

# The impact of findings from grey literature on the outcomes of systematic reviews on interventions to prevent obesity among children

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# **Abstract**

## **Background**

By 2025 obesity rates are predicted to rise in Australia by 65% despite the myriad substantial efforts of a multiplicity of interventions and strategies from the public health sector, particularly those at the community or small unit level.<sup>1</sup> Childhood obesity often persists into adulthood, and these strongly established links to adult obesity along with all the attendant risks, costs and consequences make childhood a natural starting point for a closer examination of prevention literature.<sup>2-4</sup> Public health interventions are usually implemented directly by government agencies and so the impact of these interventions tends to be measured in observational, rather than experimental, evidence and may not be captured in traditional academic published sources. There is, therefore, a need to determine whether this non-traditional (grey, commercially unpublished) literature is being actively sought when evaluating the effectiveness of public health interventions; and also whether the inclusion of grey literature has an impact on the conclusions (outcomes) of these SRs.

## **Objectives**

The objectives of this systematic review were to evaluate (i) use of grey literature in systematic reviews on the prevention of childhood obesity, as well as (ii) to determine the impact of grey literature on the findings of these systematic reviews.

## **Methods**

### **Inclusion criteria**

#### ***Types of studies***

Systematic reviews of interventions to prevent obesity among children, where there was either a meta-analysis, narrative summary or tabular presentation of results.

#### ***Types of participants***

Children aged two to 18 years without (at baseline) a diagnosis of obesity or eating disorders, or co-morbid conditions that pre-dispose to obesity.



### ***Types of intervention(s)***

Systematic reviews of public health interventions aimed at obesity prevention that may be applied at the population, community (including schools) or primary care level that searched one or more grey literature source and/or included one or more grey literature study. These were referred to as 'grey' systematic reviews.

### ***Types of comparators***

Systematic reviews of public health interventions aimed at prevention of obesity in children that (1) did not search one or more grey literature sources, and/or (2) did not include one or more grey literature studies. These were referred to as 'black' systematic reviews.

### ***Types of outcomes***

Primary: Obesity prevention measured according to body mass index (BMI, weight/height<sup>2</sup>) as calculated against a suitable growth reference. Outcomes were grouped according to the type of prevention intervention implemented, and by the presence or absence of grey studies included in the systematic review.

Secondary: Ratio of black to grey eligible systematic reviews; ratio of black to grey studies included in eligible systematic reviews; type of grey literature included in eligible systematic reviews and sources used in the systematic reviews to obtain literature.

### **Search strategy**

The search strategy that was used sought to find both published and unpublished (grey) systematic reviews. A four-step search strategy was utilised in this review. An initial limited search of MEDLINE, EMBASE, CINAHL and the Cochrane Library was undertaken to "scope" the literature, followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe the resultant articles. A second search using all identified keywords and index terms was then undertaken across all included databases. Thirdly, the reference lists of all identified reviews, reports and articles were searched for additional systematic reviews. Systematic reviews published in English were considered for inclusion in this review, with no date limitation.

### ***Assessment of methodological quality***

Systematic reviews selected for retrieval were assessed by two independent reviewers for methodological validity using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Systematic Reviews (Appendix I)

### ***Data collection***

Data were extracted using standardized author-designed topic-specific extraction forms and an assessment of the concordance of pooled (meta-analysed) BMI results between grey and black systematic reviews was to be undertaken. However, the number of grey systematic reviews proved to be extremely limited.

The body mass index results were grouped according to type of obesity prevention program and assessed as to whether the direction of the findings differed according to the amount of grey literature incorporated into the review. Data for each of the other pre-specified outcomes were extracted from the studies, tabulated or graphed and the results were discussed narratively.

### ***Results***

A total of 48 systematic reviews (SRs) met the inclusion criteria<sup>5-52</sup>. Results of the SRs were stratified by the type of intervention investigated to prevent childhood obesity. Seven SRs were inconclusive or unable to draw clear conclusions. Eleven showed that these interventions had no statistically significant impact on BMI, eight showed a small impact on BMI while the remaining 24 SRs reported on interventions that had considerable success at preventing childhood obesity. Health/lifestyle interventions registered the greatest success. The use of grey literature by some SRs did not appear to affect the direction of findings when compared to SRs that only used black literature.

### ***Conclusion***

Obesity prevention interventions with children or adolescent participants are largely unsuccessful and childhood obesity remains at the forefront of public health concerns for this population. The inclusion of grey literature did not appear to affect the direction of findings in SRs that evaluated the impact of public health interventions to prevent childhood obesity. Overall, on the basis of the information collated for this overview of SRs, the impact of GL on the direction of results appears equivocal.

## **Student Declaration**

I, Jessica Dorothy Edith Tyndall, certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other territory institution, and, to the best of my knowledge and belief, contains no material previously published or written by another person except where due reference has been made in the text. In addition I certify that no part of this work will, in future, be used in a submission for any other degree or diploma in any university or other tertiary institution, without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

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Jessica Tyndall

Signature

Date: September 18 2015

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