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Treatment of Pediatric Obesity Using a Parent-Only Approach: A Case Example

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Abstract

Objective—There is a great need for solution-oriented studies and descriptions of interventions for pediatric obesity in real-world settings. This report describes a group-based behavioral parent-only intervention to promote healthier lifestyle habits and reduce weight status in an obese 12-year-old female participant.

Method—The behavioral parent-only intervention program described was part of a randomized controlled trial that evaluated the impact of 2 behavioral interventions that addressed dietary intake, physical activity, and weight status in overweight and obese youth living in rural settings. Both the child and parent were targeted for behavior change. The intervention included 12 group sessions over 4 months. Behavioral strategies, including self-monitoring, goal setting, performance feedback, reinforcement, stimulus control, and instruction in behavioral parenting strategies were flexibly applied to meet the needs of the family. Assessments were completed at baseline, month-4 posttreatment, and month-10 follow-up.

Results—The parent attended 10 of 12 treatment sessions. At follow-up the child had lost 17 pounds and grew 1.7 in. in height. The child also experienced improved quality of dietary intake and a drop in the number of self-reported unhealthy weight control behaviors. The parent experienced no notable decrease or increase in BMI.

Conclusions—The report describes the successful application of a behavioral intervention to address pediatric obesity that uses a parent-only approach. It is hoped that this presentation will facilitate discussion and help encourage further presentations of how the flexible application of evidenced-based interventions can be applied in real-world settings.

Keywords

children; obesity; treatment; parenting

Erica was a 12-year-old Caucasian girl who, along with her mother, were participants in a randomized controlled trial (RCT) that examined the effectiveness of parent-only interventions to address pediatric obesity in rural settings. This case was selected for presentation because Erica and her mother displayed a number of barriers to treatment, such as busy families schedules and difficulty completing daily dietary monitoring forms, which are commonly experienced by families in RCTs that address pediatric obesity. It also represents how flexible application of a manualized treatment can help to address the unique challenges and needs of an individual family.

Erica lived with her mother, father, and brother. Her body mass index (BMI) was at the 98th percentile based on age and gender norms, which placed her in the obese range. Her mother was overweight, but her father and brother were not overweight. Both parents were employed and had a combined yearly income of \$65,000. Erica had a few close friends and good relationships within her family. She played softball, but beyond that did not engage in regular physical activity. Erica skipped breakfast every other day; when she did eat breakfast her selections usually consisted of high-calorie, low-nutrient foods. Lunch and dinner frequently consisted of fried foods (e.g., chicken, French fries, cheese sticks), sandwiches often with mayonnaise and mustard, or cheese pizza. She rarely ate fruits or vegetables. The family ate at fast food restaurants an average of four times per week. For snacks, Erica often ate sweets or left-over restaurant food. Her beverages of choice were sweet tea, nondiet soda, or Gatorade.

Erica's mother, Cindy, reported that it was challenging to both get her children to their activities and make healthy meals for the family. Cindy rarely ate breakfast and engaged in little daily physical activity. Her beverage consumption was poor, marked by three glasses of Pepsi or sweet tea per day. She regularly ate at fast food restaurants. She felt the biggest barriers to changes were her family's busy schedule, being tired in the evenings, and limited spousal support for adopting and encouraging healthy lifestyle changes within the family.

Importance of Issue

Pediatric obesity is a pressing public health issue. One in three children are overweight or obese (Ogden, Carroll, Kit, & Flegal, 2012). Obese youth are at elevated risk for numerous health and psychosocial problems (Steele, Nelson, & Jelalian, 2008). This issue is even more pressing in rural areas where youth are more likely to be overweight or obese than their nonrural peers (Lutfiyya, Lipsky, Wisdom-Behounek & Inpanbutr-Martinkus, 2007).

One of the challenges facing the field is translating research findings into evidence-based public health and clinical practice that can be actively disseminated and widely adopted (Kerner, Rimer, & Emmons, 2005). Numerous studies show that behavioral family interventions can be efficacious in addressing pediatric obesity (Whitlock, O'Connor, Williams, Beil, & Lutz, 2010), but many describe randomized clinical trials conducted in ideal specialty clinics with treatment delivered by a team of experts. Less attention has been paid to how psychologists and other professionals can take these interventions and apply them in community or clinical settings with diverse groups of families presenting with a variety of unique barriers to behavior change.

Review of the Literature

Behavior family interventions (BFIs) have been the most studied intervention for pediatric obesity in elementary-aged children. (See Table 1 for a list of selected studies addressing pediatric obesity.) These interventions commonly target both the child and parent for behavior change by focusing on gradual reductions in caloric intake and increases in moderate intensity physical activity. The use of behavior strategies is encouraged to help facilitate behavior change. Key meta-analyses and systematic literature reviews suggest there is adequate evidence that multicomponent, behavioral interventions for obese children can lead to short-term improvements in weight status relative to controls (Kitzmann et al., 2010; Whitlock et al., 2010). These improvements in weight status are most often a function of a relative reduction in weight gain rather than actual weight loss (Whitlock et al., 2010). It is important that parental involvement in treatment and the use of behavioral strategies are both associated with better health outcomes.

Although a variety of dietary strategies may be implemented to encourage reductions in caloric intake, many treatments have addressed dietary intervention through the Stoplight Program (Epstein, Paluch, Roemmich, & Beecher, 2007). The program is a simplified approach to classifying foods and setting goals to modify dietary intake. Families are taught to classify foods into three categories, “green,” “yellow,” and “red” based on nutrient and fat content of the food. “Green” foods are mostly fruits and vegetables and generally have less than 2 g of fat per serving. “Yellow” foods contain a majority of the nutrients commonly consumed but can also be high in calories. These include foods such as poultry, skim milk, pasta, and eggs. “Yellow” foods should be consumed in moderation and generally have between 2 and 5 g of fat per serving. “Red” foods have a low nutrient-to-calorie ratio, generally including more than 5 g of fat per serving. Common red foods include chips, cookies, pizza, and sweetened beverages (Epstein, Rommerich, & Raynoer, 2001).

In most programs that use this system, children are encouraged to substitute green and yellow foods for red foods so that children consume no more than 14 red foods per week, while also minimizing portion sizes of yellow food.

Interventions that encourage some form of increased energy expenditure with dietary modification improve the short-term effectiveness of pediatric obesity treatments (Epstein et al., 2007). Most commonly, increases in energy expenditure are encouraged through gradual increases in physical activity. These targeted increases are usually achieved through lifestyle approaches that encourage increased energy expenditure through a variety of activities (walking to school, organized sports, nonstructured play). Moreover, the use of behavioral strategies to target a decrease in sedentary activity can be a successful adjunct to treatments for pediatric obesity (Epstein et al., 2007).

Although there is a body of data demonstrating the efficacy of BFIs to address childhood obesity (Kitzmann et al., 2010; Whitlock et al., 2010), an important question to be addressed is how these evidenced-based interventions are applied in real-world settings with typical families. Many children and parents are seen in treatment settings with less-than-ideal resources or levels of support for intervention. As such, there can be frustration in terms of how clinicians should apply scientifically grounded approaches in complex clinical care (Kazak & Steele, 2011). As noted by Kazak and Steele (2011), “selecting, delivering and evaluating evidenced-based practice requires clinical wisdom and flexibility” (p. 501). It is unfortunate that there is little published research that tells the clinician or public health professional what to do, with whom to work, how to do it, and when and where to do it (Robinson, 2008).

Treatment Selection

Although BFIs that include both the child and parent have demonstrated success in producing improved weight status for obese children in controlled efficacy trials (Whitlock et al., 2010), research also suggests that working only with the parents may lead to similar decreases in weight status (Golan & Crow, 2004). Exclusively targeting parents in weight management programs offers some advantages over the format in which both the child and parents attend meetings such as the use of fewer resources and less potential stigmatization of the child.

The behavioral parent-only intervention program described here was part of a randomized controlled trial that evaluated the impact of two behavioral interventions addressing dietary intake, physical activity, and weight status in overweight and obese youth living in rural settings. Details of this study and intervention protocol can be found in a previous published article (Janicke et al., 2008). In brief, child and parent dyads were randomized to a behavioral parent-only intervention (PO), BFI, or a waitlist control. All group treatment

meetings were held at the Cooperative Extension Service (CES) offices in the participating rural counties. PO interventions were delivered by a CES employee with a background in nutrition in collaboration with a postdoctoral psychologist or a graduate student in clinical and health psychology. Although the intervention was based on a behavioral family approach, appreciation of social–ecological theory was also important as attending to the family and broader cultural context in which the child was embedded allowed for appropriate flexibility in implementation of the intervention. Consistent with expert committee recommendations for treatment of pediatric obesity (Spear et al., 2007), both of the interventions focused on (a) the gradual modification of eating patterns to produce decreased caloric intake in a nutritionally sound manner; (b) increasing moderate intensity exercise; and, (c) instruction and practice in the use of behavioral strategies to facilitate behavior change. This case was selected for presentation as the mother and daughter experienced a number of the common challenges faced by families attempting to adopt healthier lifestyle behaviors, such as, (a) a target child that was not enthused about attending treatment meetings; (b) two working parents and children with extracurricular activities that made regularly attending meetings, and creating a healthful home environment, very challenging; (c) the presence of a spouse and sibling that was resistant to change; and, (d) difficulties with following treatment recommendations and completing homework.

Although the assignment to treatment condition was based on randomization, there are a number of reasons why the PO behavioral group intervention was a good fit for this specific family. Given their busy schedule, it would have been extremely difficult for the family to coordinate their schedules to allow both the mother and daughter to attend group meetings together. Requiring only the mother to attend session minimized this barrier. In addition, the mother's internalization of program goals and responsibility for family change were critical to their success. The PO format forced the mother to take greater ownership of, and responsibility for, building a healthier home environment and her daughter's behavior change. It is important to note that Erica did not want to attend group meetings. Forcing her to attend group meetings could have led to significant family conflict and would have increased the chances of treatment failure. Finally, this format also provided essential support for Cindy from the other group members and interventionists to overcome the logistical and emotional challenges to making lifestyle changes.

Course, Challenges, and Key Decision Points

At baseline both Erica and her mother consumed a daily average of five to six red foods. Most of Erica's physical activity came during softball; an accurate step count was not available as she refused to wear the pedometer during softball, and often she forgot to wear it during school. Cindy was very sedentary; during Week 1 of the program she averaged 3,500 pedometer steps per day (roughly 1.3 miles), well below common recommendations of 10,000 steps per day. On the basis of this data and the manualized intervention, self-monitoring was introduced first to help the intervention team learn more about the dyads specific dietary and physical activity patterns. Red food intake was targeted next, followed by an increase in physical activity by setting and relating goals back to data from the monitoring forms. Long-term goals were to decrease red foods to two per day and increase moderate to vigorous physical activity by 30 min per day. Overall, Cindy attended 10 of the 12 meetings. The treatment group included six other parents. An important feature of this translational intervention program was the premium placed on flexibility and individualization of the treatment to the needs of each dyad.

Self-Monitoring

Cindy was encouraged to work with Erica to monitor and record everything they both ate and drank on a daily basis. Cindy and Erica struggled to complete the monitoring forms during the first 2 weeks and did not complete any monitoring forms during Week 3. Despite efforts to normalize these difficulties and provide reinforcement for the positive efforts that she had made, Cindy reported that she felt like a failure. She was encouraged to use abbreviated monitoring forms (only track red foods, fruits, and vegetables), but she declined indicating that she wanted to use the full forms like other parents. Cindy did not attend Sessions 4 and 5. A follow-up phone check-in was conducted to assess her status and to convey how much the group missed her during the last session. She expressed that she was too embarrassed to attend the sessions because she had failed to implement the agreed on plans for change and was having a hard time “connecting with her daughter” when discussing the program. The interventionists normalized these difficulties, used motivational strategies to review her reasons and goals for joining the program (Miller & Rollnick, 1991), and discussed pros and cons of continuing the program. It was also emphasized that monitoring was just one behavior tool and that many of her goals were still attainable whether or not they used the monitoring forms. Cindy was encouraged to attend the next session, but it was suggested that she take a 2-week “holiday” from using the monitoring forms. Instead, an emphasis would be placed on making small changes in the household environment. Cindy attended Sessions 6 and 7. Group members expressed significant excitement and support at Cindy's return, which was very helpful to Cindy. At Session 7 Cindy asked if she and Erica could “try out” the abbreviated monitoring forms during the next week. Cindy and Erica found the forms easier to manage and completed them for a majority of the days for the remainder of the program, as well as on an intermittent basis after the completion of the group meetings.

Goal Setting to Achieve Behavior Change

With few completed monitoring forms, it was difficult to set realistic and specific goals during the first few sessions. When Cindy returned to the treatment group at Session 6, there was a focus on two main goals: (a) ensuring that healthy food and beverage options were available in the home, and (b) changing some basic eating habits so that more meals were made at home, healthier food options were selected when eating out, and items were shared so that portion sizes were decreased and there was no temptation to take home leftovers. Once they started using abbreviated monitoring forms following Session 7, Cindy and Erica were able to use this data to set more appropriate weekly goals and establish more specific plans to decrease the consumption of targeted foods. With specific strategies in place to increase the availability of healthy food options in the home and to make smarter choices when eating outside the home, setting specific daily goals further aided Erica and Cindy to plan their food choices to gradually decrease their red food intake. Although goals were set to increase fruit and vegetable intake for some families, Erica and Cindy decided to set only red foods goals, as they felt fruit and vegetable consumption would increase as red foods decreased. Cindy eventually set daily step goals and Erica developed “activity plans” (walking with Cindy) to help increase physical activity. Erica also began wearing her pedometer during the final weeks of the program to engage in a supportive “step competition” with her mother.

Mother–Daughter Teamwork

During the first 4 weeks of treatment, Cindy and Erica experienced difficulty working together to accomplish homework tasks. They met infrequently to discuss assignments and behavior change strategies, and they argued about completing the monitoring forms.

Another mother in treatment group suggested that Cindy and Erica schedule a brief meeting each evening to complete their monitoring logs and discuss the implementation of the behavior change strategies. This meeting could occur during, or be followed by, a pleasurable activity they engaged in together. Role play exercises were conducted to help Cindy practice discussing program issues with Erica. During these exercises it became apparent that Cindy was telling Erica what goals and changes she needed to adopt. A more collaborative approach was encouraged whereby Cindy suggested various options to Erica but also actively listened to Erica's suggestions. This allowed Erica to provide greater input into the specific goals and plans for behavior change. During these meetings, they discussed what Cindy learned at weekly sessions, how they could make changes that were agreeable to both of them, and how they could support each other. They also kept each other accountable in reaching their goals. Their nightly meeting became a key component in the healthy changes they adopted and maintained.

Both Erica and Cindy were having trouble incorporating increased physical activity into their daily routine. While Erica was playing softball for the school team, she felt she did not engage in much moderate-to-vigorous physical activity during the games. She was also worried about what she would do for physical activity once softball ended. Cindy was often tired and had little motivation to be active after work. After some brainstorming, they decided that after completing their monitoring forms each night, they would go on a brief walk together during which they would conduct the rest of their "nightly meeting." The first week they set a goal for a 15-min walk; this quickly increased to 30 min after a week. Erica and Cindy eventually established a positive competition as to who could reach their step goals more often.

Outcome Assessment Approach

Anthropometric, lifestyle, and psychosocial variables were compared across baseline, posttreatment, and follow-up. Height and weight were assessed by trained research personnel. Cindy and Erica worked together to complete the Self-Administered Physical Activity Checklist (Sallis et al., 1996) and the Youth/Adolescent Food Frequency Questionnaire (Rocket, Wolf, & Colditz, 1995) to assess Erica's physical activity and dietary intake. Erica completed the Children's Eating and Attitude Test (ChEAT; Maloney, McGuire, & Daniels, 1988) to assess self-report of unhealthy eating attitudes and behaviors, as well as the Harter Self-Perception Profile (Harter, 1988) to assess self-esteem. Assessment of these two variables was important as some health care professionals have expressed concern that weight management programs may lead to increases in unhealthy weight control behaviors and lower self-esteem (Satter, 2005).

Behavior Change and Outcome

At the beginning of treatment, Erica was 66 in. tall and weighed 177 lbs. This was close to the 98th percentile based on age and gender norms and in the obese range. At posttreatment she had lost 9 pounds. At 6-month follow-up Erica had lost approximately 17 lb while growing 1.7 in. in height, equating to a decrease of over 0.6 BMI z-score units. Her BMI was at roughly the 92nd percentile, which is in the overweight range. This is a clinically significant improvement, as decreases of .50 z-score units have been associated with improvements in insulin resistance and cardiovascular risk factors in children (Reinehr, de Sousa, & Andler, 2005). Erica's mean daily caloric intake decreased from a baseline level of 2,066 to 1,664 at 6-month follow-up. During the first week of treatment, Erica and her mother consumed an average of 5.2 and 5.0 portions of red foods per day, respectively. By the last week of treatment, these averages had dropped to 2.4 and 3.7, respectively. At the final assessment Cindy had begun to walk in the morning before work. Erica was running on

a regular basis, initially about 1 mile every other evening but eventually building-up to 8 to 10 miles per week. As can be seen in Table 2, her average energy expenditure increased by 263 kJ/day from baseline to follow-up. Table 2 also displays other lifestyle and psychosocial outcome variables completed at the three assessments. Notably, there was a dramatic drop in her score on the ChEAT, a measure of disordered eating attitudes and behaviors. There also were small improvements in self-esteem. It is important to note that both Erica and her mother reported high satisfaction with this program.

Alternative Evidence-Based Approaches

Other than multicomponent behavioral interventions, there are few evidenced-based treatments for pediatric obesity. Single component interventions that focus only on improvements in dietary intake or physical activity are alternative approaches, but there is insufficient evidence to support the efficacy of these intervention components delivered in “isolation” in the treatment of pediatric obesity (Oude et al., 2007). Combined pharmacological and behavior interventions have been used to treat obesity in adolescents 12 to 18 years of age but only for those with a BMI above 35 (Whitlock et al., 2010). Thus, this approach was not appropriate for Erica. There is some evidence in support of the efficacy of school-based and primary care based interventions (Kitzmann et al., 2010). Although these models have some potential limitations, such as limited parental involvement or less-than-optimal frequency and intensity to treatment, these inventions may offer a cost-effective treatment alternative. Moreover, recent data suggests that multisystemic therapy may be a possible treatment for pediatric obesity (Cunningham, Ellis, & Naar-King, 2010). However, much more research is needed before definitive conclusions can be drawn on the efficacy of this approach for treating childhood obesity. Moreover, the resources needed to implement multisystemic therapy may make it cost prohibitive for many settings. Finally, telehealth and Internet-based programs also hold promise for expanding the reach of these interventions to underserved populations (Gallagher, Davis, Malone, Landrum, & Black, 2011). Once again, additional research is needed to support the efficacy of these interventions.

Summary and Conclusions

Descriptions of pediatric obesity interventions in real-world settings are extremely valuable, but rare. Many reports addressing this issue present efficacy trials that are often applied with ideal families and interprofessional teams delivered under strict protocols. While randomized, controlled efficacy trials are instrumental in the development of efficacious interventions, there are aspects of these published trials that limit the generalizability to real-world settings. These include pretreatment run-in periods that result in a more responsive study sample, calorie counting, and goals targeting a range of 1200–1500 calories per day, complex reward systems, and an intensive schedule of treatment contacts (Epstein et al., 2007; Savoye et al., 2007). These reports may not reflect the challenges faced by providers in clinical and community settings.

Although this is just one case from a larger RCT, it illustrates an example of the flexible application of a manualized pediatric obesity intervention that can be translated to real world clinical practice. The intervention described here was not led by a multi-disciplinary team of obesity experts, but rather by a CES agent and a postdoctoral fellow in pediatric psychology with group meetings held in a small conference room at local CES offices. Although the group described here did include two group leaders, the PO intervention group format can be led by one professional and implemented with minimal resources. Moreover critical elements of this case can inform day-to-day practice of clinicians whether in a group or individual treatment format. Most notably is the importance of flexibility when

implementing evidence-based pediatric obesity interventions in real-world settings. A supportive and collaborative approach was used throughout treatment and adapted the manualized intervention to the needs of the family. Motivational interviewing techniques and group support were used to help overcome Cindy's ambivalence toward completing the treatment program. The dyad struggled with completing daily monitoring forms and setting multiple goals given their hectic schedule. This is a common barrier in community-based settings. To address this barrier, a modified approach was used, incorporating abbreviated monitoring forms and simplified goal setting that targeted the relative availability of healthy and unhealthy foods in the home, as well as healthy choice and portion size selection when eating away from home. These strategies were easier for Erica and Cindy to complete, and they greatly appreciated the flexibility, support, and ability to provide input into the treatment plan. As their confidence grew, more challenging lifestyle changes were targeted. Obviously other families will likely benefit from different combinations of applied tools, goals, and strategies that may need to change over time. As such, flexible application of this treatment protocol requires a commitment to continually assess and understand the pertinent needs, resources, and barriers that impact each family, and a willingness to accept gradual change.

This treatment approach has limitations. Although the PO approach was a good fit for this family, this will not be the case for all families, as some will want their child to attend treatment meetings. Second, a group format was used, which may not be feasible in some settings. However, key components of this intervention can be delivered on an individual basis with families, with one benefit being more time and attention provided to the specific needs of each family. On the other hand, the lack of a group format eliminates the feedback, ideas, and support provided by other parents. Third, as this case was extracted from a National Institutes of Health-funded trial, resources were available to treatment team (e.g., money for pedometers, treatment manuals, and multiple group leaders) that may not be available for other providers. However, the PO intervention does not require substantial resources and may be more economical than the traditional child and parent format. Finally, the treatment described here focused on small, gradual changes for a young female at roughly the 95th BMI percentile for age and gender. Such an intervention may not be of sufficient power to lead to clinically significant changes for morbidly obese youth.

The report describes the use of a behavior intervention to address pediatric obesity, utilizing a PO approach. The need for solution-oriented studies and descriptions of interventions in real-world settings is greater than ever as health professionals look to expand the reach and saliency of prevention and intervention efforts to address this critical public health issue. Such reports help move the literature forward as they provide health professionals with valuable information on what to do, with whom to work, how to do it, and when and where to do it. Hopefully this presentation will facilitate discussion and help encourage further presentations of how the flexible application of evidenced-based interventions can be applied in real-world settings.

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Table 1

Selected Pediatric Obesity Treatment Studies Use of Behavior Strategies and Child Involvement

Study	Behavior strategies taught	Format
Boutelle et al., 2011	Monitoring, goal setting, stimulus control, contingency management, parent modeling	Behavioral parent only
Epstein et al., 2000	Monitoring, goal setting, stimulus control, contingency management, parent modeling, differential attention, shaping	Behavioral family
Golan & Crow, 2004	Stimulus control, parent modeling	Behavioral parent only
Golley et al., 2007	Monitoring, positive parenting program	Behavioral parent only
Janicke et al., 2008	Monitoring, goal setting, stimulus control contingency management, parent modeling, differential attention, shaping	Behavioral family & parent-only treatments
Savoye et al., 2007	Monitoring, goal setting, stimulus control, contingency management, parent modeling, coping skills	Behavioral family
Wilfley et al., 2007	Monitoring, goal setting, stimulus control, contingency management, parent modeling, differential attention, shaping	Behavioral family

Table 2

Weight, Lifestyle, and Psychosocial Variables at Baseline, Posttreatment, and Follow-Up

Variable	Baseline	Posttreatment	Follow-up	from baseline to follow-up
BMI <i>z</i> -score	2.06	1.63	1.38	−0.68
Caloric intake	2,066	1,650	1,664	−402
Energy expenditure during physical activity (kJ/d)	730	1,195	993	263
Global self-esteem	19	22	21	+2
Physical appearance self-esteem	18	24	23	+5
Athletic ability self-esteem	21	24	24	+3
Eating attitudes	16	4	6	−12
Parent BMI	29.8	29.2	29	+0.10

Note. BMI = body mass index.