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Research Article

Parent Involvement Intervention in Developing Weight Management Skills for both Parents and Overweight/Obese Children

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SUMMARY

Purpose: The purpose of the study was to evaluate a parent involvement intervention for childhood obesity intended to increase parents' skills in managing children's weight-related behavior and to improve child-parent relationships. Many studies reported on parental influence on childhood obesity, emphasizing parent involvement in prevention and management of childhood obesity.

Methods: A randomized controlled trial was conducted. Forty-two parents of overweight/obese children were recruited from four cities and randomized to the experimental group or control group. The parental intervention was provided only to parents in the experimental group and consisted of weekly newsletters and text messages for a period of 5 weeks. Exercise classes and nutrition education were provided to all children. Lifestyle Behaviour Checklist and the Child-Parent Relationship Scale (CPRS) were used for measurement of parent outcome. For the child outcome, dietary self-efficacy, exercise frequency, and body mass index were measured. A mixed-design analysis of variance was performed with city location entered as a random effect.

Results: After the intervention, CPRS of parents and dietary self-efficacy of children showed an increase in the experimental group ($p < .05$). Intervention effects differed significantly according to the city location regarding the control efficacy of parents and dietary self-efficacy of children ($p < .05$).

Conclusions: The results support the effectiveness of the parent involvement intervention in promoting child-parent relationship and dietary self-efficacy of children. However, a 5-week parent involvement intervention was not sufficient to produce significant changes in children's body mass index. Further research is needed to investigate effects of parent involvement intervention with long-term evaluation.

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Introduction

Childhood obesity is a worldwide epidemic [1]. Obesity rates have increased two-fold among children and adolescents in Korea in recent decades [2]. As such, obesity in children comprises a significant public health concern in Korea. Obese children are more likely to have higher risk of obesity in adulthood, as well as increased risk of hypertension, diabetes mellitus, and premature death [3]. Childhood obesity is also associated with psychological

health problems, including depression, low self-esteem, and social stigma [4], while others reported that body mass index and body image dissatisfaction were significantly associated with poor mental health among girls [5]. Thus, effective interventions are required in order to alleviate physical and psychological health problems associated with childhood obesity [6].

Studies have reported on the influence of parents on childhood obesity, emphasizing parent involvement in prevention and management of childhood obesity [7,8]. A previous study argued for the role of parent-child relationship in prevention of developing cognitions associated with eating disorder [9], while others found that parent-only interventions resulted in a significant reduction in weight among obese children [10]. West et al [11], who provided a

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12-week parent involvement intervention to parents of overweight and obese children, found that the body mass index (BMI) of children and parents' perception on problem behaviors of their children decreased, while control efficacy of parents on these problem behaviors improved at 1-year follow-up. Pinquart [12] reported association of a positive parent-child relationship with lower weight, healthier eating, and more physical activity of the child. Parents can serve as a role model and provide support in weight management, and an enhanced parent-child relationship functions as a mediator in development of healthier behaviors and further weight control [13]. Other researchers have argued that improved parent-youth relationship can help youth in coping more effectively with stresses associated with obesity, and also positively influence adoption and maintenance of healthy lifestyles conducive to weight control [13,14].

Parent involvement programs for childhood obesity have focused on lifestyle change (diet and physical activity) or cognitive approaches for behavior modification, while programs to promote parent-child relationship, general parenting skills, and/or family functioning have been scarce [15]. Women's participation in economic activities has increased in Korea, with both partners employed in 43.6% of couples [16], which poses difficulties with gathering parents in one place in order to provide interventions for their obese children. Accordingly, offering related information using text messages and/or newsletters would be an easier option for these busy parents.

The current study sought to develop a parent involvement program for childhood obesity using text messages and newsletters to promote lifestyle behaviors of children, general parenting skills of parents, and parents' management of problem behaviors of obese children. The purpose of this study was to evaluate the effects of a parent involvement intervention program for both parents and children. Targeting parents, (a) parents' perceptions of obesity-related problem behaviors of children, (b) control efficacy of parents, and (c) parents' perceptions of parent-child relationship were evaluated, while for the children, (d) dietary self-efficacy, (e) exercise frequency, and (f) BMI were evaluated after the intervention.

Methods

Design

This study used a randomized controlled trial (RCT) with pretest-posttest design and with an equivalent control group.

Setting and sample

The study participants included 55 overweight/obese children aged 7–12 years old and their parents. Study participants were recruited targeting 177 children who enrolled in the Y Health Coaching Program supported by the Korean Ministry of Health and Welfare, which was provided in four cities in Korea. Stratified randomization was performed using the [RANDOM.ORG](#) program [17], and participants were stratified according to the city location. Within each city, all participants were randomly given odd or even numbers by the [RANDOM.ORG](#) program. Participants who were given odd numbers were assigned to the experimental group, while those with even numbers were assigned to the control group. Accordingly, parents of 31 children were assigned to the experimental group, and parents of 24 children were assigned to the control group. Attrition of 13 parents resulted in inclusion of parents of 42 children (experimental group, $n = 23$, control group, $n = 19$) in the posttest (76.4%). Thirteen parents were excluded in the posttest because they were lost to follow up ($n = 11$) or discontinued participation in the program ($n = 2$). Inclusion criteria

were (a) children and parents who agreed to participate in this study, (b) able to communicate using the Korean language, and (c) children with greater than 85% BMI-for-age, or BMI over 25 kg/m², based on gender-specific and age-specific growth chart of Korea [18].

Power analysis was performed using G*power 3.1.9. With an effect size of .45, which was determined based on a previous study involving parents for childhood obesity [19], 42 participants were required to produced 80.0% power ($\alpha = .05$) with eight groups (multiplying the level of both factors, 2 groups by 4 cities), wherein the numerator $df = 1$ (main effect for group) in the test of mixed-design analysis of variance (ANOVA) with fixed and random effects [20]. Considering 30.0% attrition, 55 participants were recruited.

Ethical consideration

This study was approved by the Institutional Review Board of Yonsei University in Korea (No. 2012-0012). The participants' confidentiality and anonymity were assured, and participants were informed that they could withdraw from the study any time at their request without any disadvantages. Written consent was obtained from parents who agreed to participate, and verbal assent was obtained from children before pretest data collection.

Measurements

Lifestyle Behaviour Checklist (LBC) and Child-Parent Relationship Scale (CPRS) were included as parental outcomes, while dietary self-efficacy, exercise frequency, and BMI were included as child outcomes.

Parents' outcome

LBC

Parents' perceptions of obesity-related problem behaviors of children (LBC–Problem) and control efficacy of parents on children's obesity-related problem behaviors (LBC–Control) were measured using LBC [11]. LBC–Problem, including eating habits, physical activity, and complaining of being overweight (i.e., being teased), was assessed with 24 items using a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Higher scores indicate more problematic behaviors. LBC–Control was assessed with 24 items identical to the LBC–Problem scale and measured using a 10-point Likert scale with higher scores indicating greater control. Cronbach α ranged from .85 to .95 in the literature [11], and .90 for LBC–Problem and .97 for LBC–Control in the current study.

CPRS

Parents' perception of the child-parent relationship was measured using CPRS [21]. This instrument consisted of two sub-categories, including eight items of conflict dimension and seven items of closeness dimension. It was measured using a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). Questions showing reverse meanings were inverted prior to analysis, and higher scores indicate better child-parent relationship, less conflict, and more closeness. Cronbach α ranged from .72 to .80 in the previous study [21], while .75 for conflicts scale, .77 for closeness scale, and .83 for CPRS in total in the current study.

The LBC and CPRS were translated into Korean by a bilingual research team member. Other research team members (one professor and two doctoral students) reviewed appropriateness of translation, accuracy of expressions and wordings in use with Korean parents, and modified the translated instruments for use in the current study. Although back translation was not performed,

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