

Comment on Open Letter and Teicholz article

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This comment focuses on the methodology used to identify and search for evidence that is described in the Scientific Report of the 2015 Dietary Guidelines Advisory Committee (DGAC) ([2015 report](#)), criticisms of the methodology made by Teicholz ([article](#)), and the response to these criticisms that have been published in an [open letter](#). The comment also puts these criticisms in the context of international standards for retraction of scientific articles.

Although systematic review methods are a key part of the guideline development process, guideline development is also influenced by the availability of evidence, how to evaluate and synthesize diverse types of evidence, how to rate the strength of recommendations, conflicts of interest of panel members and political pressures. Although the methods for clinical practice guidelines are well developed, methods for more complex public health guidelines are not. Many organizations are grappling with how to develop rigorous, guidelines for complex public health issues, such as dietary guidelines. It is important to consider the methods of systematic reviews in the context of other aspects of guideline development.

The main methodological criticisms stated by Teicholz, and noted in comments 1, 2, 7 and 8 in the open letter, are that the Report did not define “systematic criteria for how studies or outside review papers were identified, selected or evaluated,” that there was “an ad hoc selection of review papers,” and that the methodology for the selection of systematic reviews was “inadequately described and “not predefined.” The open letter correctly notes that the report did describe its methods for identifying data to supplement the NEL review, AHA and ACC reviews. The methods of the 2015 report are described in Part C: Methodology (pages 3-24), Appendix E-2, and the online evidence reports linked to this appendix.

Call for retraction

The open letter calls for retraction of Teicholz’s article because it is “riddled with errors.” However, Teicholz’s criticisms of the methods used by DGAC are within the realm of scientific debate. They are certainly not grounds for retraction. The Committee on Publication Ethics Retraction Guidelines state that journal editors should consider retracting a publication if:

- “• they have clear evidence that the findings are unreliable, either as a result of misconduct (e.g. data fabrication) or honest error (e.g. miscalculation or experimental error)
- the findings have previously been published elsewhere without proper crossreferencing, permission or justification (i.e. cases of redundant publication)
- it constitutes plagiarism
- it reports unethical research.”

Teicholz’s criticisms of the methodology do not fit these criteria as they are within the scope of disputing methodological issues where there is existing acceptable variation.

Methods for Reviews of Reviews

The DGAC Report is based, in part, on evidence from systematic reviews in the USDA’s Nutrition Evidence Library (www.NEL.gov). These reviews covered 27% of the research questions posed in the report. An additional 45% of the questions were addressed using other systematic reviews, meta-analyses and reports. Thus, the DGAC conducted an overview of reviews to supplement information from the NEL reviews and it is these methods that have been critiqued by Teicholz.

Overviews of reviews, also known as “umbrella review,” “rapid reviews” and updates of existing systematic reviews are often prepared for practice guidelines and policy decisions. Overviews are systematically conducted reviews of systematic reviews, but there is no “gold standard” method for conducting overviews of reviews and recent analyses of overviews have shown that the methods are quite variable. However, there are a number of existing recommendations for the methodology of overviews, which can also include updates of existing reviews (Aromataris et al 2015; Becker and Oxman 2008, Cooper and Koenka 2012, Joanna Briggs Institute 2014). In general, an overview should consist of the same steps as a systematic review: 1) formulate question(s), 2) conduct systematic and thorough search, 3) screen and select reviews according to pre-defined inclusion and exclusion criteria, 4) assess risks of bias in the included reviews, 5) extract data, 6) synthesize the evidence. Subjective steps, such as screening of studies for selection, data extraction, or quality assessment of included reviews should be done by two coders, working independently. Each of these steps should be transparent and reproducible. A Cochrane Methods Group on Rapid Reviews has been recently formed and it will be proposing standards for conducting overviews and rapid reviews.

Studies examining the methods used for conducting reviews of reviews show that the methods are variable, not transparent, and often fail to meet the criteria for searching, quality assessment or data extraction (Featherstone et al 2015; Tricco et al 2015). For example, a review of 75 overviews published between 2000 and 2011 found that two reviewers independently screened full text for inclusion in 29 overviews (39%), methods of data extraction were reported in 45 (60%), and quality assessment of the included reviews was performed in 28 (37%) overviews using at least 9 different tools (Hartling et al 2012).

The Scientific Report of the 2015 Dietary Guidelines Advisory Committee (DGAC) ([2015 report](#)), describes 1) a search strategy for identifying existing systematic reviews, meta-analyses and reports, 2) pre-defined inclusion criteria, and 3) how the reviews were assessed for quality. The appendices also provide a list of excluded reviews with the reason for exclusion. However, the methods of the DGAC Report sometimes lack sufficient detail and may introduce bias, as described below, regarding the search strategies, inclusion of studies and quality assessment.

Search Strategies

Bias was potentially introduced into the search strategies reported by DGAC by deciding a priori to use existing reports, failing to describe the criteria to determine when a review needs updating, and failing to describe how reviews were selected for inclusion or exclusion when they overlapped.

First, “when committee members were aware of high-quality existing reports that addressed their question(s), they decided a priori to use existing reports”. A literature search for reports was then conducted. This method introduces bias because a decision to conduct a search for reviews should be independent of a committee member’s knowledge of existing reviews. Otherwise, studies in high profile journals, certain fields of research, or from certain groups of researchers may be included while others are not.

Another part of the methodology describes, “For some questions, the Committee used existing reports as the primary source of evidence to answer a question, but chose to update one or more of those existing reports using the NEL process to identify and review studies that had been published after the completion of the literature search for the existing report(s).” This process also introduces bias, as the criteria for deciding when a review needs to be updated or not were not described.

Lastly, different methods were used to decide if overlapping reviews should be included in an overview. The methodology states that if multiple reviews were available, the decision to use one was “based on the relevancy of the review in question” and “consistency of the findings.” The Report also states: “if two or more SRs/MAs appropriately answered a question and there was substantial reference overlap, the Committee chose to only use one of the SRs/MA to answer the question.” Reviews should not be included in an overview on the basis of their findings, but rather on the strength of their methodology. The Evidence Summaries for each chapter (Appendix 2) give examples of studies that were excluded due to overlapping studies, but it is not clear why one review was selected for inclusion compared to another:

Esposito K, Kastorini CM, Panagiotakos DB, Giugliano D. Prevention of type 2 diabetes by dietary patterns: a systematic review of prospective studies and meta-analysis. *Metab Syndr Relat Disord*. 2010 Dec;8(6):471-6. doi: 10.1089/met.2010.0009. Epub 2010 Oct 19. Review. PubMed PMID: 20958207. EXCLUDE: Of the 10 included studies, 8 were included in the NEL and Alhamzi reviews being considered by the Committee

Sofi F, Abbate R, Gensini GF, Casini A. Accruing evidence on benefits of adherence to the Mediterranean diet on health: an updated systematic review and meta-analysis. *Am J Clin Nutr*. 2010 Nov;92(5):1189-96. doi: 10.3945/ajcn.2010.29673. Epub 2010 Sep 1. Review. PubMed PMID: 20810976. EXCLUDE: Meta-analysis captured in Sofi 2013

Summerbell CD, Douthwaite W, Whittaker V, Ells LJ, Hillier F, Smith S, Kelly S, Edmunds LD, Macdonald I. The association between diet and physical activity and subsequent excess weight gain and obesity assessed at 5 years of age or older: a systematic review of the epidemiological evidence. *Int J Obes (Lond)*. 2009 Jul;33 Suppl 3:S1-92. doi: 10.1038/ijo.2009.80. Review. Erratum in: *Int J Obes (Lond)*. 2010 Apr;34(4):789. abstract no. 5.3 only. *Int J Obes (Lond)*. 2010 Apr;34(4):788. abstract no. 5.2 only. PubMed PMID: 19597430. EXCLUDE: Considered various aspects of eating, including fast food intake, frequency of eating, night eating, individual food groups, as well as

physical activity, etc.; included relevant section with 6 studies, 1 considered glycemic index/load, and 4 included in NEL review

The Methodology section of the report also notes:

“In a few cases, existing reports were considered that did not examine the evidence using SR or MA. These reports were discussed by the subcommittees and determined to be of high-quality. The subcommittees also had the option of bringing existing reports to the Science Review Subcommittee to ensure that the report met the quality standards of the Committee, if needed.”

These additional methods of identifying reports circumvent the systematic search process described for identifying reviews.

Quality assessment of included reviews

An overview should include an assessment of the quality of the included reviews, and DGAC used a common method - the Assessment of Multiple Systematic Reviews tool – AMSTAR. Reviews were included if they received an AMSTAR score of 8-11 (with 11 being the best score). There are multiple tools available for assessing the quality of systematic reviews, including the Scottish Intercollegiate Guidelines Network (SIGN) System for Coding Quality of Systematic Reviews, AMSTAR (used by the DGAC) and the newer ROBIS (Whiting 2015). A study comparing 4 different tools for assessing quality of reviews found that the choice of critical appraisal tool did not affect the results of the evidence synthesis (Pieper et al 2014). Thus, there is no evidence to support use of one tool over another.

The Evidence Summaries for each chapter in Appendix 2 provide additional information. These summaries list the existing reports, systematic reviews and meta-analyses that were included and their AMSTAR scores. The specific search terms used for the electronic searches to identify existing systematic reviews or meta-analyses are also provided. Inclusion criteria for date, study design, subjects, intervention / exposure, outcomes and AMSTAR score are also listed, as well as a flow chart of search results. A list of excluded articles with reasons for exclusion is provided.

Summary

The specific methods used by the DGAC to conduct overviews of reviews is a topic of legitimate scientific debate. For example, there are many different strategies for identifying systematic reviews, including searches of electronic databases, or searches of reference lists of other guidelines. Overviews also differ in their inclusion of English-language only studies or not. As noted above, a variety of tools for assessing review quality are available, and none have been shown to be better than others.

Because of the diversity of methods available and the lack of a gold standard, the methods used by the DGAC are similar, but not identical, to other organizations that do reviews of reviews, such as the Canadian Agency for Drugs and Technologies in Health (CADTH), Oregon Health Sciences University Center for Evidence-Based Policy, and the Ottawa Hospital Research Institute (OHRI) (Polisena et al 2015). Teicholz's criticisms of these methods do not warrant retractions as they are within the scope of disputing methodological issues where there is existing acceptable variation.

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