

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

## Public Health

journal homepage: [www.elsevier.com/puhe](http://www.elsevier.com/puhe)

## Original Research

# Effect of educational interventions on health in childhood: a meta-analysis of randomized controlled trials



X. Wang <sup>a,d</sup>, G. Zhou <sup>d</sup>, J. Zeng <sup>a,b,c</sup>, T. Yang <sup>a,b,c</sup>, J. Chen <sup>a,b,c</sup>, T. Li <sup>a,b,c,\*</sup>

<sup>a</sup> Children's Nutrition Research Center, Children's Hospital of Chongqing Medical University, Chongqing 400014, China

<sup>b</sup> Ministry of Education Key Laboratory of Child Development and Disorders, Children's Hospital of Chongqing Medical University, Chongqing 400014, China

<sup>c</sup> Chongqing Key Laboratory of Translational Medical Research in Cognitive Development and Learning and Memory Disorders, Chongqing 400014, China

<sup>d</sup> Third Affiliated Hospital of Zunyi Medical College, Guizhou 563000, China

## ARTICLE INFO

## Article history:

Received 20 November 2017

Received in revised form

22 March 2018

Accepted 19 April 2018

## Keywords:

Children

Educational

Meta-analysis

## ABSTRACT

**Objective:** The purpose of this study was to summarize the findings of randomized controlled trials (RCTs) investigating any potential effects of educational interventions on health in childhood.

**Study design:** Meta-analysis.

**Methods:** PubMed, Embase, and the Cochrane Library databases were searched to identify all RCTs that fit our analysis through May 2016. Weighted mean difference (WMD) was used to measure the effect of educational interventions in childhood by using a random effects model.

**Results:** Thirty RCTs reporting data on 35,296 children were included in the meta-analysis. The summary WMD indicated that children who received educational interventions had lower levels of body mass index (BMI) (WMD:  $-0.15$ ; 95% CI:  $-0.24$  to  $-0.05$ ;  $P = 0.003$ ), BMI z-score (WMD:  $-0.03$ ; 95% CI:  $-0.05$  to  $-0.02$ ;  $P < 0.001$ ), waist circumference (WMD:  $-0.97$ ; 95% CI:  $-1.95$  to  $-0.00$ ;  $P = 0.050$ ), triceps skinfold (WMD:  $-1.39$ ; 95% CI:  $-2.41$  to  $-0.37$ ;  $P = 0.008$ ), systolic blood pressure (WMD:  $-1.13$ ; 95% CI:  $-2.20$  to  $-0.07$ ;  $P = 0.037$ ), total cholesterol (WMD:  $-4.04$ ; 95% CI:  $-7.18$  to  $-0.90$ ;  $P = 0.012$ ), and triglyceride (WMD:  $-2.62$ ; 95% CI:  $-4.33$  to  $-0.90$ ;  $P = 0.003$ ). However, educational interventions were found to have little or no significant impact on the waist-to-hip ratio, diastolic blood pressure, high-density lipoprotein, and low-density lipoprotein.

**Conclusions:** The study findings prove the positive effects of educational interventions on BMI, BMI z-score, waist circumference, triceps skinfold, systolic blood pressure, total cholesterol, and triglyceride.

© 2018 Published by Elsevier Ltd on behalf of The Royal Society for Public Health.

\* Corresponding author. Children's Nutrition Research Center, Children's Hospital of Chongqing Medical University, Chongqing 400014, China.

E-mail address: [tyli@vip.sina.com](mailto:tyli@vip.sina.com) (T. Li).

<https://doi.org/10.1016/j.puhe.2018.04.013>

0033-3506/© 2018 Published by Elsevier Ltd on behalf of The Royal Society for Public Health.

## Introduction

The increasing prevalence of overweight children is regarded as a critical public health concern worldwide.<sup>1,2</sup> The issue of being overweight in children is alarming and widespread and is a condition that is costly and difficult to treat.<sup>3–5</sup> Previous studies have suggested that physical activity, sedentary behaviors, and dietary modes are key variables that are correlated with childhood obesity.<sup>6</sup> Furthermore, overweight children have a higher risk of cardiometabolic disease and other chronic diseases in later life.<sup>7–10</sup> Therefore, the educational interventions focused on health habits on multiple levels, including individual, family, school, and community, which are ideal tools to promote health and prevent obesity as they offer an optimal environment and are cost-effective as large-scale interventions with the potential to induce healthy behaviors in many children.<sup>11</sup>

Currently, the studies focused on making food balance sheets healthier and increasing physical activity to reduce obesity was associated with the energy content of diet and sedentary lifestyle.<sup>12,13</sup> Educational interventions are regarded as a key tool to prevent being overweight and obesity, and health education might have the potential to positively influence behaviors and health in childhood. Sbruzzi et al. conducted a comprehensive meta-analysis based on randomized controlled trials (RCTs) to evaluate the impact of educational interventions to prevent and treat childhood obesity, and the interventions included behavioral modification, nutrition, and physical activity.<sup>14</sup> The results revealed that educational interventions are effective in the treatment of obesity in children but have no significant effect on preventing childhood obesity consequent long-term effects. However, potential confounders were not stratified in the study by Sbruzzi et al., such as mean age of children and duration of follow-up. By including health data from a diverse and greater number of trials, we systematically collected data on this topic to evaluate the impact of educational interventions in preventing obesity in children, which could summarize the results of the studies with same purpose and exact assess the preventive effect of educational interventions in children.

## Methods

### Data sources, search strategy, and selection criteria

This meta-analysis based on reviews and pooled data was conducted and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) Statement issued in 2009.<sup>15</sup> RCT trials that focused on educational interventions and were written in English were eligible for inclusion in this meta-analysis. The electronic databases PubMed, Embase, and the Cochrane Library were systematically searched to identify relevant trials that met the inclusion criteria, and all RCTs published on the topic so far until May 2016 were included. The core terms used in the search query are listed as follows: ('child' OR 'school' OR 'student') AND ('education' OR 'early intervention' OR 'health education' OR 'school health services' OR 'child health

services' OR 'community health planning' OR 'primary health care' OR 'health behavior' OR 'child nutrition sciences' OR 'child nutrition disorders' OR 'food habits' OR 'nutrition assessment' OR 'diet' OR 'diet therapy') AND 'human' AND 'English.' Furthermore, ongoing trials were also searched from the metaRegister of Controlled Trials and [www.clinicaltrials.gov](http://www.clinicaltrials.gov) listing completed trials that had not yet been published. Finally, manual searches of the reference lists within the studies on same topic were conducted in order to identify additional eligible trials.

The literature search was independently undertaken by two authors using a standardized approach. Any inconsistencies were resolved by discussion with the primary author, and a consensus was reached. We excluded studies that were not published as full reports, including conference abstracts and letters to editors. In order to minimize confounding variables or biases, we restricted our study design to RCTs only and excluded observational studies. A study was considered eligible for inclusion if the following criteria were met: (1) the study had an RCT design; (2) the study compared the effects of educational interventions to those of usual health programs; (3) the study had a sample size greater than 100 to ensure the reliability of pooled results; and (4) the study reported at least one of the following outcomes: body mass index (BMI), BMI z-score, waist circumference (WC), triceps skinfold, waist-to-hip ratio (WTHR), systolic blood pressure (SBP), diastolic blood pressure (DBP), low density lipoprotein (LDL), high density lipoprotein (HDL), total cholesterol (TC), and triglyceride (TG).

### Data collection and quality assessment

A standard protocol was adopted independently by two authors to extract the data from all included trials, and any inconsistencies were resolved by group discussion. The collected data included study characteristics (first author's name, publication year, country, intervention, controls, and duration of follow-up), participants' characteristics (number of participants, mean age, and participants status), and outcomes variables (BMI, BMI z-score, WC, triceps skinfold, WTHR, SBP, DBP, LDL, HDL, TC, and TG). The quality of included trials was evaluated using the Jadad score, which is quite comprehensive and has been partially validated for evaluating the quality of RCT in meta-analysis.<sup>16</sup> The Jadad score is based on the following subscales: randomization (0 or 1), concealment of treatment allocation (0 or 1), blinding (0 or 1), completeness of follow-up (0 or 1), and use of intention-to-treat analysis (0 or 1). A 'score system' ranged 0–5 has been developed for assessment, and we considered a study with a score of 4 or greater to be of high quality.

### Statistical analysis

Each RCT's results were treated as continuous data, and mean, standard deviation, and sample size in each group were extracted from each trial to calculate weighted mean difference (WMD) and 95% confidence intervals (CIs). Overall, WMD with 95% CIs were calculated for BMI, BMI z-score, WC, triceps skinfold, WTHR, SBP, DBP, LDL, HDL, TC, and TG in children who received educational interventions or usual health

Download English Version:

<https://daneshyari.com/en/article/11263876>

Download Persian Version:

<https://daneshyari.com/article/11263876>

[Daneshyari.com](https://daneshyari.com)