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TITLE: How useful are systematic reviews of child obesity interventions?

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ABSTRACT:

To facilitate the translation of research evidence into practice, policy makers and practitioners require practice relevant information such as descriptions of intervention costs and adverse outcomes, as well as information regarding the effectiveness of interventions delivered in specific settings, using various intervention modalities, and by various personnel. The aim of this study was to review the relevance of information reported in systematic reviews of child obesity interventions to policy makers and practitioners. Methods: A systematic search was conducted for systematic reviews of child obesity interventions published in English between 1990-2008. **Results:** A total of 3,150 citations were examined. Of the 44 eligible reviews, 16 examined prevention interventions, 18 examined treatment interventions and 10 examined both prevention and treatment interventions. Few reviews reported the effect of interventions conducted in childcare centres and health care settings, of interventions conducted by various personnel and delivered via various intervention modalities. Similarly, few reviews reported cost or adverse event outcomes. Conclusions: Existing systematic reviews of childhood obesity interventions provide limited practice relevant information and can therefore not be fully utilized by practitioners and policy makers. Involving end-users in systematic review development may improve the relevance of outcomes reported in systematic reviews.

INTRODUCTION

Globally, more than 1.5 billion people are overweight or obese (1). The World Health Organization estimated the burden of excessive weight in adults to be more than 30 million disability-adjusted life years, representing a considerable health burden for both developed and developing countries (2). Similar to patterns observed in adult populations, the prevalence of obesity among children is greatest in developed nations, and is projected to continue to increase into future decades (2- 4). Given evidence of the likelihood of progression of excessive weight from childhood and adolescence into adulthood (5), the implementation of evidence based child obesity interventions is particularly important to address the growing health burden of obesity (6).

Systematic reviews aim to synthesise research evidence to guide health policy, clinical practice, the development of public health interventions and to identify priority areas for research (7). To facilitate the use of research evidence in the development and delivery of health interventions, systematic reviews should provide information of practice relevance to health practitioners and policy makers (7). Information regarding adverse events, the intervention setting, and cost, and the effectiveness of; intervention personnel (such as physicians, nursing staff or non health professionals); specific intervention modalities (such as print, face to face or telephone); and interventions of various intensity (in terms of duration or number of intervention contacts) have been identified as important to facilitate the translation of research into practice (8-10). Despite this, few systematic reviews report such information. For example, recent surveys of non-Cochrane systematic reviews of health care interventions have found that 43-52% of the reviews did not include information regarding adverse events and 84% did not include information regarding intervention costs (10-11).

Given the importance of systematic reviews for informing the development and implementation of initiatives to improve health, we reviewed analyses reported in systematic reviews of child obesity interventions to describe their potential practice relevance.

METHODS

Search strategy and inclusion criteria.

A search of electronic data-bases PsycINFO, Medline, the Cochrane Library and the Database of Abstracts of Reviews of Effects was conducted for systematic reviews of the effects of interventions to treat overweight or obese children and adolescents or to prevent children or adolescents from becoming overweight or obese. The databases were searched combining_the keyword 'Obesity' and 'Child'; 'Pediatric'; or 'Paediatric'. English language systematic reviews published between 1990 and May 2008 of trials with an objective measure of adiposity (e.g. weight, BMI, % body fat, skin-folds) were eligible for inclusion in the study.

Two reviewers independently searched for eligible papers by viewing citation titles and abstracts. Full texts of all reviews identified as potentially eligible were obtained and further screened against the eligibility criteria. Disagreement between reviewers regarding eligibility was resolved via discussion with a third reviewer.

Data extraction and analysis

Data from included reviews were extracted by one reviewer separately for prevention and treatment interventions. To describe the characteristics of included reviews, the following information was extracted: the research design of included trials, if any assessments (against a specified criteria) were made of the methodological quality of trials included in the review, and if the review performed a meta-analyses of any intervention effects.

Practice relevance of analyses reported in systematic reviews

The methods and results sections of reviews were audited for specific analyses; or an attempt (which may have not been conducted due to a lack of trials or information within published papers) to conduct specific analyses of the effects of an intervention. 'Analysis' was defined as an attempt by the author to synthesise information across included trials on a specified issue.

Based on information considered to be of practice relevance for health practitioners and policy makers, (8-10,12) systematic reviews were audited for analyses of:

- Intervention content. Specifically, if the review included analyses of the effect of physical activity or sedentary behaviour interventions, or diet or nutrition interventions. For treatment interventions, analyses of pharmacotherapy or surgery intervention was also audited
- Interventions delivered in settings identified as important in addressing childhood obesity such as schools, childcare centres, health services, home and family or specialist clinics (13-14).
- Intervention delivered by various personnel. Specifically, if the review included analyses
 of the effect of interventions delivered by research staff, health professionals or non
 health professionals
- 4. Intervention delivered via various modalities. Specifically, if the review included analyses of the effect of face to face, telephone, computer or internet, or print delivered interventions.
- 5. Interventions of various intensities. Specifically, if the review included analyses comparing the effectiveness of different combinations of intervention content (such as nutrition v.s nutrition and physical activity); or components (behavioural counselling v.s. behavioural counselling and tailored print materials); or analyses of the duration of direct

intervention contact (such as time spent in a counselling consultation); number of intervention contacts, or the period of time over which interventions are delivered.

- 6. Intervention cost or cost analyses
- 7. Any adverse intervention effects.

RESULTS

A total of 3,150 citations were examined. The full texts of 92 potentially eligible reviews were obtained. On closer inspection of these studies 48 did not meet the eligibility criteria, including one review where separation of obesity prevention and treatment analyses was not possible. Of the remaining 44 eligible reviews, 16 reviewed prevention interventions, 18 reviewed treatment interventions and 10 examined both prevention and treatment interventions.

Of the 26 interventions that examined prevention, five (19%) included randomised controlled trials only, 14 (54%) assessed the quality of included trials against specified criterion and one (4%) included a meta-analysis. Of the 28 reviews examining treatment, ten (36%) included randomised controlled trials only, 13 (46%) assessed the quality of included trials against specified criteria and eight (29%) included meta-analyses.

The analyses reported in the systematic reviews included in this study are presented in Table 1. Half of both the prevention and treatment reviews reported analyses of the effects of physical activity or sedentary behaviour interventions. Fifteen percent or less of prevention and treatment interventions reported analyses of intervention personnel, modality, cost or adverse events.

| | Prevention reviews (n=26) | Treatment reviews (n=28) |
|--|------------------------------|-----------------------------|
| Intervention content | | |
| Physical activity/ sedentary behaviour | 13 (50%) | 14 (50%) |
| Nutrition / Diet | 8 (31%) | 6 (21%) |
| Pharmacotherapy | n/a | 2 (7%) |
| Surgical | n/a | 2 (7%) |
| Intervention setting | | |
| School | 12 (46%) | 5 (18%) |
| Childcare | 2 (8%) | 1 (4%) |
| Health care | 1 (4%) | 3 (11%) |
| Home and family, or clinic | 5 (19%) | 5 (18%) |
| Intervention personnel | | |
| Health professional | 0 (0%) | 3 (11%) |
| Non health professional | 2 (8%) | 0(0%) |
| Research staff | 3 (12%) | 0 (0%) |
| Intervention modality | | |
| Face to face | 0 (0%) | 0 (0%) |
| Telephone | 0 (0%) | 0 (0%) |
| Computer/internet | 0 (0%) | 0 (0%) |
| Print materials | 1 (4%) | 0 (0%) |
| Intervention intensity | | |
| Content or componentry | 11 (42%) | 12 (43%) |
| Duration of contact | 1 (4%) | 3 (11%) |
| Number of intervention contacts | 0 (0%) | 2 (7%) |
| Period of intervention contacts | 3 (12%) | 7 (25%) |
| Intervention cost/cost analyses | 3 (12%) | 1 (4%) |
| Adverse effects of intervention | 4 (15%) | 4 (14%) |

Table 1. Analyses reported in systematic reviews of child obesity prevention and treatment interventions.

n/a = not applicable

DISCUSSION

The findings of the survey suggest that few systematic reviews report comprehensive analyses important in the development and delivery of interventions to address childhood obesity. In particular, few reviews, including those conducted by the Cochrane collaboration, reported analyses of the effects of various intervention modalities and personnel, or of interventions conducted in settings such as health and childcare considered key in efforts to control the problem (13,14). Similarly, just four prevention and treatment reviews reported any unintended adverse effects of interventions. Appraisal of both the beneficial and adverse impacts of an intervention should be a fundamental consideration for those making decisions regarding obesity prevention and treatment interventions.

A lack of childhood obesity research trials reporting practice relevant information is likely to have influenced the number of reviews attempting to conduct such analyses (8,15). An absence of research trials reporting practice relevant information is, however, an important finding of systematic reviews. Identified gaps in the literature help inform future research priorities required for the development and delivery of effective interventions. In recognition of this, the Cochrane collaboration frequently publishes reviews that fail to locate any eligible trials (16) or are unable to conduct specific analyses due to insufficient trial information (17).

Amendments to reporting standards for clinical trials, changes in priorities of funding agencies and a greater dialogue between researchers, journal editors, and end users have been suggested as strategies to improve the practice relevance of outcomes reported in trials (8,18) and is likely to facilitate the publication of systematic reviews reporting such information. Similarly, amending reporting standards for systematic reviews, journal requirements, and better engagement of practitioners and policy makers may also improve the practice relevance of information reported in systematic reviews. This is particularly relevant to childhood obesity interventions where there is an urgency for solutions (19).

Systematic reviews have an important role in informing the development and delivery of interventions to address child obesity. Initiatives to improve the reporting of practice relevant information in systematic reviews may expediate the translation of research evidence into practice, prevent unnecessary research duplication and identify future research priorities to further enhance efforts to curb the child obesity epidemic. Reviewers should consider the needs of end users when developing systematic review protocols and performing analyses.

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