

Systematic Review Protocol

December 2015

Assessing reporting of narrative synthesis of quantitative data in public health systematic reviews

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Introduction

Systematic reviews are used to underpin evidence-informed policy and practice (Lavis, Posada et al. 2004, Ogilvie, Craig et al. 2009). The value of systematic reviews in supporting decision making is their transparency, reproducibility and systematic approach to assessing the relevant evidence base. Ensuring transparency at each stage of the process is crucial to fostering evidence-informed decision-making. One aspect of the review process which has been criticised for not being transparent is narrative synthesis (Higgins and Green 2011); an approach which is commonly used in reviews of public health interventions. For example, 74% of National Institute for Health and Care Excellence (NICE) public health appraisals published between 2006 and 2012 included narrative summaries of the evidence (Achana, Hubbard et al. 2014). For many reviews of public health topics, statistical pooling or meta-analysis of study findings is inappropriate due to high levels of heterogeneity or not possible due to data availability. Different study designs, outcomes, contexts, populations, and interventions may also contra-indicate the use of meta-analysis.

Methodological developments in narrative synthesis of quantitative data have not kept pace with parallel developments to improve utility and rigour of statistical synthesis or synthesis of qualitative data (Thomas and Harden 2008, Higgins and Green 2011, France, Ring et al. 2014, Lewin, Glenton et al. 2015). Guidance on the conduct and reporting of narrative synthesis has been published by the Economic and Social Research Council (ESRC) (Popay, Roberts et al. 2006) but does not appear to be widely used, and many narrative syntheses are poorly reported. The methods used in narrative synthesis are often inadequately described, and there is a lack of transparency in how conclusions are derived. Inadequacies in reporting make it difficult to judge whether the synthesis has been well conducted. Poor reporting also makes assessment of level and source of bias difficult (Higgins and Green 2011) which is problematic given systematic review methods and processes aim to minimise bias and promote transparency. In the absence of clearly reported methods and processes for carrying out narrative synthesis, reviewers may synthesise the data differently, leading to diverse conclusions from the same or similar data – illustrated recently by debates around the use of e-cigarettes in public health policy (Grana, Benowitz et al. 2014, McNeill, Etter et al. 2014).

Rationale

Poor reporting of the methods used and processes followed in narrative synthesis, together with the heavy reliance of this approach in reviews of public health interventions (Achana, Hubbard et al. 2014) suggest the need for reporting standards.

To enable the development of reporting standards, we propose preliminary work to establish the current level of reporting of narrative syntheses and to identify any common issues. We will describe the nature and extent of reporting of narrative synthesis methods, and the approaches used in a sample of reviews of public health interventions. This information will be used to assess the adequacy of current practice in narrative synthesis and to identify key gaps in reporting. We will use the information obtained to seek research funding to develop reporting standards for narrative syntheses which will be of value to the wider community of systematic reviewers around the world.

Review aims and objectives

The main aim of this review is to determine the adequacy of reporting of narrative synthesis of quantitative data in systematic reviews of public health interventions. A secondary aim is to describe the methods and processes used in narrative synthesis.

The review objectives are to:

1. identify common gaps in the reporting of narrative synthesis,
2. describe justification for narrative synthesis,
3. describe how randomised and non-randomised studies are managed within narrative synthesis,
4. describe how conceptual heterogeneity is managed, (e.g. heterogeneity in methods, participants, interventions or outcomes in included studies),
5. describe the methods used to promote transparent links between synthesised data and review conclusions.

Methods

We will review existing systematic reviews of public health interventions. Given the intention to describe a diverse range of systematic review practice, the synthesis component of the review will be narrative, with summary statistics to help describe the results.

Inclusion/exclusion criteria

Eligible reviews are those listed on the McMaster Health Evidence database (<http://www.healthevidence.org/>). This register contains systematic reviews relevant to public health (Lee, Dobbins et al. 2012) and reviews are included if they: relate to promotion, protection or prevention of public health or health; have participants from developed countries; examine an intervention/programme/service/policy; include evidence on outcomes; and describe a search strategy (see <http://www.healthevidence.org/our-appraisal-tools.aspx>).

We will include reviews that:

- were published between 2010 and 2015 inclusive,
- examine an intervention, programme or policy,
- include quantitative data

As this review is using the McMaster Health Evidence database to obtain a sample of public health systematic reviews, we will use the Health Evidence database definitions of systematic review, intervention, public health topic (see <http://www.healthevidence.org/our-appraisal-tools.aspx>).

Search strategy

The McMaster Health Evidence database (<http://www.healthevidence.org/>) uses an effective search filter for retrieving systematic reviews of public health interventions (Lee, Dobbins et al. 2012). The filter has high sensitivity, specificity and precision, enabling Health Evidence to maintain an up to date, relevant database.

We will request a download of all reviews included in the Health Evidence database that have been published on or since 2010.

Review selection

Twenty percent of the Health Evidence database from 2010 to 2015 (inclusive) will be randomly selected for preliminary analysis (retrieved in October 2015). An Excel random number function will be

used to allocate a number for each database entry and allocated numbers will be sorted lowest to highest. The first twenty percent of the random numbers will be used to identify the corresponding Health Evidence Endnote entries. The purpose of the preliminary data extraction is to obtain an estimate of the proportion of reviews in public health which use narrative synthesis, meta-analysis, or a mix of the two methods. Details of the preliminary data extraction exercise are listed below in the data extraction section.

From the preliminary analysis, we will select reviews that have narratively synthesised their primary outcome(s), for more detailed data extraction and analysis.

Data extraction and coding

Preliminary analysis

Data on the review question and main method of synthesis will be extracted for the 20% random sample of reviews. We will also record details of: authors, year, journal, review question, reference to a protocol, synthesis methods (meta-analysis only, meta-analysis and narrative synthesis, narrative synthesis only), the intervention, whether the review includes randomised controlled trials (RCT) only, RCT and non-randomised studies (NRS), NRS only, and the primary outcome(s). Each member of the project team will be allocated a number of reviews to extract independently, with comparison of some extraction and discussion at team meetings to ensure consistency of data collection across reviewers.

Detailed analysis

Through the preliminary analysis we will identify systematic reviews which have narratively synthesised the primary outcome or used narrative synthesis as the main method of synthesis. We will select these reviews for more detailed analysis. A data extraction form will be developed building on key sources including:

- Popay, Roberts et al (2006) Guidance on the conduct of narrative synthesis in systematic reviews, ESRC.
- Gough, Oliver, et al., Eds. (2012). An introduction to systematic reviews. London, Sage.
- Petticrew and Roberts (2006). Systematic reviews in the social sciences: a practical guide. London, Blackwell.
- Pope, Mays, et al. (2007). Synthesizing qualitative and quantitative health evidence, Open University Press.
- Cochrane Public Health guidance on writing a protocol and doing a review which are available on this page: <http://ph.cochrane.org/review-authors>.

- Popay, J., Ed. (2012) Methods for the development of NICE public health guidance
- World Health Organization (2014). WHO Handbook for guideline development, World health Organisation.

In addition, guideline development documents from NICE and WHO will be consulted (Popay 2012, World Health Organization 2014).

We anticipate extracting information on: review characteristics, justification for the use of narrative synthesis, preliminary and detailed synthesis, how the data were integrated, measures to promote transparency between the data and the narrative, and robustness of the synthesis.

The data extraction process will be piloted by two independent reviewers. Subject to achieving satisfactory agreement, extraction will be by a single reviewer. All members of the project team will carry out data extraction and data will be entered directly into an Excel database. Extracted data will be tabulated to aid synthesis and for publication.

Synthesis

We will tabulate the extracted data and where appropriate we will follow the recommendations of the ESRC guidance (Popay, Roberts et al. 2006). In reviews where the synthesis is poorly reported we will explore whether there are common features. We will examine the public health topic under review, date of publication, and the inclusion of qualitative data.

Using the extracted and tabulated data the synthesis will include description of:

- the extent of reporting of narrative synthesis methods: the amount and type of detail included and variations by review topic and included study designs
- the range of approaches and tools used to narratively synthesise data
- how conceptual and methodological heterogeneity is managed

We will reflect on the robustness of this systematic review by considering the limitations of the review methods.

Research outcomes

We will provide an overview of narrative synthesis methods and techniques in current use and highlight any shortcomings. From this, we will prepare a funding proposal with the aim of developing reporting standards that will be of value to the international community of systematic reviewers.

Dissemination

The findings of the review will be prepared for publication in an international peer-reviewed journal. Presentations will be made to relevant audiences, with the aim of maximising the impact of the project findings.

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A University Unit funded by the Medical Research
Council and the Chief Scientist Office of the Scottish
Government Health and Social Care Directorates, at the
University of Glasgow.



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