



## ORIGINAL ARTICLE

# Knowledge synthesis methods for generating or refining theory: a scoping review reveals that little guidance is available

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## Abstract

**Objectives:** To describe and compare, through a scoping review, emerging knowledge synthesis methods for generating and refining theory, in terms of expertise required, similarities, differences, strengths, limitations, and steps involved in using the methods.

**Study Design and Setting:** Electronic databases (e.g., MEDLINE) were searched, and two reviewers independently selected studies and abstracted data for qualitative analysis.

**Results:** In total, 287 articles reporting nine knowledge synthesis methods (concept synthesis, critical interpretive synthesis, integrative review, meta-ethnography, meta-interpretation, meta-study, meta-synthesis, narrative synthesis, and realist review) were included after screening of 17,962 citations and 1,010 full-text articles. Strengths of the methods included comprehensive synthesis providing rich contextual data and suitability for identifying gaps in the literature, informing policy, aiding in clinical decisions, addressing complex research questions, and synthesizing patient preferences, beliefs, and values. However, many of the methods were highly subjective and not reproducible. For integrative review, meta-ethnography, and realist review, guidance was provided on all steps of the review process, whereas meta-synthesis had guidance on the fewest number of steps.

**Conclusion:** Guidance for conducting the steps was often vague and sometimes absent. Further work is needed to provide direction on operationalizing these methods. © 2016 Elsevier Inc. All rights reserved.

**Keywords:** Knowledge synthesis; Critical interpretive synthesis; Integrative review; Meta-synthesis; Meta-ethnography; Realist review

## 1. Introduction

In health care, information synthesis has focused predominantly on systematic reviews of interventions

using methods proposed by the Cochrane Collaboration [1] and others [2–4]. However, systematic reviews often lack the rich contextual detail that can be gathered using emerging knowledge synthesis methods [5], such as meta-ethnography, meta-study, and realist review. Such forms of synthesis can generate greater understanding and provide useful insight through the development of theories and frameworks. It has been argued that such emerging methods show promise for informing practice and policy and could thereby improve health care systems [6,7].

Patients' expectations, adherence, preferences, knowledge, and values are factors that can influence the effectiveness of an intervention [8–12]. As well, the perspectives of various stakeholders, such as patients, researchers, clinicians, and policy makers, can shape the creation of different types of interventions. These factors provide rich

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**What is new?****Key findings**

- We found nine knowledge synthesis methods that can be used to generate or refine theory: concept synthesis, critical interpretive synthesis, integrative review, meta-ethnography, meta-interpretation, meta-study, meta-synthesis, narrative synthesis, and realist review. For integrative review, meta-ethnography, and realist review, guidance was provided on all steps of the review process, whereas meta-synthesis had guidance on the fewest number of steps.

**What this adds to what was known?**

- This is the first study to compare and contrast numerous features of emerging knowledge synthesis methods that can be used for generating and refining theory.

**What is the implication and what should change now?**

- We found a lack of guidance on how to conduct emerging knowledge synthesis methods for generating or refining theory. Differences among the methods are predominantly related to analysis techniques rather than the full synthesis methods.
- We propose convening an international group of leaders in the field to clarify the methods for emerging knowledge synthesis approaches, to create an algorithm for matching a question to a method, and to write a textbook on how to conduct each of the methods.

contextual details that can be used to establish theories as to why certain interventions work (or fail) in particular settings and contexts [13]. As such, the perceptions, values, and experiences of stakeholders are important factors to consider in planning, implementing, and evaluating health care interventions.

Interest in emerging knowledge synthesis methods within health care has been increasing [14,15], but confusion exists about similarities and differences among the methods and how to operationalize them. Previous work focused on explaining the different types of synthesis methods for qualitative evidence [16,17] but was not informed by a comprehensive scoping review of the literature. The overall objective of our scoping review was to identify and chart the different types of emerging knowledge synthesis methods in terms of definitions, comprehensiveness, disciplines, and objectives. For the present article, we aimed to compare emerging knowledge

synthesis methods that can be used to generate or refine theory (e.g., Roger's Diffusion of Innovation theory) [18]. Our specific objectives were to describe the expertise required to carry out these synthesis methods, the similarities and differences among the methods, their strengths and limitations, and the steps needed to operationalize them.

**2. Methods**

This is the fourth in a series of articles reporting the results of our scoping review of emerging knowledge synthesis methods [19–22]. We formulated our protocol [23] using the Arksey and O'Malley framework [24]. Our methods are briefly described below.

**2.1. Information sources**

To identify potentially relevant studies, the main search was of several electronic databases from inception until December 2011: MEDLINE, CINAHL, EMBASE, PsycINFO, the Cochrane Methodology Register, the Cochrane Database of Systematic Reviews, Social Sciences Abstracts, Library and Information Science Abstracts, Philosopher's Index, and Education Resources Information Center. The literature search was supplemented by scanning the reference lists of included studies, as well as searching textbooks for details about the methods identified.

**2.2. Inclusion criteria**

We included articles, manuscripts, dissertations, books, and reports that described, evaluated, or used emerging knowledge synthesis methods for generating or refining a theory (Box 1), as reported by the study authors. We defined theory generation or refinement as use of a collection of ideas to develop patterns of meaning [25]. We recognize that differences in meaning and concepts of "theory" exist across the various knowledge synthesis methods. For example, some generate new theory (e.g., critical interpretive synthesis, meta-ethnography), whereas others refine a middle-range theory (e.g., realist review). We used a broad definition of the term "theory" to allow clear distinction between methods that generate or refine theory and those that do not. A theory-generating or theory-refining knowledge synthesis method could include any paradigm (such as constructivist, ethnographic, hermeneutic, interpretivist, naturalistic, and phenomenological) seeking to generate theory through qualitative or mixed qualitative and quantitative methods [25,26]. We also considered correlational, determinative, experimental, normative, positivist, and reductionist paradigms for generating theory through quantitative methods [26]. Multidisciplinary knowledge synthesis methods from the fields of health, psychology, education, sociology, and philosophy were included.

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