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Using Childcare Programs as a Portal for Changing the Eating Behaviors of Young Children

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Introduction

Given the epidemic of overweight and obesity among children, helping them to eat better is an important goal. There are few interventions that are effective in dealing with childhood overweight and obesity. This chapter outlines an intervention that has proven to be effective based on randomized clinical trials.

Why use childcare as an entry point for dealing with the issue of overweight and obesity among children? Because today the majority of preschool-age children participate in some form of childcare — and eat 1 or more of their daily meals during that time. Five years ago, we began to see this demographic shift. Therefore, childcare programs are a natural portal for interventions targeted to young children and their families.

Many types of interventions related to childcare and childhood obesity have already been instituted at the state, regional and local levels. Several state and regional approaches are discussed briefly in the next section of this chapter. These are very broad-based public policy initiatives that lack empirical support for their effectiveness. At the local level, workshops, classes, seminars, technical assistance and, most recently, mentoring sessions seek to address childhood obesity. For the most part, their effectiveness has also not been tested. This chapter focuses specifically on mentoring because it has been demonstrated to be the most effective in producing behavioral change in childcare settings.

The Effectiveness of Mentoring: A Randomized Clinical Trial of Mentoring in Childcare

The use of mentoring in childcare has been documented in the literature for the past 10 to 15 years.[1,2] It has been demonstrated to be an effective mode of training.[1] Many studies on mentoring track the progress of the intervention; some studies included comparison groups, but few, if any, employed a truly randomized clinical trial design. This chapter describes the pre- and posttest data collected as part of a randomized clinical trial on mentoring in childcare[3] and suggests how content relevant to children's eating behaviors could be introduced into the model.

This study in south central Pennsylvania[3] — to demonstrate the effectiveness of a mentoring approach with infant/toddler caregivers — involved 40 caregivers from 20 childcare sites licensed by the Pennsylvania Department of Public Welfare (Southcentral Pennsylvania Infant Child Care Provider Mentoring Study, supported by the Pennsylvania Department of Public Welfare, July 2000–June 2003). The results reported in this chapter are from the pre- and posttest data-collection phase of the study, and include descriptive data on individual programs, program directors and caregivers, as well as comparisons among programs.

Childcare Program Statistics

The average age of the directors of childcare programs participating in this study was 33 years of age, with a range from 24 to 51 years of age. The directors were predominantly white (80%). Their level of education varied: 8% reported to have an associate degree, 60% a bachelor's degree and 32% a master's degree. The directors had been employed by their programs for an average of 29 months, with a range from 5 to 130 months. Overall, although the directors were fairly young, they had a significant amount of on-the-job experience and were well-educated individuals.

Other descriptive statistics on the program directors include the following:

- Salaries ranged from $22,000 to $27,000 per year

- Some 62% were provided health insurance and 57% were provided some form of dental or life insurance
- Some 65% were provided a retirement plan

The average age of the caregivers in the childcare programs participating in this study was 35 years of age, with a range of 20 to 64 years of age. The caregivers were predominantly white (70%). Some 47% of the caregivers reported having a high school diploma, 26% some college credit, 13% an associate degree, 8% a bachelor's degree, 5% a Child Development Associate certificate and 2% a master's degree. The caregivers had been employed by their programs for an average of 37 months, with a range of 4 to 144 months. They had worked in the early childhood field for 75 months on average, with a range of 4 to 220 months.

Other descriptive statistics on the caregivers include the following:

- Annual pay ranged from $12,000 to $17,500
- Some 55% were provided health insurance and 43% were provided some form of dental or life insurance
- Some 43% were provided a retirement plan

The average size of the childcare programs participating in the study was 95 children and 17 staff employed on either a full-time or part-time basis. The average weekly fee was $157 for infant care and $134 for toddler care.

Study Design

The study employed a truly randomized design: 20 participating childcare programs were randomly assigned to 1 of 2 groups, either the mentoring group or a control group without mentoring. From September to December 2001, staff in the mentoring group received intensive mentoring from a seasoned early childhood professional. That individual had many years of experience in the early childhood field as both a childcare program director and a teacher. The control group received routine in-service training, which included workshop training that was available in the local community, but they did not receive the mentoring intervention. However, the control group did subsequently receive the mentoring intervention from March to June

2002. The study sought to determine how the 2 groups changed from the pretest data-collection period (September 2001 to June 2002) — when they were essentially equivalent — to after the mentoring period.

To assess changes in the caregivers, the study used 4 data-collection and measurement tools:

- Infant Toddler Environmental Rating Scale (ITERS), a global measure of infant classroom quality
- Arnett Caregiver Observation Scale, a measure that rates the interactions between children and their caregivers
- Knowledge of Infant Development Inventory (KIDI), a measure that gives an indication of the overall knowledge that an individual has of infant development
- Bloom Program Administration Scale, a measure that rates the overall organizational climate of a childcare center

Study Results

The similarity of the mentoring and control groups was assessed during the pretest data-collection phase. During this phase, the 2 groups showed no statistically significant differences on any of the 4 measures. When the programs and caregivers were measured again at posttest, the results were significantly different. In the aggregate, the programs that continued with the mentoring project (n = 20) showed improvements in the overall quality of care. There was a +0.50 increase on the ITERS; a +0.35 increase on the Arnett; a 10% increase on the KIDI; and a 7-point increase on the Bloom scale. Four caregivers (10%) dropped out of the project between pre- and posttest: 2 in the mentoring group and 2 in the control group. The programs that received the mentoring intervention had as much difficulty retaining staff as did the control-group programs. The only factor that correlated highly with staff retention was the salary of the caregiver (r = .68). There was a strong relationship between staff salaries and the ITERS score (.77) and Arnett (.45) score: The higher the salaries, the higher the rating of overall program quality and child/caregiver interactions.

When the data are broken out by mentoring versus comparison group, a very different picture emerges. (See Table 1.)

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Measure	Interv
ITERS	3.
Arnett	3.
KIDI	70
Bloom	8

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Table 1. Results on 4 Measures for the Mentoring Intervention Group (n = 18) and Control Group (n = 22)

	Pretest		Posttest		Change	
Measure	**Intervention**	**Control**	**Intervention**	**Control**	**Intervention**	**Control**
ITERS	3.89	4.05	4.74	4.00	+0.85*	(-0.05)
Arnett	3.33	3.36	3.84	3.50	+.51	+.14
KIDI	70%	70%	90%	70%	+20%*	-0-
Bloom	83	87	94	91	+11	+4.0

*$P<.01$

These results, which are statistically significant ($P<.01$), are important because the mentoring group showed strong positive increases on the 4 measures, while the control group remained the same, showed a small decrease or increased slightly. In the control group sites, the measure of overall global quality (ITERS) dropped from a score of 4.05 to 4.00. On the Arnett scale, the mentoring group increased more than the control group did (ie, a .51-point increase in the intervention group versus a .14-point increase in the control group). Although the results for the overall measures did not reach statistical significance in all cases, when the data were broken out by individual items measured by each tool, many of these did reach statistical significance. (See Tables 2 and 3.)

It appears that mentoring had a positive effect for all of the intervention programs, but it worked best in those programs in which the staff was most receptive (the teacher and director thought the mentoring would be helpful, rather than just the director thinking the mentoring would be helpful). When the programs were grouped by overall quality (eg, a high group with high quality and a low group with lower quality), the high group improved significantly more than did the low group. In some cases, the high group increased by 2.50 points on the ITERS. Although the low group showed improvement, there were more obstacles to overcome and thus the gains were

Table 2. Results for the Intervention Group for Items Contained Within 2 Measurement Tools

Tool and Areas Measured	Pretest	Posttest	Significance
ITERS:			
Routines	4.03	5.21	.005
Listening activities	3.77	4.50	.05
Learning activities	4.00	4.71	.05
Interactions	3.89	4.91	.01
Adult needs	4.10	4.70	.05
Arnett:			
Sensitivity	3.33	3.90	.001
Appropriate discipline	3.40	3.70	.05

Table 3. Results for the Control Group for Items Contained Within 2 Measurement Tools

Tool and Areas Measured	Pretest	Posttest	Significance
ITERS:			
Routines	4.10	4.20	—
Listening activities	4.01	3.89	—
Learning activities	3.99	4.11	—
Interactions	4.00	3.56	.02
Adult needs	3.90	3.90	—
Arnett:			
Sensitivity	3.46	3.50	—
Appropriate discipline	3.33	3.34	—

less than in the high group. In the low group, the teachers were not as motivated to make the changes suggested by the mentors because from the beginning they were volunteered by their director rather than this being a mutual decision by the director and teacher.

The data clearly demonstrate that the sites that were mentored improved significantly on the ITERS and Arnett measures. This is particularly important given that the intervention was only 4 to 5 months long and the individuals in the mentored group had lower scores on the Bloom scale preintervention. Another interesting result was the relationship between the Bloom scale and the ITERS and the Arnett scales. There were significant relationships between the Bloom scale (measures of professional development) and the ITERS ($n = .56$; $P<.01$) and Arnett ($n = .46$; $P<.01$) scales.

The overall organizational climate of the center appears to have an influence on how a program's quality increases over time. More than 40% of the variance in overall quality of childcare programs was accounted for by how staff felt decisions were made at the center (eg, whether they had self-sufficiency in making decisions) and how closely the center came to the ideal for staff pay and promotion opportunities, relationships with co-workers, agreement among staff on program goals, innovativeness and creative problem solving.

These data clearly demonstrate how the mentored programs improved from the pretest to the posttest on several program quality measures. This is an important finding because historically the majority of mentoring projects have relied on anecdotal evidence to demonstrate their effectiveness. Very few programs have conducted randomized trials of their mentoring interventions.

The data indicate that training and technical assistance interventions are needed in infant/toddler programs because of the low scores these programs received on various program quality measures. Without interventions, the quality of these programs may actually worsen over time. This is a hypothesis that is supported by data from other studies.[4]

An interesting finding was the strong relationship between organizational climate scores on the Bloom scale and the overall program quality scales — the ITERS and the Arnett. Previous research has shown the importance of commitment to professional development and the overall quality of the childcare program.[4] Data from this study support this initial finding. The findings in this study build upon the findings of previous studies[5] and demonstrate the importance of an organizational climate that supports openness and self-sufficiency in decision making.

Public Policy Implications

The public policy implications of the findings from this randomized clinical trial are significant because they demonstrate that a mentoring intervention can produce positive changes in the quality of childcare programs. Previous research[5] has indicated that interventions that increase the number of hours of training provided to staff result in staff interactions with children that are consistently more developmentally appropriate. Mentoring fits within this model because it is an intensive one-on-one intervention in which the mentor and the individual who is mentored are engaged in problem-solving activities to improve the quality of the staff-child interactions and the overall environment of the childcare program.

An additional public policy implication is that even when the best training (eg, intensive mentoring) is provided to childcare staff, it is unlikely to positively affect turnover in the long run. The results of this study suggest that the only factor that impacts turnover is the salary of the staff: The higher the salary of staff, the lower the turnover rate. In addition, greater than 56% of the variance in overall program quality is accounted for by staff salaries. Therefore, the issue of staff compensation in the childcare setting must be addressed. If it is not, well-trained staff will continue to leave their employment, and children will not reap the benefits of care-provider training.

In summary, from a public policy perspective, this research study indicates that the most important factors for improving the overall quality of childcare programs include the following:

- Training that is targeted through a mentoring approach (70 to 85 hours at a minimum over 4 months)
- An educated program director (with at least a bachelor's degree in early childhood education and state teaching certification)
- Experienced caregivers (with 5 years or more in the childcare field)
- Appropriate compensation (eg, $20,000 to $25,000 annually for caregivers/teachers and $30,000 to $35,000 for directors)
- A program director who has an open-minded decision-making process in which she or he is willing to engage teaching staff in all decisions related to professional development

Statewide Study of Childcare Quality and Nutrition-Related Activities

In a statewide study of early childcare and education[6] that obtained global assessments of quality, my colleagues and I found a disturbing result. In more than 70% of childcare centers where nutrition-related activities were measured, the following occurred:

- The meal/snack schedule was inappropriate (eg, a child is made to wait to eat, even if hungry)
- Food served was of unacceptable nutritional value
- Sanitary conditions were not usually maintained (eg, most children and/or adults did not wash hands before handling food, tables were not sanitized, toileting/diapering and food preparation areas were not separated)
- There was a negative social atmosphere around eating (eg, staff enforced manners harshly, children were forced to eat)
- No accommodations were made for children's food allergies

These are important and distressing findings. In the programs where these situations occurred, none had a mentoring program in place when these results were collected.

Similar results were found for in-home childcare as well. In this same study, the following situations were present in 85% of in-home childcare programs:

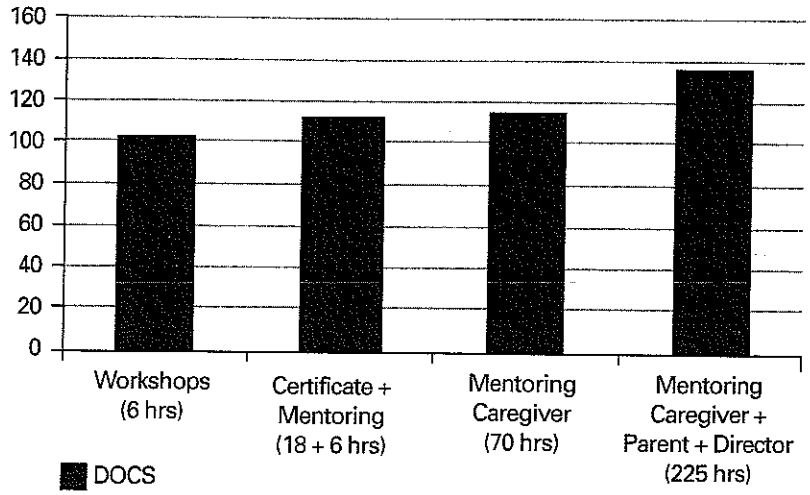
- Meal/snack schedule was irregular
- Cooking and eating areas were not kept clean
- Infants were not held for feedings and were routinely fed by propping a bottle
- Infants and toddlers were put to bed with bottles
- The nutritional quality of food was questionable

These childcare programs, both at centers and in homes, could benefit from a mentoring program, which was not available to them when this study was performed. A key benefit of mentoring is that it can be very flexible with

content of the program. Mentoring can easily include specific components that deal with children's eating. In fact, nutritional modules have been built into both center-based and in-home mentoring programs. If this type of mentoring intervention were available to the programs in the study just described, the results could have been very different. The next section of this chapter discusses nutrition content in mentoring, as well as specific mentoring modules.

A series of studies conducted by Fiene[3] demonstrated that traditional workshop training for caregivers is not effective. When workshop instruction is linked with certificate programs that require a minimum of 24 hours of instruction, the certificate programs are more effective in producing behavioral change in caregivers. However, the most significant and longest-lasting behavioral changes in caregivers were found when these caregivers participated in mentoring programs of various lengths. The programs that were most effective in producing positive, developmentally appropriate changes in young children (based on the Developmental Observation Checklist System, or DOCS[7]) involved mentoring of the child's caregiver, their parents and the childcare director. Figure 1 demonstrates this relationship. (DOCS is a comprehensive developmental assessment of young children from infancy to preschool. The purpose of the DOCS is to identify infants and children who are developing normally and those significantly below their peers in acquiring cognitive, language, social and motor abilities; to give direction to instructional practice; and to document educational progress.)

Figure 1. DOCS scores of children based on caregiver training.



States' Initiatives Related to Childhood Obesity

At a state level, there are a number of public policy initiatives that deal with childhood obesity. North Carolina, New York and Texas have implemented innovative efforts to deal with this issue at a more global level than the mentoring intervention described above.

North Carolina

Color Me Healthy[8] is a joint effort of the North Carolina Cooperative Extension Service and the North Carolina Governor's Council on Physical Fitness and Health. These 2 lead organizations also partnered with the Start with Your Heart program and the North Carolina Initiative for Healthy Weight in Children and Adolescents. Start with Your Heart program is a statewide task force to reduce the incidence of heart attacks and strokes in North Carolina. The North Carolina Initiative for Healthy Weight in Children and Adolescents is a statewide initiative to address the problem of

childhood obesity in North Carolina. County extension agents are asked to bring a partner of their choice to training in December. Family and Consumer Science agents, who are state employees, in the past, have partnered with local health departments, childcare resource and referral agencies, Healthy Carolinians (Healthy Carolinians is an effort to develop community-based partnerships to improve health in North Carolina; established in 1994, Healthy Carolinians is based on community engagement principles), local Fitness Councils or community volunteers. *Color Me Healthy* is designed to reach children 4 to 5 years of age with fun and interactive learning opportunities. It provides caregivers in childcare programs with quick and easy tools to teach young children about healthy eating and physical activity.

New York

Eat Well Play Hard,[9] an initiative spearheaded by the New York Department of Health, seeks to prevent overweight and the accompanying long-term risks of chronic disease, such as diabetes and coronary heart disease, by modifying behavior in preschoolers beginning at 2 years of age. The Department of Health provides funds to childcare programs and public schools to ensure that preschool and early elementary-age children and their families receive consistent and positive messages about nutrition and physical activity. Families are encouraged to adopt the following strategies to achieve life-long healthy choices:

- Increase the amount of developmentally appropriate physical activity
- Increase consumption of 1% or nonfat milk and low-fat dairy products
- Increase consumption of fruits and vegetables

Texas

The *Building Healthy Families Initiative*[10] was launched in September 2004 by the Texas Department of State Health Services (formerly Texas Department of Health) in cooperation with Blue Cross and Blue Shield of Texas, the Caring for Children Foundation of Texas, H-E-B (Here Everything's Better) grocery stores, Texas Medical Association, Texas Hospital Association and the American Heart Association of Texas. The goal of the program is to raise awareness of the long-term health risks associated with obesity in adults and children, and to inspire small lifestyle changes that can lead Texans to live healthier lives through exercise and better food choices.

The 2003 Strategic Plan on the Prevention of Obesity in Texas is the basis for the *Building Healthy Families Initiative.* Implementation of this program takes into account the demographic diversity among Texans and the urgency of making overweight and obesity awareness and prevention a part of daily life.

Discussion

Childcare programs can be an effective portal for interventions related to children and eating if the interventions are built upon a mentoring model as described in the previous section of this chapter. However, the content of the mentoring must be focused specifically on children's eating behaviors.

With mentoring, caregivers are shown that they have a unique opportunity to provide nutrition education to children on a continuing basis, rather than through a week-long nutrition unit once or twice during the year. Ideally nutrition and physical activity should be part of the ongoing childcare curriculum.

Nutrition education during the early childhood years is especially important because it is during this period that lifetime eating habits are formed. The quality of nutrition for children 2 to 5 years of age is especially important because it affects their growth and development. Childcare programs need to provide healthy foods that meet recommended dietary guidelines — and offer only those foods to children. Children do not automatically make healthy decisions about food. Without nutrition education and guidance, they tend to choose foods that are high in sodium, salt, sugar and fat, or those foods that are familiar to them. The goal of nutrition education in childcare is to encourage children to make wise choices about the foods they eat.

Childcare providers should be aware that large portion sizes are a major contributing factor in overweight and obesity at all age levels. Providers should serve age-adjusted recommended portions.

Childcare programs should not encourage, force or bribe children to eat more than they actually need. The goal should be for children to learn to self-regulate their food intake — and to realize when they are full and stop eating when satiated.

Caregivers can teach children to recognize the link between nutrition and physical well-being. Children need to be given basic information on the nutrients in foods and their effect on physical growth and development.

Recommendations for caregivers on helping children learn to eat healthy foods in a healthy way include the following:

- Serve children age-appropriate amounts and offer seconds only if the child asks for more.
- Encourage children to eat slowly. Involving children in conversation about foods and eating preferences during snacks and mealtime helps to slow their intake rate and provides an opportunity to discuss nutrition and foods on a daily basis.
- Serve meals and snacks at specific times and remove food when mealtime is over. Some children are naturally slow eaters and may need a few extra minutes to finish the meal.
- Eating should not become a stand-off between caregiver and child. If a child chooses not to eat, then remove the food and tell the child it is time to move on to the next activity. Explain that the child will have another chance to eat at the next snack or mealtime.
- Eating is a behavior that is strongly influenced by the social environment. The eating behavior of other children can serve as a role model and a positive social pressure for influencing a child's food preferences. Seating a child who refuses to eat corn with other children who enjoy eating corn will likely increase the child's willingness to eat corn.
- Caregivers should model what they teach. Do not have coffee, a donut or a can of soda in the room if you expect children to eat healthy food at regular times.

Summary and Conclusions

This chapter discussed using childcare programs as a portal for interventions to change children's eating behaviors, focusing specifically on mentoring of providers as an intervention model. I provided details on an empirical study of mentoring, a randomized clinical trial of mentoring in Pennsylvania childcare programs.

The mentoring model is an approach that all 50 states can use as all have training systems that are funded through the Federal Child Care Development Fund. Unfortunately, the predominant training approach in childcare programs remains traditional workshops that have been demonstrated to be ineffective in training interventions. Although mentoring does cost more to deliver, the effectiveness of this approach offsets its expense. A mentoring approach that focuses on children's eating behaviors during the hours they spend in childcare can be a very effective intervention strategy for producing positive changes in these specific behaviors.

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