75% of childcare providers reported making children eat foods they think are good for them, this behavior differed significantly by ethnicity ( $\chi^2(2,63) = 7.25, P < 0.05$ ), with more than 85% of Hispanic providers reporting this behavior compared to 69% of Asians and 44% of Caucasians. Hughes et al. (8) similarly reported Hispanic childcare providers in Head Start practiced an authoritarian feeding style. Pressuring children to eat healthful foods appears to be counterproductive, as it has been linked to reduced consumption of fruit and vegetables in five year old girls (33), and reduced ability to regulate energy intake, contributing to overweight (34).

Looking at the introduction of new foods, 46% of all childcare providers reported only cooking food they know children like. This was highly significant for ethnicity ( $\chi^2(2,67) = 1.96, P < 0.001$ ), with Hispanic providers three times more likely than Asians and Caucasians to engage in this behavior. Though not significant, family-based providers (63%) reported this practice more than center-based providers (39%). Another study reported childcare providers rarely offering a new food more than three to five times (35), whereas more frequent exposure to a new food is necessary to enhance its acceptance (36,37). In our study, despite responses from the knowledge pretest indicating that over 90% of respondents knew a child may need to try a food many times before liking it, this knowledge did not translate into behavior.

Behavior relating to the amount of food a child is allowed to consume was assessed. With 59% of all providers making children finish their meal before dessert, there was no significant difference based on ethnicity, education, or provider type. However, insisting children finish their food before they leave the table was significantly related to ethnicity ( $\chi^2(2,65) = 6.07, P < 0.05$ ), with 50% of Hispanics but only 30% of Asians and 20% of Caucasians practicing this behavior. No difference was seen between education or provider type. When asked, “How often do you allow children to eat less than you think they should,” 40% rarely or never practiced this behavior. Family-based providers (47%) were more likely to practice this compared to center-based providers (29%), but the difference was not statistically significant. More Hispanic, compared to Asian or Caucasian providers, did not allow children to eat less than they think they should ( $\chi^2(8,64) = 2.08, P < 0.01$ ). Requiring children to “clean their plate” teaches them the amount of food remaining on their plate, rather than internal physiological cues, determines when to stop eating (38,39), and is associated with overeating and overweight in young children (15) as well as future eating problems (10,14,17).

Approximately 45% of providers rarely or never allowed children to eat more than they thought they should. Though not statistically significant, family-based providers (55%) were more likely to practice this behavior than center-based providers (27%) and more Hispanics (53%) practiced this behavior compared to Asians (31%) and Caucasians (22%). This practice did not vary by education level. The division of responsibility model (10,17), if practiced by the adult during feeding, may help them trust that the child will be able to self-regulate their food intake.

In this study, 43% of childcare providers often or always said something to make children eat more [significant only by provider type ( $\chi^2(12,63) = 2.15, P < 0.05$ )]. Previous research reported similar behavior among childcare providers (8).

## **Feeding Knowledge**

After the feeding class, providers’ knowledge significantly ( $P < 0.001$ ) improved for five of 13 child-feeding practices, as assessed by responses to pre- and posttests (Table 2). Fifty-two percent correctly answered at least 80% of questions at posttest compared to 33% at pretest. Knowledge assessed on these tests was not always consistent with providers’ behavior. At pretest, 76% responded correctly to the statement, “children are able to decide how much they need to eat at a meal”, but in practice, only 61% replied that they let the children decide how much they should eat. After childcare providers were taught that during mealtimes, it is the child who decides the amount of food to eat, and whether to eat or not (10,17), most (90%) correctly responded that children are able to decide how much they need to eat at a meal. Yet, almost half (46%) answered at posttest that they should make sure the child does not overeat, which was in

agreement with their earlier response (i.e., they rarely or never allowed children to eat more than they thought they should). These responses support the notion that childcare providers feel strongly that they should regulate how much a child eats, which is supported by previous research among socioeconomically diverse white, Hispanic and African-American mothers (9).

Table 2. Childcare Providers' Self-reported Knowledge of Child Feeding Practices at Pretest vs. Posttest (n=50)

Child Feeding Practice	Correct Response	% Correct		Mean Difference $\pm$ SD
		Pre	Post	
It's okay to cook different foods for a child if they don't like the meal	False	48	54	.06 $\pm$ .5
Children are able to decide how much they need to eat at a meal	True	76	90	.14 $\pm$ .5 <sup>*b</sup>
It's a good idea to let a child decide what foods you should buy, because then he or she will eat them	False	70	72	.02 $\pm$ .4
Children should not be allowed to eat whenever they want	True	60	64	.04 $\pm$ .7
Childcare givers should make children eat vegetables even if they don't like them	False	72	74	.02 $\pm$ .5
It's important for young children to eat meals with the family	True	100	100	N/A
A child may need to try a food many times before he or she likes it.	True	90	96	.06 $\pm$ .2
To encourage the child to eat, it's all right to let him or her eat anywhere he or she wants	False	80	94	.14 $\pm$ .4 <sup>**b</sup>
It's okay to offer a reward (such as dessert) to get a child to eat	False	48	74	.26 $\pm$ .5 <sup>**a</sup>
Childcare givers should make sure the child doesn't eat too much	False	46	46	N/A
Meals and snacks should usually be served at about the same time every day	True	84	96	.12 $\pm$ .3 <sup>*b</sup>
Childcare givers should make the children eat even if they don't want to	False	90	94	.04 $\pm$ .3
Childcare givers should make sure the child finishes everything on their plate	False	82	94	.12 $\pm$ .4 <sup>*b</sup>
<b>Total Child Feeding Knowledge Score</b>		<b>73</b>	<b>82</b>	<b>1.02 <math>\pm</math> 1.9<sup>***a</sup></b>

<sup>a</sup> Significance based on *t* tests for normally distributed data

<sup>b</sup> Significance based on Wilcoxon signed ranks for non-normally distributed data. Skewness and kurtosis values for each item, in order are -2.7, 5.8; -3.8, 13.1; -4.8, 22.3; and -3.8, 13.1.

\*P<0.05.

\*\*P<0.01.

\*\*\*P<0.001.

## Limitations

This research has a number of limitations, including small sample size, selection bias, and instrument validity. Respondents were a convenience sample recruited from an organization that requires its members to receive continuous training. Thus, they may have self-selected this class based on interest or knowledge, and may not be representative of all childcare providers. Though instruments used were based on existing validated tools, additional validation measures (e.g. test-retest) should be performed. Finally, although this research indicates an increase in self-reported child-feeding knowledge among childcare providers taught the division of responsibility in feeding model, it does not mean knowledge translates into practice. In the present study, no follow-up was conducted to assess knowledge retention or behavior change.

## CONCLUSIONS

This exploratory research provides important information about multiethnic childcare provider child-feeding behaviors. The findings of this study suggest that many providers practice child-feeding behaviors consistent with the division of responsibility in feeding model (10,17) recommended by the American Dietetic Association (25). However, these results reveal significant differences based on ethnicity, with Hispanic childcare providers practicing child-feeding behaviors less congruent with those recommended to reduce childhood obesity. Since the prevalence of overweight and obesity is high in this population, and these providers care for many children under the age of five, dietitians working with early child feeding programs should pay special attention to this population with the goal of not only increasing knowledge of appropriate feeding practices, but also translating this knowledge into appropriate behaviors.

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