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## Original Research

# Synthesizing diverse evidence: the use of primary qualitative data analysis methods and logic models in public health reviews

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## ABSTRACT

**Objectives:** The nature of public health evidence presents challenges for conventional systematic review processes, with increasing recognition of the need to include a broader range of work including observational studies and qualitative research, yet with methods to combine diverse sources remaining underdeveloped. The objective of this paper is to report the application of a new approach for review of evidence in the public health sphere. The method enables a diverse range of evidence types to be synthesized in order to examine potential relationships between a public health environment and outcomes.

**Study design:** The study drew on previous work by the National Institute for Health and Clinical Excellence on conceptual frameworks. It applied and further extended this work to the synthesis of evidence relating to one particular public health area: the enhancement of employee mental well-being in the workplace.

**Methods:** The approach utilized thematic analysis techniques from primary research, together with conceptual modelling, to explore potential relationships between factors and outcomes.

**Results:** The method enabled a logic framework to be built from a diverse document set that illustrates how elements and associations between elements may impact on the well-being of employees.

**Conclusions:** Whilst recognizing potential criticisms of the approach, it is suggested that logic models can be a useful way of examining the complexity of relationships between factors and outcomes in public health, and of highlighting potential areas for interventions and further research. The use of techniques from primary qualitative research may also be helpful in synthesizing diverse document types.

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## Introduction

Public health policy is increasingly based on summaries of information collated through systematic reviews of the

literature.<sup>1</sup> Systematic review methods developed by the Cochrane Collaboration<sup>2</sup> and the National Institute for Health and Clinical Effectiveness (NICE)<sup>3</sup> have explored questions regarding the effectiveness of clinical interventions, and have

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consequently given preference to quantitative studies. Public health, however, may offer particular challenges to the conventional systematic review method due to the nature of the evidence available and the complexity of the interventions.<sup>4,5</sup>

A systematic review endeavours to use transparent and replicable methods to identify, evaluate and interpret available evidence to address a research question. A review will define inclusion and exclusion criteria, include an examination of study quality, and will often synthesize findings into evidence statements.<sup>5,6</sup> The quality of the evidence included is assessed according to the study design, conduct and analysis.<sup>1</sup> Reviewers set the minimum quality standard for evidence that will be considered, based on the conventional hierarchy of design that places experimental studies and, in particular, randomized controlled trials at the top. These study design hierarchies, however, are problematic in areas of research such as public health, with its preponderance of non-trial evidence exploring wider issues such as how interventions work, patients' experiences, or how public health can be improved and health inequalities reduced.<sup>7,8</sup> In addition to these issues, many areas of study lack research of sufficient quality or quantity on a topic to contribute to a meaningful systematic review.<sup>9</sup>

In recognition of these limitations, there has been increasing interest in developing review methods to incorporate diverse types of evidence including qualitative research.<sup>7,10,11</sup> Conventional systematic reviews have been criticized on a number of grounds, including: they provide a lack of context for social interventions<sup>12</sup>; they are of limited use to policy makers, practitioners and other groups due to the lack of studies available<sup>8</sup>; they exclude important work<sup>12</sup>; and they lack consideration of feasibility and implementation. Widening the types of evidence included in a review may help to overcome these criticisms.

As the potential for different types of evidence to make a contribution to a review has been explored, methods for the synthesis of qualitative research have expanded.<sup>13</sup> Approaches such as 'qualitative meta-synthesis'<sup>14</sup> are being increasingly applied in a wide variety of areas.<sup>15,16</sup> Researchers in the area caution, however, that approaches to qualitative synthesis of secondary research need to be further developed to be just as explicit as methods in primary research,<sup>9</sup> and that forms of data extraction used for this type of study require further improvement and evaluation.<sup>10,11</sup> Whilst it is argued that the benefit of including diverse study types in a review is to provide context for interventions and explanations for their effects,<sup>17</sup> the integration of different types of data in the same review remains a key challenge.<sup>17</sup> In some reviews, different types of evidence are given different weighting or are used to answer different sub-questions. Alternatively, it has been suggested that qualitative evidence could be used to refocus the outcome of the quantitative synthesis.<sup>18</sup>

In addition to these challenges associated with the incorporation of diverse evidence types, public health reviews examine interventions that are often complex. This may be associated with the characteristics of the intervention or study populations, or may be a result of examining multifactorial outcomes rather than a causal chain between an agent and an outcome that is relatively short and simple.<sup>4,19</sup> There may be long and complex causal pathways that are

subject to effect modifications and variation between settings, thus creating considerable challenges for reviews to link public health interventions to outcomes.<sup>19</sup>

It has been suggested that conceptual models (logic models) could prove useful by providing a structure for exploring these complex relationships between public health practice and outcomes.<sup>20</sup> Logic models (also known as impact models) originate from the field of programme evaluation, and are typically diagrams or flow charts that convey relationships between contextual factors, inputs, processes and outcomes.<sup>21</sup> It is argued that logic models are valuable in providing a 'roadmap' to illustrate influential relationships and components from inputs to outcomes.<sup>20,22</sup> These models have been used widely in the health promotion literature to identify domains underlying best practice.<sup>23–25</sup>

The work outlined in this paper aimed to pilot a new approach to systematic review of the evidence, which had the potential to overcome these issues of study design hierarchies, limited available evidence and complex causal pathways. The method was developed with the objective of drawing on acknowledged systematic review processes, yet enabling diverse sources of evidence to be examined and synthesized, to develop an improved understanding of the processes and outcomes underpinning a complex area of public health.

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## Methods

The approach described in this paper was developed following an earlier phase of work using a conventional systematic review methodology. This review had the purpose of examining evidence relating to interventions to improve employee mental well-being in the workplace. The review identified that there was 'insufficient evidence' of organization-wide approaches to promoting mental well-being, and suggested that useful evidence may have been excluded because of the narrow focus of the original research question.<sup>26</sup> The findings suggested that other types of evidence that had been excluded from the traditional review process could be equally valid and relevant to inform policy decisions regarding effectiveness. Research in the field included a growing body of cohort studies, and influential work from authors using cross-sectional designs. This wider literature suggested that the influence of the working environment on the mental well-being of employees was complex.

### Conceptual modelling

An alternative approach to reviewing the literature was therefore proposed based on previous work at NICE on conceptual modelling, described in a previous paper.<sup>27</sup> Briefly, the development of NICE public health guidance is informed by conceptual understanding of the causal pathways that influence health,<sup>27</sup> and this understanding provides a theoretical rationale for potential interventions for improving health. The conceptual model is based on two premises. The first is that there are causal pathways from the wider determinants of health to individual-level health outcomes. The second is that there are causal pathways from the wider determinants of health to patterns of population-level health. These causal

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