



# Effects of an obesity management mentoring program for Korean children



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## ABSTRACT

**Aim:** This research aimed to develop and test a mentored obesity management program guiding physical exercise, improving eating habits, and promoting self-esteem among elementary school learners.

**Methods:** A nonequivalent control group pretest–posttest design was used. Thirty learners were recruited through convenience sampling from two elementary schools, then evenly assigned to the experimental and control groups. Six nursing students were mentored, receiving 16 h of mentorship training. A 10-week mentored obesity management program promoting physical exercise and proper nutrition was developed and provided.

**Results:** The two groups' pretest and posttest body mass index and self-esteem differences were statistically significant. Most participants were satisfied with the program, endorsing its provision in the regular school curriculum.

**Conclusions:** A mentored obesity management program for elementary school learners would effectively manage weight and improve self-esteem. Programs purportedly curtailing childhood obesity should be expanded, and school policies regulated to enable implementation.

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## 1. Introduction

Childhood obesity is a worldwide nutritional disorder that causes secondary health problems, and leads to obesity in adulthood. The World Health Organization (WHO) reported childhood overweight and obesity as one of the most serious health issues in post-industrial societies (WHO, 2015). In the US, the prevalence of obesity in children and adolescents has remained fairly stable, at ~17%, and has affected ~12.7 million children and adolescents over the past decade (Centers for Disease Control and Prevention, 2014). China has also been aware of the obesity epidemic, with a special focus on elementary school students, whose rates of overweight and obesity are rapidly increasing (Zhang, Zhao, Chu, & Zhou, 2015).

Childhood obesity is a significant public health problem and is linked to a number of medical conditions, including type II diabetes, cardiovascular disease, and various mental health disorders. Childhood obesity will continue to inflate healthcare costs considerably in future (Suarez-Balcazar, Friesema, & Lukyanova, 2013). Obese children

experience a deterioration in physical fitness, difficulties with physical activities, and receive negative feedback that leads to a lack of socialization, sense of inferiority, and alienation from peers during their school lives. Those recurrent negative experiences resulting from obesity create a negative self-concept, low self-esteem, low academic achievement, depression, and refusal to attend school.

In Korea, the growth of the economy has led to Western eating habits and a lifestyle of convenience. This has led to an increase in calorie intake, decrease in physical activity, and an increase in body weight (Hur et al., 2015). As a result, the rate of obesity in Korea has increased in recent decades. Accordingly, the rate of childhood obesity is also rapidly increasing (Bahk & Khang, 2016). In 2014, 20.4% of Korean children under 19 years old were categorized as obese, increasing from 14.6% in 2010. Furthermore, extreme childhood obesity was reportedly at 3.2% in 2010 and 5.3% in 2014. From 2010 to 2014, secondary conditions of childhood obesity accounted for 82.9% of medical expenses for children (National Health Insurance Service, 2015). These reports comprise concerns and discussions regarding obesity management and health promotion, requiring urgent strategies to decrease childhood obesity.

The purpose of this research was to develop and test an obesity management program for elementary school learners, using mentors. Mentors served to guide the children's physical exercise and healthy eating

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habits, and to promote their self-esteem. The specific objectives of this study were as follows:

1. To develop an obesity management program using mentors for elementary school learners.
2. To test the effects of the program on elementary school learners' body mass index (BMI).
3. To test the effects of the program on the self-esteem of elementary school learners.

### 1.1. Cultural background related to obesity

Traditionally, Koreans are seldom concerned with obese children because they consider it a natural growth pattern. They believe that excess weight will turn into height gain. Koreans regard foods as a virtue and serve abundant meals to convey their generosity. It is Korean etiquette to serve additional food and encourage provision of more servings in instances of an empty plate. They consider limiting food as a sign of low affection, which is not expected in the building and maintenance of interpersonal relationships. A psychiatrist specializing in obesity treatment reported that obesity is a socio-cultural disease requiring that cultural background be considered in the treatment thereof (Chung, 2015). Poor recognition of childhood obesity, as well as eating culture, interferes in the early detection, management, and treatment of obese children.

Family environment is also related to the rate of childhood obesity in Korea. It has been reported that children from low-income families, single-parent families, and double-income families are more likely to be obese than are other children (Korea Institute for Health and Social Affairs, 2015). The children in vulnerable families eat more fast food and high-sugar foods. They also spend more time on digital games and less time on physical activities than do children who are not from vulnerable families (Noh, Kim, Oh, & Kwon, 2014). A survey on the snack menus in three Korean elementary schools, as offered by afterschool programs, showed that the majority of snacks were sweet and processed foods, such as cookies and cakes (Medical Today, 2015).

Recently, Korean society has started recognizing the seriousness of childhood obesity, and has agreed to develop adequate policy, service, education, and treatment for children. A report from a policy forum stated that childhood obesity threatens child health, and we need to restore a lifestyle of healthy eating, physical activity, and recreation. Social agreements based on the interests and cooperation of families, schools, and communities are required to advance those objectives. Forum participants agreed that the issue of obesity among learners should be approached from the level of the school principal, and that homeroom teachers should also be involved in this issue (Jejudomin Daily, 2015).

### 1.2. Childhood obesity management programs

Programs for managing childhood obesity have been developed and evaluated by several researchers. The majority of these programs included physical exercise, additional nutrition education, recreation, and parent education. The majority of the programs lasted 8–16 weeks, while some lasted 36 or 48 weeks. The effects of these programs were generally successful, taking into account BMI and health indices. However, it has been reported that few participants continually maintain their expected weight after the program, and most participants experienced 33%–50% weight gain within 1 year (Grønbaek et al., 2012; Wing, 2002).

Family-based education programs involving parent education and relationships between children and parents were effective in maintaining the participation rate and durability (Davison & Birch, 2001). A school-based obesity intervention showed remarkable durability. The majority of the children maintained or improved their health indices or physical strength for three years following the 36-week program (Meyer et al., 2014).

In many cases, obese children need behavioral corrections in their eating and physical exercise habits. These children are likely to eat sugary foods or instant foods, and prefer sedentary activities. These habits create barriers to the correction of the children's behaviors. Mentoring has been reported as an effective method for correcting the behaviors and for the removal of these barriers (Kim, 2007).

Although many researchers have stressed the impact of childhood obesity on the psychosocial development and mental health of children, few programs consider the psychosocial aspects of the children. Obese children often experience negative feedback from their peers, which leads to a negative self-concept, low self-esteem, or unsuccessful interpersonal relationships during their development (Pizzi & Vroman, 2013). Thus, strategies for improving self-esteem should be included in childhood obesity interventions. Research focusing on mentoring has shown improvement in self-esteem among elementary school learners (Sung, 2009). Therefore, in this study, we trained mentors for a program designed to correct unhealthy weight habits, and to improve self-esteem.

## 2. Methods

### 2.1. Research design

This research used a nonequivalent control group pretest–posttest design to develop and test the effects of an obesity management program for elementary school learners.

#### 2.1.1. Sampling

The participants of this study were elementary school learners who were recruited through convenience sampling from two elementary schools in the Seoul Capital Area. We explained our study to the principal of each school, and received confirmation regarding the research program and data collection. The children with a higher BMI-for-age percentile were included as potential participants in this study. Parents' written consent was received from learners who wanted to participate in the program. Initially, 33 learners and their parents voluntarily agreed to participate in the program. We calculated the children's BMIs, and 32 were above the 85th percentile. To avoid contamination of the data, the participants were assigned to groups according to their respective schools. Seventeen children at one of the schools were assigned to the experimental group, and 15 children in another school were assigned to the control group. Two learners in the experimental group were withdrawn from the study because their participation rate dropped below 50%, which could not provide enough data to enable evaluation of the effectiveness of the program.

### 2.2. Ethical considerations

All of the participants received sufficient explanation about the objectives and processes of the study, and recognized their rights as participants. Those who voluntarily signed an informed consent form were permitted to participate in this study. They understood that they could withdraw from the study any time without any disadvantages. The participants' names and personal information were handled confidentially.

### 2.3. The program

The program was developed to manage elementary school learners' obesity through mentoring, physical exercise, and nutrition education. The program consisted of eight sessions (Table 1). Mentors were recruited via flyers from a nursing college in Seoul, and voluntarily participated in the program. Seven female nursing students applied to be mentors, and received 16-h mentoring training, which included the concept and roles of a mentor, building and maintaining therapeutic relationships, and communication skills. Two to three elementary school learners, who were mentees, were assigned to one mentor, and received

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