An intervention for multiethnic obese parents and overweight children

Diane Berry, PhD, CANP\textsuperscript{a,*}, Mary Savoye, RD, CD-N, CDE\textsuperscript{b},
Gail Melkus, EdD, C-ANP, CDE, FAAN\textsuperscript{c}, Margaret Grey, DrPH, RN, FAAN\textsuperscript{d}

\textsuperscript{a}University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7460, USA
\textsuperscript{b}Pediatric Endocrinology, General Clinical Research Center, Yale University School of Medicine, New Haven, CT 06520-8064, USA
\textsuperscript{c}Yale University School of Nursing, New Haven, CT 06536-0740, USA
\textsuperscript{d}Center for Self and Family Management, Yale University School of Nursing, New Haven, CT 06536-0740, USA

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Abstract

The purpose of this pilot study was to determine the effects of the addition of coping skills training for obese multiethnic parents whose overweight children were attending a weight management program. At 6 months, parents in the experimental group had significantly lower body mass index (BMI) and body fat percentage (BFP) and higher numbers of pedometer steps compared with those in the control group. Parents in the experimental group also demonstrated significant improvement in interpersonal relationships, behavior control, and stress management compared with those in the control group. Children in the experimental group demonstrated trends toward decreased BMI and BFP and increased pedometer steps.

\textsuperscript{*} Corresponding author. Tel.: +1 919 968 1946; fax: +1 919 933 0848.
E-mail addresses: dberry@email.unc.edu (D. Berry), mary.savoye@yale.edu (M. Savoye), gail.melkus@yale.edu (G. Melkus), margaret.grey@yale.edu (M. Grey).

1. Introduction

Obesity is increasing at an alarming rate in the United States. The percentage of at risk for overweight or overweight children and overweight and obese adults has increased dramatically over the past 40 years, with Black, Hispanic, and Native American families disproportionately affected (Jolliffe, 2004; United States Department of Health and Human Services, 2001). Currently, 64% of adults (Mokdad et al., 1999) are either overweight or obese, and 30% of children (Centers for Disease Control and Prevention [CDC], 1999) are either at risk for overweight or overweight. Obesity is associated with an increased risk for prediabetes (impaired glucose tolerance and impaired fasting glucose), type 2 diabetes, hypertension, dyslipidemia, cardiovascular disease, sleep apnea, and depression in children and adults, leading to long-term morbidity and early mortality (Ruser, Federman, & Kashaf, 2005; Sturm, 2002). For the first time in two centuries, there is a potential decline in life expectancy in the United States secondary to the effect of obesity on longevity (Olshansky et al., 2005). Obese adults spend approximately 36% more on health services and 77% more on medications than do normal-weight individuals (Sturm, 2002). Children account for approximately US $127 million in overweight-associated hospital costs secondary to type 2 diabetes, cardiovascular disease, sleep apnea, and orthopedic problems (Wang & Dietz, 2002).

In adults, overweight is defined as a body mass index (BMI) \(>25–29.9\) kg/m\(^2\) and obesity is defined as a BMI \(\geq 30.0\) kg/m\(^2\) (National Heart, Lung, and Blood Institute, 2000). In children, at risk for overweight is defined as a BMI >85th percentile and overweight is defined as \(\geq 95th\) percentile for gender and age (CDC, 1999; Kuczmarski et al., 2000). Black and Hispanic children are at a higher risk for developing overweight when their parents are overweight or obese, eat a diet high in fat, and do not follow a regular exercise program (Ogden, Flegal, Carroll, & Johnson, 2002; Troiano & Flegal, 1998). Parents who eat a nutritionally balanced diet and exercise regularly are in a unique position to be positive role models for their children.

Nutrition education, exercise, and behavioral interventions are the mainstay of treatment for overweight and obese parents (adults) and at risk for overweight or overweight...
Nutrition education is based on decreasing portion sizes, lowering fat intake, decreasing sugared drinks, and increasing intake of lean meats and fish, whole grains, fruits, and vegetables (Engels, Gretebeck, Gretebeck, & Jimenez, 2005). A balanced nutritional approach teaches parents and children to eat foods within their cultural preference by making small changes in portions and in the fat content of their recipes and by substituting healthier ingredients without dramatically changing the basic foods that they have grown up with and that are important for them to include in their daily meals. When caloric intake is decreased and exercise is increased, weight loss outcomes improve (Cole & Rolland-Cacher, 2002; Goldfield, Raynor, & Epstein, 2002). Parents who display high levels of unhealthy eating habits may foster the development of excess body fat in their children (Hood et al., 2000).

It is important for parents and children to incorporate exercise into their life on a daily basis. Currently, 39% of boys and 58% of girls aged 7–18 years do not achieve recommended levels of exercise, which includes at least 1 hour a day at moderate intensity (Horgan, 2005). The goals for overweight and obese parents and their children include increasing physical activity and decreasing sedentary behaviors such as watching television and playing video games. Parental exercise has been found to be associated with children’s increased extracurricular sports participation and cardiorespiratory fitness (Cleland, Venn, Fryer, Dwyer, & Blizzard, 2005). The level of adult encouragement and intention has been found to predict vigorous activity and perceived level of competence in their children (Biddle & Goudas, 1996). Increasing lifestyle activity is designed to increase physical activity and decrease sedentary behaviors in day-to-day activities (Parizkova, Maffeiis, & Poskitt, 2002).

Behavioral interventions with parents and children use varying levels of parental involvement (Cooper & Fairburn, 2002). When both parents and children are targeted for behavior change, weight loss outcomes usually improve (Epstein, 1996). Direct involvement in the weight loss process of at least one parent as an active partner with their child has been found to improve the child’s short- and long-term (1-year) weight loss (Epstein, 1996; Wadden & Stunkard, 2002). Six- to 11-year-old children, in whom parents are frequently the mediators of change (Epstein, 1996), have demonstrated increased weight loss and positive behavior change (Golan, Fainaru, & Weizman, 1998; Golan, Weizman, Apter, & Fainaru, 1998). When parents are taught new parenting skills such as problem solving, role modeling, self-monitoring, and praise, their children’s weight loss outcomes have improved (Epstein, McKenzie, Valoski, Klein, & Wing, 1994). To date, most family-based interventions for children have been conducted on middle-class White children and adults, whereas the prevalence of obesity is higher in Hispanic, Black, and Native American adults and children (Berry et al., 2004; Heisler, Rust, Pattillo, & Dubois, 2005).

Coping skills training (CST) is a form of a cognitive behavioral intervention and is based on social learning theory (Bandura, 1977), which is designed to improve self-efficacy outcomes. CST includes communication skills training, which includes social skills training and assertiveness training, social problem solving, conflict resolution, and cognitive behavior modification (Forman, 1993). Grey, Boland, Davidson, Li, and Tamborlane (2000) found that in female patients with type 1 diabetes, CST prevented weight gain and improved long-term metabolic and psychosocial outcomes. In a pilot study of a school-based intervention program to prevent type 2 diabetes among high-risk youth, CST was successful in improving not only nutrition and exercise for both Black and Hispanic children and parents but also metabolic outcomes in children (Grey et al., 2004). However, these studies did not specifically target obese parents of overweight children.

Most studies using nutrition education, exercise, and behavioral interventions for obesity target middle-class White adults and children separately or together and have had mixed results (Berry et al., 2004). There are no data about interventions using CST to target multiethnic obese parents and their overweight children attending a weight management program.

This article presents results from a pilot study that was conducted to determine the effects of the addition of CST for obese multiethnic parents whose overweight children were attending the Bright Bodies weight management program. The primary research question was, “What are the effects of the addition of CST for obese multiethnic parents whose overweight children were attending a weight management program on clinical outcomes of parents and their children and health behavior outcomes of parents?”

2. Methods

Following approval for protection of human subjects from the Yale School of Nursing and Yale New Haven Hospital Institutional Review Boards, parents whose children were enrolled in the Bright Bodies weight management program were given a brochure that described the study. If they were interested in joining the study, they were invited to call the research office and leave a message. The principal investigator (PI) called them back to answer any questions, and they were screened for eligibility by asking their height and weight and calculating their BMI (in kilograms per meters squared). If they were interested, the PI scheduled an appointment to meet with the parent and child to discuss the study and review the consent and child assent forms. Inclusion criteria included any ethnic group (Black, Hispanic, or White), either gender, English- or Spanish-speaking parents and their children between the ages of 7 and 17 years who
assented and whose parent or guardian consented to their participation, BMI > 25 for parents and > 85th percentile for children, and no major diagnosis that would affect their participation in the study.

After the participants consented and children assented to join the study, they were randomized by class, using the "sealed envelope technique" in blocks of 8–10 parent–child dyads to either the experimental group or the control group. Between November 1, 2003, and September 30, 2004, 80 parent–child dyads met the inclusion criteria and agreed to participate. All parents and children who consented to be a part of the study received an Accusplit Eagle 170 Deluxe Activity Pedometer and a Pedometer Walking Book (Sweetgall, 2001) with a 1-year pedometer logbook.

2.1. Setting and sample

The study was conducted at a middle school in an early evening program. A total of 88 parents contacted the PI to participate in the study. However, because eight parents did not meet the inclusion criteria of having a BMI > 25, they were not included in the study. A total sample of 80 parent–child dyads were inducted into the study. The baseline demographic characteristics of the parents and children can be seen in Tables 1 and 2. There were no significant ($p < .05$) baseline differences between the parents and children. All of the parents and children were able to read, write, and speak English. Therefore, the intervention was delivered in English.

2.2. Intervention

The intervention protocol is shown in Table 3. All children and parents received the nutrition and exercise education program (NEEP). All children received formal exercise and behavior modification, and all parents were encouraged to exercise as detailed below. Only the parents in the experimental group received CST.

The Bright Bodies’ registered dietitians taught the NEEP classes once a week. Nutrition education focused on making better food choices, ethnic menu plans, lowering fat and calories, and portion control. Exercise education focused on increasing physical activity and decreasing sedentary behaviors. Parents and children in both the experimental and control groups attended six weekly 45-minute classes together, and then children in both the experimental and control groups attended additional six weekly 45-minute NEEP classes with behavior modification without their parents.

The Bright Bodies’ exercise physiologists taught the exercise classes twice a week. The exercise classes for the children were held in an exercise room at the hospital or at a local middle-school gymnasium. Activities included basketball, dancing, tag, walking, and stair climbing. Children in both the experimental and control groups attended 12 twice-a-week, 45-minute classes. Parents in the experimental and control groups were encouraged by the research assistants to walk between 30 and 60 minutes a day and keep track of their progress in their pedometer logbooks. If they felt that they could not do 30 minutes at one time, they were encouraged to take at least 10-minute walks each day. Parents were asked to get medical clearance from their health care provider before self-starting an exercise program.

The Bright Bodies’ registered dietitians taught the behavior modification classes with NEEP to the children in both the experimental and control groups without their parents once a week for 45 minutes during the last 6 weeks of classes. Behavior modification focused on improving

### Table 1

Demographic baseline comparison of parents in the experimental group ($n = 40$) and the control group ($n = 40$)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Experimental group ($M \pm SD$)</th>
<th>Control group ($M \pm SD$)</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>41.1 ± 7.6</td>
<td>43.6 ± 8.6</td>
<td>−1.4</td>
<td>78</td>
<td>.2</td>
</tr>
<tr>
<td>BMI</td>
<td>37.7 ± 7.0</td>
<td>37.9 ± 10.8</td>
<td>−1.3</td>
<td>78</td>
<td>.2</td>
</tr>
<tr>
<td>BFP</td>
<td>43.3 ± 6.8</td>
<td>43.4 ± 8.4</td>
<td>−0.8</td>
<td>78</td>
<td>.4</td>
</tr>
<tr>
<td>Pedometer steps</td>
<td>2356 ± 953</td>
<td>2334 ± 728</td>
<td>−0.5</td>
<td>75</td>
<td>.6</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>34</td>
<td>36</td>
<td>0.5</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>17</td>
<td>11</td>
<td>3.0</td>
<td>2</td>
<td>.2</td>
</tr>
<tr>
<td>Hispanic</td>
<td>12</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>11</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income (US$)^a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$19,900</td>
<td>10</td>
<td>9</td>
<td>7.1</td>
<td>6</td>
<td>.3</td>
</tr>
<tr>
<td>$20,000–$59,999</td>
<td>24</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;$60,000</td>
<td>5</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a Five participants did not answer.
The CST classes were taught to the parents in the experimental group by an advanced practice nurse in six weekly 60-minute classes. The CST classes included an introduction, cognitive behavior modification and exercise, social problem solving and barriers to weight loss, assertiveness training and how to motivate oneself, conflict resolution and rebounding from relapse, and social problem solving and weight maintenance.

Communication skills training included social skills training and assertiveness training, which assisted individuals to express themselves in a clear and constructive manner. Social skills training taught parents ways to communicate, which resulted in positive outcomes and included instructions on how to handle social situations by witnessing role modeling, practicing role play, and receiving feedback on role play. Assertiveness training encouraged communication that was direct and honest between parents and their family members in regard to motivating themselves to eat healthier foods and to exercise daily.

Social problem solving provided skills necessary to deal with societal pressures by thinking through a problem and the process that was required to solve it, which allowed insight into possible outcomes and consequences of decisions made. Forman (1993) identified six problem-solving steps, which included identifying the problem, determining goals, generating alternative solutions, examining consequences, choosing a solution, and evaluating the outcome. Social problem solving was used to address barriers to weight loss and weight loss maintenance.

Conflict resolution provided skills necessary to resolve conflict in a positive manner and resulted in positive outcomes (Deutsch & Brickman, 1994). The conflicts in relation to rebounding from relapse were identified, and all possible outcomes were explored. Role playing allowed new skills to be practiced, and feedback was obtained in relation to communication skills and conflict resolution.

Cognitive behavioral modification (Cooper & Fairburn, 2002) included recognition of thoughts and feelings, problem solving, and guided self-dialogue in relation to exercise. First, group members were given time to reflect on how they thought and responded in certain situations. Second, thoughts were examined to see if they were based on assumption or fact. Third, they were taught to use their thoughts to help them follow through on a decision made in the previous step. Group members were encouraged to list their negative thoughts, and then they formulated alternative positive thoughts to counter the negative thoughts in relation to exercise.

### 2.3. Outcome measures

Data were collected at baseline and at 3 months (completion of the 12-week intervention) and 6 months on all clinical and health behavior outcomes. Trained research assistants blinded to the study group collected clinical and psychosocial data.

Two research assistants collected parent and child clinical outcomes and included height, weight, calculated BMI, body fat percentage (BFP), and downloaded pedometer steps at baseline and at 3 and 6 months on both the parents and their children. Height was measured using a wall-mounted stadiometer, which was calibrated in 1/8-cm intervals. Weight was measured using a Tanita Body Fat Monitor and Scale and measured in kilograms. The Tanita Body Fat Analyzer Scale (TBF300) was zeroed and calibrated before each measurement. BMI was calculated using the formula BMI = weight (in kilograms)/height (in meters squared) for the parents and the BMI gender- and age-specific growth charts for the children (Kuczmarski et al., 2000).

BFP was obtained using the TBF300, which was programmed for each participant entering age, gender, height, and activity level. The TBF300 uses leg-to-leg bioimpedance analysis (BIA), which is a low-level electrical signal that is passed through the body using foot electrodes. BFP is calculated based on the amount of impedance as the current flows from one point to another (Davies & Cole, 1995). The signal passes faster through lean muscle than fat because muscle contains approximately 70–75% of the body’s water and fat contains almost no water (Davies & Cole, 1995). BIA is most consistent and reliable if the participants are properly hydrated and have waited 3 hours after eating or exercising before measuring BFP. All adult participants were asked if they had pacemakers or internal cardiac defibrillators before BFP measurement because BIA is contraindicated in those participants. BIA has been found to correlate well with hydrodensitometry and dual-energy X-ray absorptiometry (Nunez, Rubiano, Horlick, Thornton, & Heysmsfield, 1999). BFP was calculated on all participants consistently between 5:00 and 7:00 p.m. at baseline and at 3 and 6 months.

As part of the study, each parent and each child participant were given an Accusplit Eagle 170 Deluxe Activity Pedometer and a Pedometer Walking Book (Sweetgall, 2001) with a 1-year pedometer logbook. The pedometers counted steps, computed walking distance in miles, and computed the number of calories burned. The research assistants taught both parents and children how to program their pedometers and use their pedometers, and both parents and children gave the research assistants a return demon-

### Table 3: Intervention

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Parents in the experimental group</th>
<th>Parents in the control group</th>
<th>Children in the experimental and control groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks of NEEP</td>
<td>6 weeks of NEEP</td>
<td>6 weeks of NEEP</td>
<td>6 weeks of NEEP</td>
</tr>
<tr>
<td>6 weeks of CST</td>
<td>12 weeks of exercise</td>
<td>6 weeks of BM with NEEP</td>
<td>12 weeks of exercise</td>
</tr>
</tbody>
</table>

*Note. BM = behavior modification. CST = coping skills training.*
The FAD has been widely used with diverse populations (Jefferson, Melkus, & Spollett, 2000) and is available in English and Spanish. For the entire scale, $\alpha = .92$, and for the subscales, $\alpha = .70-.90$. Test-retest reliability in Black women ranged from .70 to .74.

A demographic data sheet was used at baseline for parents to provide data on sociodemographic status such as ethnicity, race, socioeconomic status, and religion. In addition, age, birth order, gender of their children, and any health problems that their children had were obtained.

### 2.4. Participation in the intervention

Attendance sheets were documented weekly for both the children and their parents. Seven (8%) of the parent–child dyads dropped out after baseline data. When asked why they decided not to continue, most of the parents and children responded that they were not “overweight enough” or that they had “moved and it was too far to travel” to attend the program. At 3 months, 13 more parent–child dyads (total = 20 dyads) or 25% dropped out of the study, and they gave the same answers when asked why they decided not to continue. However, of the 20 dyads, 7 had moved and left no forwarding address or telephone number at which to contact them. According to several parents, it was common to move “two to three times a year to a new apartment.” Not all participants attended all of the classes offered. Seventy-five percent of the participants took advantage of the makeup classes offered.

### 2.5. Analyses

Data were entered into a Statistical Package for the Social Sciences (SPSS) database and checked for accuracy. Analyses were performed using version 13.0 of the SPSS (2005). Chi-square and $t$ tests were used to compare baseline group differences. Repeated measures analysis of variance (ANOVA) was used to test the hypotheses that the participants in the experimental group would have improved parent and children clinical outcomes and improved parent health behavior outcomes at 3 and 6 months when compared with those in the control group. For this pilot study, trends are reported at or below $p = .3$.

### 3. Results

Parents’ age ranged from 27 to 77 years ($M = 42.3$, $SD = 8.2$); 87.5% were female, 35.0% were Black, 36.2% were White, and 28.8% were Hispanic. Children’s age ranged from 7 to 17 years ($M = 11.9$, $SD = 2.4$); 58.8% were male, 33.8% were Black, 36.2% were White, and 30.0% were Hispanic. The randomization procedure
produced two parent and children groups comparable on demographic and clinical variables at baseline (Tables 1 and 2). Both the experimental and control groups received equal NEEP classes; hence, differences between the randomized groups at 3 and 6 months may be due to the CST intervention.

Tables 4 and 5, contain the results of the repeated measures ANOVA. By 6 months, parents in the experimental group had significantly lower BMI \((p = .003)\) and BFP \((p = .02)\) and increased their pedometer steps \((p = .03)\) compared with those in the control group. Parents in the experimental group demonstrated significant improvement in interpersonal relationships \((p = .04)\), behavior control \((p = .04)\), and stress management \((p = .05)\) and showed trends toward improved nutrition \((p = .06)\), physical activity \((p = .1)\), health responsibility \((p = .3)\), negative affect eating \((p = .06)\), socially acceptable eating \((p = .08)\), problem solving \((p = .06)\), general family functioning \((p = .2)\), and family roles \((p = .3)\) compared with those in the control group. At 6 months, children in the experimental group demonstrated trends toward decreased BMI \((p = .08)\) and BFP \((p = .1)\) and increased pedometer steps \((p = .2)\). No significant differences or trends were noted in spirituality, communication, affective responsiveness, or affective involvement.

### 4. Discussion

Results from this pilot study demonstrate that the addition of CST for parents enhanced outcomes in an established weight management program for overweight youth. Both parents and children in the experimental group had better outcomes compared with those in the control group. Parents and children from both the experimental and control groups received NEEP and some form of exercise training, and thus, outcomes improved in both groups.

The National Weight Control Registry has followed up more than 4,500 individuals over the age of 18 years who have successfully maintained a 30-lb weight loss for a minimum of 1 year (Wing & Hill, 2001). Findings suggest that successful weight losers reported making substantial changes in their eating and exercise habits to lose weight and maintain their weight loss and that walking was the most frequent form of physical exercise. In addition, shared behavioral strategies among those who were successful at

### Table 4

<table>
<thead>
<tr>
<th>Clinical outcomes</th>
<th>Experimental group, (M (SD))</th>
<th>Control group, (M (SD))</th>
<th>Group × Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline 3 months 6 months</td>
<td>Baseline 3 months 6 months</td>
<td>(F) (p)</td>
</tr>
<tr>
<td>Parents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>37.7 (7.0) 37.1 (6.8) 36.9 (6.9)</td>
<td>37.9 (10.8) 38.0 (10.9) 38.2 (11.2)</td>
<td>6.4 .003</td>
</tr>
<tr>
<td>BFP</td>
<td>43.3 (6.8) 42.4 (7.2) 42.0 (7.6)</td>
<td>43.4 (8.4) 43.7 (8.1) 43.9 (8.6)</td>
<td>4.1 .02</td>
</tr>
<tr>
<td>Pedometer steps</td>
<td>2356 (953) 4471 (1,215) 5843 (1,407)</td>
<td>2334 (728) 3953 (1,747) 4803 (1,565)</td>
<td>3.9 .03</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>35.5 (7.0) 35.0 (5.4) 34.3 (5.5)</td>
<td>35.9 (5.6) 35.7 (5.8) 35.6 (6.1)</td>
<td>2.6 .08</td>
</tr>
<tr>
<td>BFP</td>
<td>45.2 (7.9) 43.4 (7.5) 42.8 (7.6)</td>
<td>44.8 (8.1) 43.4 (7.0) 43.5 (7.2)</td>
<td>2.1 .1</td>
</tr>
<tr>
<td>Pedometer steps</td>
<td>1942 (931) 3743 (1,015) 5098 (1,377)</td>
<td>2019 (743) 3754 (1,794) 4724 (1,734)</td>
<td>1.4 .3</td>
</tr>
</tbody>
</table>

### Table 5

<table>
<thead>
<tr>
<th>Behavioral outcomes</th>
<th>Experimental group, (M (SD))</th>
<th>Control group, (M (SD))</th>
<th>Group × Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline 3 months 6 months</td>
<td>Baseline 3 months 6 months</td>
<td>(F) (p)</td>
</tr>
<tr>
<td>Health responsibility</td>
<td>2.26 (0.54) 2.58 (0.64) 2.64 (0.64)</td>
<td>2.42 (0.57) 2.65 (0.61) 2.64 (0.57)</td>
<td>1.2 .3</td>
</tr>
<tr>
<td>Nutrition</td>
<td>2.34 (0.64) 2.67 (0.67) 2.79 (0.59)</td>
<td>2.34 (0.46) 2.53 (0.48) 2.45 (0.47)</td>
<td>3.0 .06</td>
</tr>
<tr>
<td>Physical activity</td>
<td>1.74 (0.63) 2.25 (0.70) 2.42 (0.59)</td>
<td>1.69 (0.49) 1.94 (0.62) 2.01 (0.63)</td>
<td>2.2 .1</td>
</tr>
<tr>
<td>Stress management</td>
<td>2.12 (0.48) 2.45 (0.61) 2.68 (0.55)</td>
<td>1.97 (0.45) 2.18 (0.54) 2.24 (0.56)</td>
<td>3.2 .05</td>
</tr>
<tr>
<td>Interpersonal relationships</td>
<td>2.74 (0.51) 2.91 (0.60) 2.95 (0.52)</td>
<td>2.84 (0.53) 2.94 (0.51) 2.81 (0.52)</td>
<td>3.4 .04</td>
</tr>
<tr>
<td>Spirituality</td>
<td>2.75 (0.45) 2.85 (0.54) 2.78 (0.56)</td>
<td>2.73 (0.58) 2.88 (0.54) 2.75 (0.49)</td>
<td>0.3 .7</td>
</tr>
<tr>
<td>FAD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem solving</td>
<td>2.02 (0.45) 1.96 (0.37) 1.84 (0.46)</td>
<td>2.03 (0.39) 2.14 (0.46) 2.06 (0.45)</td>
<td>3.0 .06</td>
</tr>
<tr>
<td>Behavior control</td>
<td>1.68 (0.38) 1.68 (0.40) 1.66 (0.38)</td>
<td>1.64 (0.37) 1.65 (0.34) 1.82 (0.33)</td>
<td>3.3 .04</td>
</tr>
<tr>
<td>General functioning</td>
<td>1.79 (0.47) 1.86 (0.37) 1.76 (0.41)</td>
<td>2.01 (0.48) 2.02 (0.35) 2.01 (0.37)</td>
<td>1.5 .2</td>
</tr>
<tr>
<td>Roles</td>
<td>2.31 (0.47) 2.26 (0.41) 2.24 (0.39)</td>
<td>2.56 (0.41) 2.42 (0.36) 2.40 (0.33)</td>
<td>1.1 .3</td>
</tr>
<tr>
<td>Communication</td>
<td>1.95 (0.50) 1.91 (0.44) 1.97 (0.41)</td>
<td>2.10 (0.43) 2.05 (0.42) 2.09 (0.37)</td>
<td>0.3 .8</td>
</tr>
<tr>
<td>Affective responsiveness</td>
<td>1.85 (0.53) 1.87 (0.47) 1.93 (0.47)</td>
<td>2.10 (0.49) 2.01 (0.41) 2.08 (0.38)</td>
<td>0.6 .5</td>
</tr>
<tr>
<td>Affective involvement</td>
<td>2.00 (0.48) 2.15 (0.31) 1.96 (0.41)</td>
<td>2.14 (0.50) 2.26 (0.35) 2.12 (0.41)</td>
<td>0.2 .8</td>
</tr>
<tr>
<td>ESES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socially acceptable eating</td>
<td>38.8 (14.4) 35.9 (12.9) 32.2 (12.3)</td>
<td>36.5 (15.8) 37.9 (14.8) 37.3 (15.2)</td>
<td>2.6 .08</td>
</tr>
<tr>
<td>Negative affect eating</td>
<td>48.4 (26.1) 41.1 (20.1) 40.5 (18.6)</td>
<td>51.7 (28.7) 4.2 (28.7) 51.3 (22.9)</td>
<td>2.9 .06</td>
</tr>
</tbody>
</table>
weight loss and maintenance included eating a diet low in fat, frequent self-monitoring of weight and food intake, and high levels of physical activity (Wing & Hill, 2001).

To date, no studies have been reported to have used an experimental design to test the impact of the addition of CST delivered to obese multiethnic parents whose overweight children were attending an established weight management program on clinical outcomes of both parents and children and on behavioral outcomes of the parents. The ability of parents and children in the experimental group to decrease BMI and BFP and increase pedometer steps, as well as the parent’s ability to improve behavioral outcomes after 6 months, provides support for interventions that include both parents and children using NEEP, exercise, and CST over interventions that use nutrition education and exercise alone.

These data demonstrate that parent participants who received CST showed improvement in nutrition and physical activity knowledge, stress management, interpersonal relationships, negative affect eating, socially acceptable eating, problem solving, and behavior control compared with those parents who did not receive CST. BMI and BFP values from parents in the experimental group steadily decreased over the 6-month period, whereas those from parents in the control group increased slightly. Pedometer steps increased for parents in both the experimental and control groups, but parents in the experimental group increased number of steps per day more than those in the control group.

Previous studies using nutrition education, exercise, and behavior modification, behavioral therapy, or problem solving in family-based interventions with parents and children have demonstrated mixed results and predominately targeted middle-class White families (Berry et al., 2004). Similar to this study, previous studies that used some form of behavior modification (Golan et al., 1998; Israel, Guile, Baker, & Silverman, 1994; Wadden et al., 1990) or behavioral therapy (Epstein et al., 1994; Flodmark, Ohlsson, Ryden, & Sveger, 1993) and targeted parents or children separately were found to improve weight loss outcomes. As in this study, other studies that used problem-solving (Epstein, Paluch, Gordy, Saelens, & Ernest, 2000; Graves, Meyers, & Clark, 1988) interventions and targeted parents of children showed improved weight loss outcomes for their children.

A major difference in this pilot study, as compared with most behavioral intervention studies with parents and children, is that our data suggest that CST taught to multiethnic parents improves health-promoting behaviors such as nutrition knowledge, exercise, stress management, and interpersonal relationships. Furthermore, socially acceptable eating and negative affect eating improved, suggesting improved eating self-efficacy. Finally, family problem solving, family roles, general family functioning, and behavior control improved after receiving CST. The addition of a parental behavioral component appeared to enhance weight management behaviors in parents and showed similar beneficial trends in their children.

4.1. Limitations

As a pilot study, these data do not provide definitive evidence that an NEEP, an exercise program, and a CST program targeting obese multiethnic parents of overweight children will have long-lasting results. Dropout rates and loss to follow-up were moderate. When working with low-income multiethnic families who move from two to three times a year, we have learned that, at induction, it is important to record additional family members’ telephone numbers and permission to call them if the study staff has difficulty contacting them.

The data suggest CST delivered to parents adds an important component to a traditional weight management program for children. The partnership between parent and child with the parent role modeling healthy behavior change may be effective in changing family health behavior. Further testing of the CST intervention and extending it to children may provide increased knowledge of weight management in parents and children.

4.2. Implications for nursing practice and research

The study demonstrates positive effects of CST for multiethnic obese parents and their overweight children. Nurses can use CST in research and clinical practice to teach management and prevention of overweight and obesity in parents and their children. Nurses who teach parents and children the importance of good nutrition and daily exercise can use cognitive behavioral modification, social problem solving, communication skills training, and conflict resolution.

Nurses can use cognitive behavioral modification (Cooper & Fairburn, 2002) to teach parents and children about the importance of daily exercise. Parents and children can better understand the barriers they may be having to losing weight when the nurse is able to help them identify the problem, determine goals, generate alternative solutions, examine the consequences, choose a solution, and evaluate the outcome using social problem solving (Forman, 1993). Nurses can teach parents and children the importance of direct and honest communication with each other, which results in positive outcomes and conflict resolution (Deutsch & Brackman, 1994) and encourages parents and children to improve their health. In addition, nurses can be instrumental in helping parents and children understand that weight management entails difficult work and that relapse is not uncommon and should not be viewed as a failure. Instead, relapse should be viewed as an opportunity to get back on track as soon as possible.

Weight management programs including nutrition education, exercise, and some form of behavioral modification for parents and children are congruent with Healthy People 2010’s goals of reducing overweight and obesity to decrease morbidity and mortality. Parents and children need to be empowered to improve their health, manage their weight, and ultimately prevent the development of type 2 diabetes.
and cardiovascular disease later in life. CST may add another component that can improve clinical and psycho-social outcomes. However, further research is needed.

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References


