Is a Parent-Focused Intervention More Effective Than a Child-Focused Approach in Treating Childhood Obesity?

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Is a Parent-focused Intervention More Effective Than a Child-focused Approach in Treating Childhood Obesity?

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A SELECTIVE EVIDENCE BASED MEDICINE REVIEW

In Partial Fulfillment of the Requirements For

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In

Health Sciences – Physician Assistant

Department of Physician Assistant Studies
Philadelphia College of Osteopathic Medicine
Philadelphia, Pennsylvania

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ABSTRACT

OBJECTIVE: The objective of this selective EBM review is to determine whether or not a parent-focused intervention is more effective than a child-focused approach in treating childhood obesity.

STUDY DESIGN: This review consists of three randomized controlled trials published in the English language between the years 2004 and 2010.

DATA SOURCES: Data sources were articles published in peer reviewed journals comparing parent-focused intervention as a treatment of childhood obesity compared to a child-focused approach found using Cochrane and PubMed databases.

OUTCOMES MEASURED: The outcomes measured were the child’s obesity status and quality of life. These outcomes were measured using a standard medical scale and rigid height rod for height and weight and the Pediatric Quality of Life Inventory to measure quality of life.

RESULTS: All three studies showed a significant decrease in the obesity status in children ages 4-12 diagnosed with obesity and their quality of life. Golan et al showed significant weight loss results 1, 2, and 7 years after conclusion of the study in the parent-only group vs child-only group (p=<0.05, p=<0.01, p=<0.05, respectively). Yackobovitch-Gavan also showed significant results in BMI reduction and in overall BMI decrease in parents who were involved versus those who were not. (p=0.048, p=0.031, respectively). Lastly, West et al had significant BMI reduction in the intervention group compared to the control group. (-0.11, p=<0.05)

CONCLUSIONS: The results of the RCTs and comparing weights of obese children before and after the implemented interventions show that a parent-focused health care approach is an effective treatment in childhood obesity. The inclusion of parents in the intervention of their children’s health resulted in weight reduction, BMI improvement, and improvement in quality of life. Further research is needed in order to determine the exact type of parental involvement that can maximize weight loss and provide patients with the best quality of life.

KEYWORDS: childhood obesity; parental intervention
INTRODUCTION

Childhood obesity is a condition that is becoming more prevalent in the United States. It is defined as a body mass index-for-age that is in the 95th percentile or higher.\(^1\) Over the last three decades, childhood obesity has more than doubled in children ages 2-5 and tripled in ages 6-11. Currently, one in every six children is obese.\(^2\) Total healthcare spending for children diagnosed with obesity was an estimated $750 million in 2006.\(^2\) This number is expected to increase as these children age and develop consequential comorbidities and/or complications. In the last ten years, there has been a four-fold increase in hospital admission rates for obesity and obesity-related health problems, and similarly is expected to increase with progressing health issues.\(^1\) It is clear that obesity in children is a growing problem and that changes need to be made in order to make an impact on their health.

The cause of obesity is multifactorial and complicated. It is a combination of genetics, lifestyle, and environment.\(^1\) The contribution of each varies greatly from one person to the next. Identifiable genetic variants have been found to be associated with obesity, exist in a subset of the population.\(^3\) A sedentary lifestyle is more common than not, with video games and television being a primary form of entertainment for kids. Also, the environment many children are surrounded by is frequently inundated with super-sized, largely portioned, tempting, unhealthy food. No matter the exact cause, simply put, there are more calories being taken in than are being expended; and that results in progressive weight gain.\(^4\)

Not only does obesity cause health problems, it also has the potential to cause negative psychological effects as well. Obese children are more likely to have low self-esteem, a negative body image, and depression than non-obese children.\(^4\) In addition, it puts the child at risk for numerous health problems in the future. Obese children are more likely to have heart disease,
type-2 diabetes, hypertension, cancer and other chronic conditions as adults. Childhood obesity quickly becomes a lifelong condition into adulthood.

Despite the wide etiology of this condition, there is a treatment: a balance of eating well, exercising, and maintaining or losing weight. The challenge, however, is implementing and complying with this modification in lifestyle. Children are often naive, impressionable, and uninformed. As with anything else, they need to be taught, guided, and supervised and it is unrealistic to expect a young child to make this kind of change on his or her own. However, with a parent-focused intervention, where parents are primarily the ones making the changes and encouraging new habits, children are more likely to be successful at controlling their weight and becoming healthier individuals than if left solely to their own devices.

**OBJECTIVE**

The objective of this selective EBM review is to determine whether or not a parent-focused intervention is more effective than a child-focused approach in treating childhood obesity.

**METHODS**

The studies in this systematic review included children ages 4 to 12 with diagnosed obesity. Each of the three articles implemented a parent-focused intervention and compared it to a child-only intervention. The first article is a randomized controlled trial that focused on a parent-based health centered approach and compared it to a child-based health centered approach. The second article included a 12-week parent only intervention that consisted of group and telephone sessions in order to provide parents with new knowledge and skills on how to better control their child’s weight. The last article included a 12-week regimen of child-focused exercising and/or dieting and compared the children whose parents were involved in this
regimen to ones whose parents were not.\textsuperscript{3} The outcomes measured the efficacy of parent-focused intervention by analyzing the children’s quality of life and obesity status.

The data sources collected for this Evidence Based Medicine review were found through researching the PubMed and Cochrane databases. The keywords that were used in the searches included “childhood obesity” and “parental intervention”. All of the articles used were written in the English language and have been published in peer reviewed journals. The articles were chosen based on their relevance to this topic and on the basis that the outcomes measured were patient oriented. The inclusion criteria included a child population between the ages of 4 and 12 who were diagnosed as overweight or obese. Exclusion data included children who had a concurrent medical condition or were taking a medication that could severely affect their weight. The summary of statistics reported or used in these articles includes p-value, NNT, ANOVA F-score. The demographics of the populations included in these three studies can be found in Table 1 below.
Table 1. Demographics and Characteristics of included studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Type</th>
<th># Pts</th>
<th>Age (yrs)</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>W/D</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golan⁴ (2004)</td>
<td>RCT</td>
<td>60</td>
<td>7-12</td>
<td>Children who are overweight for their weight and height</td>
<td>Children who are normal or underweight for their weight and height.</td>
<td>10</td>
<td>Parent-based health-centered approach</td>
</tr>
<tr>
<td>West³ (2010)</td>
<td>RCT</td>
<td>101</td>
<td>4-11</td>
<td>Child’s body size as overweight, the child was between 4 and 11 years of age, and the parent agreed to attend a 12-week intervention</td>
<td>Child was taking medication that affects growth or weight control, or had a severe developmental delay or disability</td>
<td>0</td>
<td>12-week intervention that consists of nine 90-minute group sessions and three 20-minute telephone sessions in order to help parents acquire new knowledge and skills.</td>
</tr>
<tr>
<td>Yackobovitch-Gavan⁶ (2009)</td>
<td>RCT</td>
<td>162</td>
<td>6-11</td>
<td>BMI exceeding the 95th percentile for age and sex</td>
<td>Presence of chronic condition, obesity because of organic cause; presence of untreated hypothyroidism; use of medication that might interfere with weight control; and participation in a clinical study during the preceding month.</td>
<td>0</td>
<td>12-week regimen of diet and exercise or a 12-week regimen of just dieting</td>
</tr>
</tbody>
</table>
OUTCOMES MEASURED

Each of the articles measured outcomes that were POEMS; however, the outcomes themselves varied slightly in each article. Some articles also measured outcomes that were not POEMS. For the purpose of this review, only the pertinent outcomes will be included – child’s quality of life and obesity status. Golan and West et al measured obesity status using a standard medical scale and a height rod in order to determine patient’s body mass index.\textsuperscript{4,5} Yackobovich et al measured quality of life using the Pediatric Quality of Life Inventory.\textsuperscript{6}

RESULTS

The three studies included in the review compared the efficacy of parental-focused intervention with child-focused intervention on the obesity status and quality of life of obese children ages 4-12. All three of the studies were randomized controlled trials. One was a double-blind study, while the other two were single-blind studies.\textsuperscript{4,5,6}

Golan studied sixty children who were considered overweight based on their body mass index. Patients excluded from the study were those who were considered of normal weight or underweight.\textsuperscript{4} These participants were randomly assigned to either the child-only group or the parent-only group. The participants in the child-only group were prescribed a 1500kcal diet and engaged in thirty one-hour sessions led by a clinical dietitian. The first seven sessions were held weekly; the remaining sessions were held every other week for a total of one year. During the sessions, the clinical dietitian discussed various topics such as physical activity, eating behavior modification, self-monitoring, and nutritional education. In the parent-focused group, only the parents participated in the session.\textsuperscript{4} The parents of the overweight children engaged in 14 one-hour support and education group sessions. The first four sessions were held weekly, the second four were held every other week, and the last six were held every six weeks. These sessions were
also led by a clinical dietitian. During the sessions, the dietitian discussed various topics such as limits of responsibilities, nutritional education, eating and activity behavior modification, and decreasing stimulus exposure. Children’s weight and height were measured at one, two, and seven years after the end of the intervention and with this data, overweight percentage was obtained using the formula $100 \times (\text{actual weight} - \text{desirable weight})/\text{desirable weight}$. At the end of the study, the children in the parent-only group showed higher reduction in percent overweight compared with the children in the child-only group, 14.6% vs. 8.43%, respectively ($p < 0.03$). At the follow-ups at one, two, and seven years after the conclusion of the study, the trend remained the same. Children in the parent-only group had a higher reduction in weight than those in the child-only group and this fact was proven to be statistically significant ($\text{RBI} = 43.56$, $\text{ABI} = 8.8$, $\text{NNT} = 12$, $p < 0.05$). See Table 2 below for results.

**Table 2. Percent weight loss of children in the parent-only group and child-only group at 1, 2, and 7 years after the conclusion of the study.**

<table>
<thead>
<tr>
<th>Years after conclusion of the study</th>
<th>Percent weight loss in parent-only group</th>
<th>Percent weight loss in child-only</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13.6%</td>
<td>0%</td>
<td>$&lt;0.05$</td>
</tr>
<tr>
<td>2</td>
<td>15%</td>
<td>2.9%</td>
<td>$&lt;0.01$</td>
</tr>
<tr>
<td>7</td>
<td>29%</td>
<td>20.2%</td>
<td>$&lt;0.05$</td>
</tr>
</tbody>
</table>

Yackobovitch-Gavan studied 162 children ages 6 to 11 with a BMI exceeding the 95th percentile for age and sex. The participants that were excluded from the study were those with a chronic condition, obesity because of an organic cause, presence of untreated hypothyroidism and use of medication that might interfere with weight control. Patients were assigned to one of three groups: diet only intervention, exercise only intervention, or diet and exercise intervention.
For the purposes of this review, only the diet-only group and the diet and exercise group will be included. The diet intervention consisted of weekly meeting with children, their parents, a dietician, and a psychologist. During each meeting, a new goal was focused on, such as food choices, eating habits, or cooking habits. The participants were also instructed to maintain a balanced diet restricted to 1200 kcal per day. The exercise intervention consisted of three 90-minute high intensity exercise sessions per week that were run by professional coaches. The parents of all participating children were asked to complete the Pediatric Quality of Life Inventory at the start of the intervention and at the end of 12 weeks. At the end of the intervention, there was a reduction in BMI seen in both groups. However, there was a significant difference in the amount of BMI reduction when comparing the children whose parents completed the questionnaire at baseline to those whose parents did not (−1.8 ± 1.3 and −1.0 ± 1.5, respectively; p = 0.048) as well as a significant difference in BMI at the end of the intervention between the children whose parents completed the questionnaire at the end of the 12 weeks and those who did not (23.6±3.2 and 25.0±3.6, respectively; p = .031). See table 3 below for results.

Table 3. BMI reduction and BMI of children whose parents completed the questionnaires at baseline and at the end of 12 weeks of intervention

<table>
<thead>
<tr>
<th></th>
<th>Children whose parents completed the questionnaire at baseline</th>
<th>Children whose parents did not complete the questionnaire at baseline</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI reduction</strong></td>
<td>−1.8 ± 1.3</td>
<td>−1.0 ± 1.5</td>
<td>0.048</td>
</tr>
<tr>
<td><strong>Children whose parents completed the questionnaire at the end of 12 weeks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>23.6±3.2</td>
<td>25.0±3.6</td>
<td>0.031</td>
</tr>
</tbody>
</table>
West et al studied 101 children between the ages of 4 and 11 who were considered overweight and whose parents agreed to attend a 12-week intervention. The children were randomly assigned to the intervention group or the control group. The intervention included nine 90-min group sessions and three 20-minute telephone conversations. The purpose of these sessions was to help parents acquire new knowledge and skills on how to manage their children’s weight problems. The group session educated parents on such things as nutritional strategies, physical activity strategies, and parenting strategies. The telephone conversations were utilized to review the parents’ implementation. At the end of the 12 weeks, there was a significant decrease in the children’s BMI in the intervention group as compared to the control group. (-0.11 and 0, respectively; p = <0.05). Additionally, problematic behaviors such as eating too much and watching too much television, also decreased in the intervention group compared to the control based on the Lifestyle Behavior Checklist (-12.51 and 2.53, respectively; p = <0.05). See Table 4 for results below.

Table 4. BMI reduction and Lifestyle Behavior Checklist score in the control group and intervention group.

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Intervention group</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI reduction</td>
<td>0</td>
<td>-0.11</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Lifestyle Behavior</td>
<td>2.53</td>
<td>-12.51</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Checklist</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

Significant results were obtained in each of the three studies indicating that a parent-focused intervention is indeed a more efficient method to treat childhood obesity, and more likely to produce a successful result. However, this treatment is hindered by numerous
dependencies, the main one being parents’ willingness or ability to participate, their commitment and dedication to take on this role.

Throughout each of these studies, there were limitations that could have altered or affected the results. In Golan, the sample size was small with 60 children. Therefore, only 30 children engaged in the intervention making it difficult to comfortably extrapolate the findings to the general population. Additionally, the intervention group was split into two sessions, 15 children each, to make the educational experience more personal. If for whatever reason a child missed a session, there was an individual session held in order to make up for the missed time. Having one-on-one sessions could vastly alter the education potential, attention of the child, and focus of the instructor. Also, ten participants (16.6%) withdrew for various personal reasons prior to the end of the study which made the number of participants in the intervention group unequal to that in the control group. In Yackobovitch-Gavan, there were differences in socioeconomic status among the participants. Having more or less money available could affect the kind of foods parents were willing and able to buy, how much time they were able to spend educating their children on good habits, and how much of a priority this was as compared to other potential stressors in their lives. It is also unclear how persistent and diligent the researchers were in asking for the questionnaires to be completed. Perhaps if this was perceived as an optional task, parents may not have felt that it was necessary to do so. In West et al, the participants of the study were recruited from an ad. Thus, they willingly sought out involvement and perhaps were more committed to the program than an average family would have been. Also, the children in this study were primarily Caucasian, so ethnicity could be a factor and negates the ability to generalize the findings to children and families of all ethnicities.
Despite the fact that there are compelling, significant findings in these studies, it is hard to pinpoint what specifically was the intervention that caused these children to lose weight. It could have been primarily the diet, the exercise, or the combination of the two. It is clear that if parents are active members in implementing the changes, children are more likely to be successful. However, a challenging aspect of utilizing this treatment is finding educated and skilled individuals willing and able to teach and provide this knowledge to parents. Sessions aren’t widely available and insurance likely will not cover the expense.

CONCLUSION

All three studies included in this EBM review state that a parent-focused intervention is an efficient way to treat childhood obesity. Future studies are warranted in order to better determine what about parental involvement produces positive results and how these options can become available to parents. Funding is necessary in order to be able to provide parents of obese children with the means to obtain the knowledge and skills needed to implement a lifestyle change intervention.
REFERENCES


