

# **What interventions are effective to prevent obesity in children?**

## **Evidence from a recent systematic review**

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- Childhood obesity causes social, psychological and health problems.
- It is linked to obesity and poor health outcomes later in life.
- Many countries (including more recently, middle- and low-income countries) see increasing rates of overweight and obesity in children & adolescents.
- Public health sector & governments needs to take action to prevent childhood obesity and to address its underlying determinants.
- The efficacy & safety of interventions to prevent obesity remains poorly understood.



# Public health questions

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- Do interventions to prevent obesity in children work ?
  - Do they reduce BMI or the prevalence of obesity / overweight ?
  - Do they lead to positive changes in behaviours related to diet or physical activity ?
- What works for whom, why and for what cost ?

## Interventions for preventing obesity in children (Review)

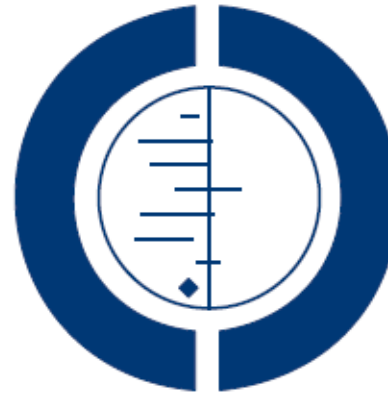
Waters E, de Silva-Sanigorski A, Hall BJ, Brown T, Campbell KJ, Gao Y, Armstrong R, Prosser L, Summerbell CD

### Updated Cochrane review:

Waters E, de Silva-Sanigorski A, Hall BJ, Brown T, Campbell KJ, Gao Y, Armstrong R, Prosser L, Summerbell CD.

### Interventions for preventing obesity in children.

*Cochrane Database of Systematic Reviews 2011, Issue 12. Art. No.: CD001871. DOI:10.1002/14651858.CD001871.pub3*



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# Methods of Cochrane Review

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- **Systematic search** in electronic databases incl. CENTRAL, MEDLINE, EMBASE, PsycINFO and CINAHL and 'grey literature' (latest search in March 2010)
- **Data extraction** by two researchers independently
- **Assessment of methodological quality (risk of bias)**
- **Meta-analysis** of data on BMI reduction: means and standard deviations (SDs) used to calculate standardised mean differences (SMDs) between groups
- **Outcomes:** measures of adiposity, behaviour, impact on equity and adverse/unintended effects, maintenance/sustainability of effects
- Extraction of **implementation information:**
  - theoretical basis of the study
  - process evaluations conducted ?
  - reporting of resources and other factors needed for implementation
  - specific strategies to address disadvantage or diversity ?



## Included studies (PICOS)

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- **Participants / Population:** Children / adolescents < 18 years. Studies with already obese children were eligible, if obesity was not a requirement for study inclusion.
- **Intervention:** Interventions/policies/programs for the **prevention** of childhood obesity that were in place for at least 12 weeks.  
**Excluded: studies on treatment of childhood obesity**
- **Comparison:** Usual care or another active comparison
- **Outcomes:** Weight and height, relative fat content, BMI, ponderal index, skin-fold thickness, prevalence of overweight and obesity.
- **Study design: Controlled study design** (with or without randomisation). If studies were randomised at a cluster level, a minimum of 6 clusters was required.

## Results (1)

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- 55 included studies; additional 36 studies compared to review version of 2005
- 39 studies targeted children aged 6-12 years
- Length of implementation of interventions:
  - 41 studies:  $\leq$  12 months
  - 7 studies: 1-2 years
  - 7 studies:  $>$ 2 years
- Setting:
  - 50 studies in high-income countries
  - 4 studies in upper-middle-income countries (Brazil, Chile, Mexico)
  - 1 in lower middle-income country (Thailand)

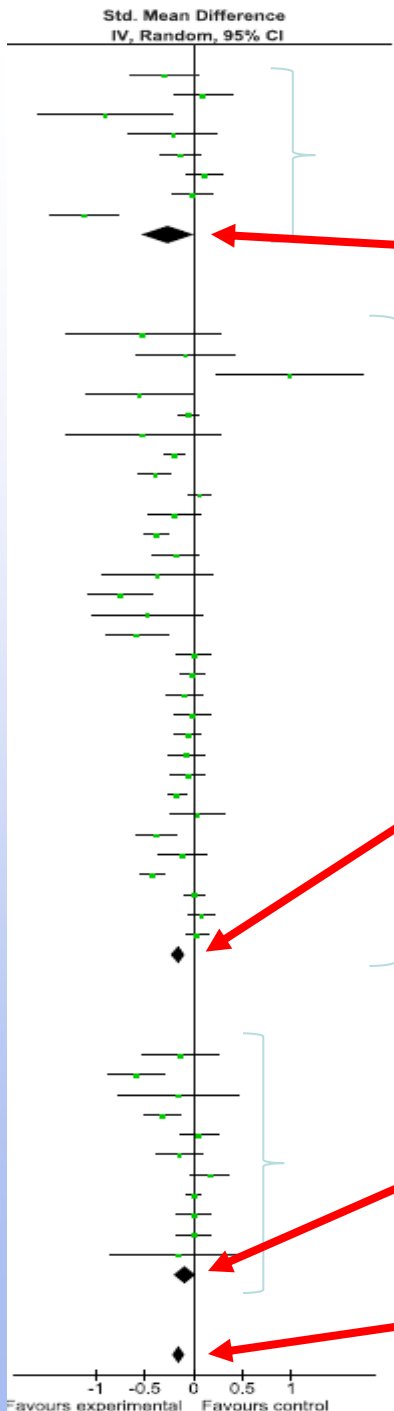


## Results (2)

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- Meta-analysis included 37 studies with 27.946 children in three age groups (0-5, 6-12, 13-18 years)
- Overall, interventions were effective at reducing obesity, but not all of them
- High level of observed heterogeneity in all three age groups could not be explained by study characteristics
- Only 8 studies reported on adverse effects; no evidence of adverse outcomes (e.g. unhealthy dieting practices, increased prevalence of underweight, body image sensitivities)
- Health inequalities were examined in few studies, but interventions did not appear to increase these.





-0.26 kg/m<sup>2</sup>  
(95% CI: -0.53 to 0.00)



-0.15 kg/m<sup>2</sup>  
(95% CI -0.23 to -0.08)



-0.09 kg/m<sup>2</sup>  
(95% CI -0.20 to 0.03)

**Overall: -0.15kg/m<sup>2</sup>**  
(95% CI: -0.21 to -0.09)

**Forest plot:**  
**Random effects meta-analysis of data from 37 studies (27.946 children)**  
**Standardised mean difference in BMI / zBMI**

### **Promising policies and strategies:**

- school curriculum including healthy eating, physical activity and body image
- increased sessions for physical activity during school week
- improvements in nutritional quality of food supply in schools
- environments and cultural practices that support children eating healthier foods and being active during day
- support for teachers and other staff to implement health promotion strategies and activities (e.g. professional development, capacity building activities)
- parent support and home activities that encourage children to be more active, eat more nutritious foods and spend less time in front of computer screens

## **Are the interventions 'effective'?**


- Effect sizes may be small for individuals, but significant on a population scale.
- Reduction by 0.15 BMI points was found among nearly 15,500 children in the intervention groups, which could be enough to shift a child from the overweight/obese category.
- Impact is clinically significant given the reach of these interventions.
- Implemented programs and policies must be sustained and continually evaluated.



## Conclusions (1): current findings

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- Evidence supports beneficial effects of child obesity prevention programmes on BMI
- Most evidence in children aged 6-12
- Unexplained heterogeneity; findings must be interpreted with caution.
- A broad range of programme components were used in these studies; not possible to distinguish which components contributed most to the beneficial effects



## Conclusions (2): future research

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- Study and evaluation designs need to be strengthened
- Better reporting of process and implementation factors, longer term outcomes, potential harms and costs
- How can effective intervention components be embedded within health, education and care systems to achieve sustainable effects ?

# Acknowledgments

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