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ORIGINAL ARTICLE

Lifestyle intervention program benefits children with overweigh compared to children with obesity

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KEYWORDS

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weight-loss program;
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Physical activity;
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Summary

Background: Lifestyle weight loss interventions represent the mainstay of treating children with obesity. Long-term follow-up studies of intervention programs are scarce. This study assessed the long-term effects and identified factors associated with significant weight loss.

Methods: This prospective, observational study involved 165 children with body mass index (BMI) z-score ≥ 1.5 who participated in after-school intervention program. Main outcome measure: change in BMI z-scores; decreased BMI z-score ≥ 0.5 units was defined as clinically significant.

Results: At baseline, 55/165 (33.3%) had BMI z-score 1.5–2 and 98 (59.4%) had BMI z-score >2 . At follow-up (mean 5.4 ± 1.4 years), 80 (48.5%) had a clinically significant reduction in BMI z-score, while 56 (33.9%) reported a mildly decrease in BMI z-score of 0–0.5 and 29 (17.6%) reported increased BMI z-score. Lower BMI z-score at baseline and participation in sport activity at follow-up were associated with long-term decrease in BMI z-score. Participation in additional post-intervention weight control programs was correlated with weight gain.

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Conclusions: Intervention program was associated with long-term improvement in weight control, especially in children with mild obesity. Physical activity was related to long-term success. Participation in an additional intervention program was associated with failure of weight control.

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Introduction

Obesity in childhood and adolescent has become a major public health concern worldwide [1–4]. In the 21st century, obesity in childhood has reached epidemic proportions and is one of the most common metabolic and nutritional diseases. The increased incidence of both overweight and obesity among children and adolescents has resulted in an escalation in the prevalence of multisystem comorbidities [5]. In the past, certain comorbidities, such as type 2 diabetes mellitus and steatohepatitis were thought to affect only adults, but currently they are often seen in adolescents with obesity. Moreover, obesity during adolescence increases the risk for cardiometabolic diseases and premature death during adulthood, independent of obesity during adulthood [6–10]. Thus, treating obesity in childhood has become a major therapeutic goal.

Several factors affect weight control in children. These include genetics and developmental (epigenetic influences) and environmental factors. Several studies are investigating the relative importance of these mechanisms. Of these potential mechanisms, only environmental factors can be modified during infancy and childhood.

Behavioural intervention programs include multi-step approaches to weight management in childhood depending on age, obesity severity and motivation [11–14]. Current interventions for children and adolescent with obesity and overweight primarily consist of behavioural modification programs [11,12] with the goal of changing behaviours that lead to overeating and lack of physical activity instead of dieting and exercise. In cases of extreme obesity, bariatric surgery might be considered [15].

Several of the techniques addressed in clinical trials may not be practical for use in a clinical setting and some of the recommendations for weight loss interventions are not supported by clinical studies. In view of these factors, the long-term effectiveness of weight loss intervention programs

should be examined to determine which have the best potential for achieving long-term results. However, long-term follow-up studies of children and adolescent participants in various intervention programs are scarce [16–18]. The objective of this study was to evaluate the long-term effects of an after-school short-term, lifestyle intervention weight loss program for children and adolescents and to identify factors associated with successful long-term weight control.

Methods

Study design

This prospective, observational study of a lifestyle intervention program involved follow-up of children and adolescents with overweight and obesity (hereafter referred to as ‘children’) who participated in a weight loss program for 16 weeks. The structured follow-up interview was conducted in November 2014, 2–7 years after children completed the intervention. It consisted of a 15–20-minute telephone interview, conducted by a single interviewer (NM) who was the program dietician. The respondents were asked to measure current height and weight by domestic measures and the interview was held several days later. The interview consisted of a structured questionnaire including, self-reported current weight and height and the same questions the participants answered when entering the program. A parent was asked to complete the questionnaire for participants, younger than 18 years of age on the day of the interview. Those 18 years or older completed the questionnaire themselves. The study was approved by the Institutional Ethics Committee. Participants or their parents gave verbal informed consent during the first phone call.

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