

Applied Research Brief: Nutrition

# Impact of a Worksite Wellness Program on the Nutrition and Physical Activity Environment of Child Care Centers

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## Abstract

**Purpose.** To test whether implementing a staff wellness program affects the nutrition and physical activity environment at child care centers.

**Design.** Quasi-experimental controlled trial.

**Setting.** Child care centers in low income neighborhoods in California.

**Subjects.** Eighty-two staff members at 13 centers completed the study.

**Intervention.** Intervention and control groups received training and education about nutrition and physical activity. The intervention group also participated in a worksite wellness program.

**Measures.** Staff members' personal health habits, self-efficacy in working with families on nutrition and physical activity, and changes in children's food and physical activity environments were assessed.

**Analysis.** Statistical software was used to analyze change scores for pre-post measures and to test differences for end point-only measures.

**Results.** Although significant differences in staff members' personal health behaviors were not observed, staff from intervention sites exhibited more positive changes in their comfort level in talking to parents about nutrition and physical activity. Intervention sites reported providing more fresh fruits ( $p = .004$ ) and vegetables ( $p = .03$ ) to children as part of regular meals and snacks and serving more fresh fruits ( $p = .05$ ) at children's celebrations. Control sites reported greater increases in sweetened foods ( $p = .02$ ) and sweetened beverages ( $p = .05$ ) at children's celebrations.

**Conclusion.** The wellness intervention shows promise in improving the children's food environment in a child care setting. (*Am J Health Promot* 2010;24[3]:186-189.)

**Key Words:** Child Care, Worksite Wellness, Early Childhood Nutrition, Physical Activity, Prevention Research. Manuscript format: research; Research purpose: intervention testing; Study design: quasi-experimental; Outcome measure: behavioral/environmental change; Setting: child care; Health focus: nutrition/physical activity; Strategy: skill building/organizational change; Target population age: adults and youth; Target population circumstances: worksite health promotion

## PURPOSE

Even as the childhood obesity epidemic has fueled research attention to nutrition and physical activity in many settings, little attention has been paid to the health policies and practices of child care centers, and even less attention has focused on the health status and practices of child care providers.<sup>1,2</sup> Worksite wellness programs have demonstrated positive spin-off benefits to clients and service recipients in other settings.<sup>3</sup> The purpose of this study was to assess the impact of adding a worksite wellness program to a health education and policy development project to determine the effects on child care providers and their program environment. We hypothesized that changes resulting from worksite wellness programs would lead to more opportunities for children to be physically active and eat healthfully at centers participating in the worksite wellness intervention compared with children at similar centers not participating in the intervention.

## METHODS

### Design

The quasi-experimental community-based trial was conducted at child care centers in low income neighborhoods in Contra Costa County, northern California. Recruited centers were already participating in a health education and policy development project (Child Health and Nutrition Center Enhancement [CHANCE]) with the Contra Costa Child Care Council. Nine

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pairs of CHANCE centers were matched on city of location and program size and were randomized to worksite wellness intervention or control group. The study was approved by the University of California, Berkeley Committee for Protection of Human Subjects.

### Sample

Of 18 sites contacted, 13 (6 intervention and 7 control) entered and completed the study. The mean number of children per site was 89 (range, 60–120) for intervention sites and 124 (range, 78–162) for control sites.

### Measures

Staff at participating centers completed self-administered questionnaires before initiation of interventions and approximately 10 months later. A series of questions collected providers' age, gender, race/ethnicity, education level, job title, frequency of consuming particular foods and beverages, level of physical activity, and perceptions of health and habits. Questionnaires were adapted from a previous study<sup>3</sup> and included validated workplace support and self-efficacy measures such as perceived workplace support for healthful behaviors and perceived comfort and success in working with parents on issues of children's nutrition and physical activity. Frequency of certain foods and beverages being served as part of work events also was queried. At end point only, providers were asked how often children received particular foods and beverages during celebrations or regular meals and snacks, and intervention staff also responded about wellness activity participation.

### Intervention

Intervention and control sites received training and technical assistance regarding children's health and nutrition and received a set of nutrition and physical activity policies for child care centers. The additional wellness program at intervention sites was developed in cooperation with intervention site staff and consisted of the following four activities: (1) kick-off wellness training with individual health consultations, (2) monthly newsletters and paycheck stuffers, (3) walking program, and (4) staff follow-up visits.

The 1-day wellness project kick-off, conducted by one of the coauthors (A.K.Y.), focused on the importance of nutrition and physical activity for health and emphasized the challenges of healthy eating and active living in a physical and social culture that promotes overeating and sedentary behaviors. The goal of the workshop was to inform providers about their personal health status, to empower them to improve their health, and to brainstorm about ways in which their worksites could support their health goals. Health assessments offered included bone density, body mass index, blood pressure, body fat, heart rate, and diet and physical activity level. Early childhood education course credit and raffle prizes were offered as incentives to attend. After the workshop, four of six intervention sites offered the health assessments on-site for staff members who missed the kick-off.

Project newsletters promoting healthy eating and physical activity and highlighting participants' personal achievements were distributed monthly for 9 months, as were "paycheck stuffers" reinforcing similar messages. Each site was offered a group walking program in which center staff received collective incentive awards as they reached milestones. Project staff support was provided for all activities.

### Statistical Analysis

Average change scores for the intervention and control groups were calculated. Answers for each question were classified using ordinal scaling, and differences between pre- and post-periods were calculated. Regression analysis was used to detect any significant differences in change from baseline to end point between the intervention and control groups. The regression model was adjusted for baseline response. SAS software (version 9.1; SAS Institute, Cary, NC) was used for all analyses. The significance of differences between intervention and control sites was determined using  $\chi^2$  analysis or Fisher exact test.

## RESULTS

### Sample Characteristics

A total of 124 subjects (84% of the staff members at participating centers) entered the study. Complete pre-post

data were available for 89 (72%) subjects (50 [56%] in the intervention group and 39 [44%] in the control group). Of those not returning at end point, most had changed employment (80%) or were on leave or vacation (14%).

Seven intervention group members who reported participating in less than half of the intervention activities were considered inadequately exposed and were excluded from the analysis, leaving 43 staff in the intervention group. Of 43 staff, 56% attended the kick-off workshop, 81% participated in on-site health screenings, 95% reported reading the monthly newsletters, and 47% participated in the walking program.

Intervention and control staff had similar demographic characteristics. They were overwhelmingly female (98%), aged 25 to 64 years (91%), and racially/ethnically diverse (49% white, 24% Asian or Pacific Islander, 17% African-American, 13% Hispanic/Latino, and 6% other). Participants could mark more than one box for race/ethnicity. Most had attended some college (52%), and some had received an associate degree (21%) or a bachelor degree (16%).

### Staff Health Behavior Change

While slightly larger increases in healthful behaviors were observed for intervention site staff compared with controls for almost all indicators, only the change in sweetened beverage consumption was statistically significant (Table 1). Intervention site staff reported a small decrease in the number of sweetened beverages consumed daily, and control site staff reported a small increase ( $p = .04$ ).

### Staff Members' Self-Efficacy in Working With Families

After the intervention, staff members at intervention sites were more likely than controls to show positive change in measures of self-efficacy in working with families (Table 1). Intervention site staff thought it was easier to engage parents in discussions about their children's eating ( $p = .04$ ) and were more comfortable in talking with parents about their children's physical activity ( $p = .02$ ) after the intervention. Staff members at control sites showed slight decreases in their perception of

**Table 1**  
**Change in Staff Members' Health Behaviors and Self-Efficacy\***

Variable	Change, mean (SD)		p	Direction of Change
	Intervention (n = 43)	Control (n = 39)		
<b>Staff Health Behaviors</b>				
Days per week exercise ≥ 30 min	0.19 (0.81)	-0.05 (0.94)	NS	+
Days per week watch television ≥ 3 h	-0.03 (0.97)	-0.11 (1.16)	NS	-
Physical activity intentions	0.10 (1.01)	-0.03 (0.84)	NS	+
Days per week eat ≥ 1 servings of junk food	-0.08 (0.67)	0.06 (0.98)	NS	+
Days per week eat ≥ 5 servings of fruits-vegetables	0.15 (0.96)	-0.12 (0.95)	NS	+
How often drink a glass of water per day	0.00 (1.17)	0.00 (1.21)	NS	0
<b>Times per day drink sweetened beverages</b>	<b>-0.10 (1.01)</b>	<b>0.33 (1.34)</b>	<b>0.04</b>	<b>+</b>
<b>Self-Efficacy Indicators</b>				
<b>Ease of engaging parents in discussion of child's eating</b>	<b>0.22 (1.01)</b>	<b>-0.31 (1.24)</b>	<b>0.04</b>	<b>+</b>
Comfort in talking to parents about child's eating	-0.10 (0.80)	-0.17 (1.08)	NS	+
<b>Comfort in talking to parents about child's physical activity</b>	<b>0.20 (0.87)</b>	<b>-0.22 (0.68)</b>	<b>0.02</b>	<b>+</b>
Comfort in encouraging parents' physical activity with children	0.12 (0.78)	0.08 (0.84)	NS	+

\* Boldface indicates statistical significance. Direction of change refers to whether the comparison of mean change between the intervention and control groups suggests that the intervention was effective. A "+" direction of change indicates that the intervention group changed more in the direction expected if the intervention was effective. A "-" direction of change suggests that the control group changed more in the direction that would be expected of the intervention group. A "0" indicates no mean change for either group. Because of missing data, the actual sample size for the intervention group varied from 37 to 43; for the control group, the sample size varied from 34 to 39.

self-efficacy related to nutrition and physical activity.

### Perception of Workplace Support for Nutrition and Physical Activity

Staff members at intervention and control sites showed modest but non-significant increases in perceived workplace support during the intervention period. These changes were not significantly different between intervention and control groups.

### Children's Food and Physical Activity Environment

At end point, intervention site staff were significantly more likely than controls to respond that they had included more fresh fruits ( $p = .004$ ) and vegetables ( $p = .03$ ) as part of children's regular meals and snacks during the intervention year and were more likely to report inclusion of fresh

fruits ( $p = .05$ ) and vegetables (NS) as part of children's celebrations (Table 2). Control site staff were significantly more likely to report that children's celebrations at their sites included more sweetened foods ( $p = .025$ ) and beverages ( $p = .05$ ) in the past year. End point assessment of children's physical activity was similar for intervention and control site staff.

## DISCUSSION

### Summary

Our results indicate a potential added benefit of conducting worksite wellness activities with child care providers to supplement a health education and policy development program. At end point, significant differences between intervention and control sites were seen for several foods and beverages provided to children in their care.

These findings suggest that delivering health messages to staff members in terms of their own health may have facilitated the adoption of health improvements for children. While our ultimate outcome of interest was children's food and activity environment, we expected our program to affect the intermediate outcomes of staff health and organizational support. However, we found that the intervention had a limited impact on staff members' personal health habits. Instead, staff seemed to apply information provided in terms of their own health to ways in which they could better care for children. Improvement in amounts of fruits and vegetables served is especially encouraging in light of the fact that the limited data available suggest that child care programs often offer inadequate amounts of fruits and vegetables to children.<sup>1,4</sup>

**Table 2**  
**Intervention Effects on Foods and Beverages Provided to Children\***

Response	No. (%)		p
	Intervention (n = 43)	Control (n = 39)	
<b>Reported Providing the Following Items in Children's Meals and Snacks More Often During the Past Year</b>			
<b>Fresh fruits</b>	31 (74)	15 (41)	0.004
<b>Fresh vegetables</b>	27 (64)	14 (38)	0.03
Sweetened beverages	3 (7)	3 (8)	NS
Sweetened foods	2 (5)	2 (5)	NS
<b>Reported Providing the Following Items in Children's Celebrations More Often During the Past Year</b>			
<b>Fresh fruits</b>	16 (39)	9 (24)	0.05
Fresh vegetables	13 (32)	9 (24)	NS
<b>Sweetened beverages</b>	3 (7)	10 (27)	0.05
<b>Sweetened foods</b>	6 (15)	13 (34)	0.025

\* Boldface indicates statistical significance. This series of questions was asked only at end point. Because of missing data, the actual sample size for the Intervention group varied from 41 to 43; for the Control group, the same sample size varied from 37 to 39.

Caring for young children is demanding and is typically accompanied by low pay, high stress, and suboptimal professional status.<sup>5,6</sup> Our experience was that child care providers appreciated the opportunity to discuss their personal health with a health professional at their workplace. Instead of telling staff how to better perform their jobs, we focused on improving providers' perceptions of self-value and importance as individuals. Additional rigorous studies of this approach are needed.

#### Limitations

Our small sample size was further reduced by the high turnover rate of child care providers, limiting our ability to detect significance for many of our indicators. The outcome that became most significant, changes in the children's food environment, had weak measures and lacked pre-post data. It was clear from our results that staff members believed that they improved in this area as a result of their participation, and our anecdotal impressions reinforced this finding. Future studies should include an objective observation of the food and physical activity environments, including workplace supports. At some sites,

not all child care providers completed project questionnaires; therefore, our remaining sample may have some participant bias. This community-based participatory intervention project was driven in large part by the child care programs with which we were working. While certainly a strength in designing and implementing the intervention, this approach introduced research challenges. Specifically, we were not able to determine precisely the activities that would occur and, thus, could not capture all of the relevant information at baseline.

#### Significance

The United States is experiencing an epidemic of poor nutrition and physical inactivity. During the child care years, norms for children's behavior are established by care providers, children, and parents. Findings from this study suggest that targeting messages to child care providers about their own health may increase the likelihood that they will provide a healthy food environment for children, even without changing their own health behavior. Further research is needed to confirm these findings, but future efforts to develop best practices for child care

health should incorporate the concept of staff wellness.

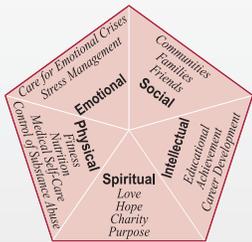
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(O'Donnell, *American Journal of Health Promotion*, 2009, 24,1,iv)

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