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COMMENTARY

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Defining three principles for credible evidence synthesis and reviews in health professions education

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ABSTRACT

As reviews become increasingly central to informing educational practice and guiding research in health professions education, the need for methodological clarity and quality has grown. This Commentary highlights three foundational principles – alignment, rigor, and transparency – that underpin high-quality reviews, regardless of type. We illustrate how these principles apply across commonly used review types, including systematic, scoping, realist, and narrative reviews. By aligning the research question with the appropriate review methodology, employing rigorous processes for evidence collection and synthesis, and maintaining transparency in methodological reporting, review teams can produce credible, transferable, and dependable findings. Embracing these principles not only enhances the trustworthiness of reviews but also supports stakeholders in applying synthesized knowledge effectively, ultimately advancing evidence-informed decision-making in health professions education.

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Introduction

In today's complex landscape of health professions education, reviews have become pivotal tools for synthesizing knowledge, informing educational practice, and guiding future research. As the demand for evidence-informed insights has grown, the volume of various types of reviews has grown exponentially (1). Each review type brings unique strengths, tailored methodologies, and specific purposes, to address varied stakeholder needs and advance the field, by leveraging different worldviews and paradigms (2,3,4). While this diversity allows investigators different avenues for understanding phenomena, there is a critical need for each to be conducted in a transparent and rigorous manner with appropriate alignment between the review question and the method used to answer it.

Based on our collective experience within Best Evidence in Medical Education (BEME) – conducting reviews together (5,6), and serving as peer reviewers and editors – we have identified three key principles that characterize high quality reviews across all types: alignment, rigor, and transparency (see Figure 1). In what follows we illustrate how each principle can be applied to various review types, including systematic, scoping, realist, and narrative reviews, to support researchers in the design, conduct and reporting of their work.

Principle 1: Alignment

A high-quality review is rooted in alignment between the research question, review methodology, and stakeholder needs. This principle requires selecting a review type that matches the focus and scope of the research question.

For example, a review on the effect of team-based learning on knowledge acquisition, could be best addressed through a conventional systematic review. A systematic review is appropriate when the research question requires applying specific criteria—such as study methods and assessed outcomes—to systematically narrow the research literature. The resulting synthesis provides focused, replicable insights that are valuable for stakeholders seeking reliable evidence on specific educational outcomes. In contrast, if the aim is to explore a broad, emerging area, such as the use of artificial

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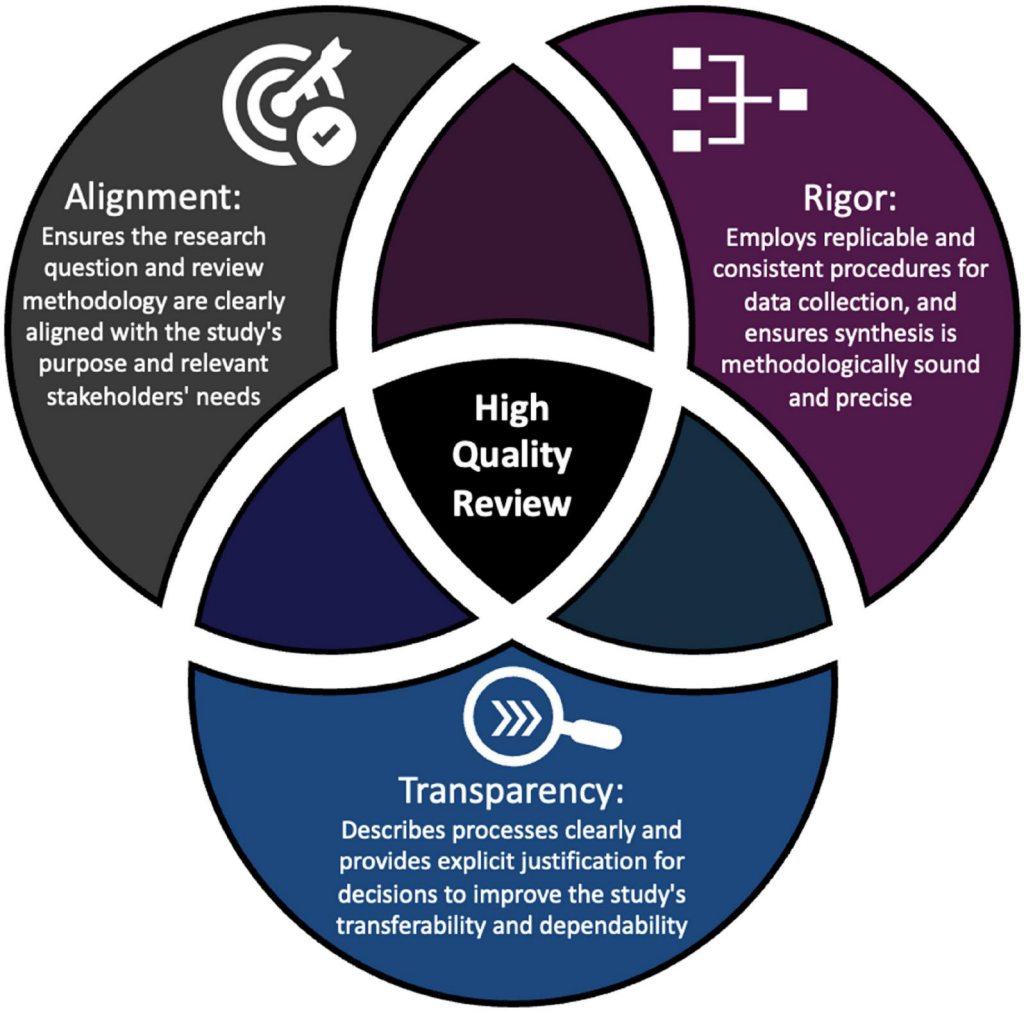

Figure 1. Three foundational principes to high-quality reviews.

intelligence in medical education, a scoping review can be used to map the range and diversity of existing studies, identify knowledge gaps and guide future research.

Realist reviews are ideal when the research team is interested in exploring how and why specific educational approaches work or fail in varying contexts, but the research methodologies and outcomes assessed in included studies are highly variable. For example, a realist review may be appropriate for synthesizing the literature on clinical teaching strategies because of the diverse range of outcomes and the complexity of the clinical learning environment potentially limiting the generalizability of any single strategy.

Narrative reviews are well-suited for synthesizing insights on interdisciplinary or evolving topics where evidence is scattered or inconsistent. For example, investigators interested in reviewing the methods used to evaluate continuing professional development courses in pediatric acute-care in low and lower-middle income countries may use a narrative review. Such a review includes diverse literature with varied outcomes that may not be conducive for a quantitative synthesis but can provide insight into past and best current practices.

By carefully selecting a review type that aligns with the intended purpose, researchers can ensure that their findings are meaningful, actionable, and informative for practice in the field of health professions education.

Principle 2: Rigor

Researchers should follow published guidelines for the selected review type (7,8). Rigor is achieved through following structured and consistent processes in evidence collection and ensuring the validity or trustworthiness of evidence synthesis.

For many review types (e.g. systematic, realist, scoping) rigor involves using structured processes in searching, selecting, and extracting data, which are foundational to building a robust and comprehensive evidence base while minimizing potential biases. There are at least two benefits to having these processes completed in duplicate. First, a shared mental model between researchers is refined through discussion of disagreements. Second, consistency is

ensured by having two reviewers independently screen and extract information from studies with a process to check and achieve consensus.

Specific forms of narrative reviews may follow adapted approaches to establish rigor within an interpretative framework. For example, state-of-the-art reviews provide a comprehensive review of the history, current status, and projected future of a phenomenon of interest (9). Integrative reviews synthesize results of different types of research to comprehensively describe what is known about a topic (10). The author team maintains scholarly quality and utility through the collective expertise of the team. By deeply engaging with the literature and applying their professional expertise, authors can produce narrative reviews that are both insightful and practically applicable, particularly in areas with diverse or emerging evidence, while maintaining a high level of scholarly rigor.

Data synthesis also requires rigor. While specific review types may require different methods, researchers must follow established guidelines for their chosen method, whether quantitative or qualitative.

For example, in systematic reviews that involve quantitative synthesis, statistical methods are used to aggregate data. When using meta-analysis, appropriate statistical techniques include the use of a random-effects model rather than a fixed effect model, accounting for effect size dependency, and accurately calculating effect sizes. By using appropriate statistical modeling techniques, systematic reviews with meta-analysis are valuable for estimating the overall effectiveness of specific educational strategies and investigating factors related to variability in effectiveness across studies, offering *generalizable* knowledge with practical implications.

In contrast, systematic reviews that involve qualitative syntheses, such as thematic analysis, emphasize concepts such as credibility and trustworthiness over traditional notions of validity (11,12). Rigor in qualitative syntheses is achieved by involving multiple researchers who collaboratively and iteratively discuss findings to reach consensus on data interpretation. Researchers, ideally offering diverse perspectives, use an iterative and flexible approach, critically questioning one another, and collectively interpreting the data. In qualitative syntheses, different perspectives are not seen as biases but as valuable contributions that strengthen the trustworthiness and credibility of the synthesis.

Realist reviews, on the other hand, employ a distinct synthesis method known as context-mechanism-outcome (CMO) analysis (13). Reviewers following this approach rigorously examine how, why, and in what contexts interventions succeed or fail, focusing on the mechanisms driving outcomes and the contextual factors that influence their success. CMO analysis provides nuanced, context-sensitive insights, making realist reviews particularly suited to addressing complex, context-dependent questions in health professions education.

By carefully selecting and rigorously applying screening and synthesis methods tailored to the review type, researchers can produce findings that are credible, relevant and impactful for stakeholders.

Principle 3: Transparency

Transparency is essential for enhancing the transferability and dependability of findings. By clearly describing research processes and providing justifications for methodological choices, researchers enable readers to understand, evaluate, and trust review findings.

Transparency involves openly detailing every step of the review process. This includes specifying search strategies, databases used, search terms, inclusion and exclusion criteria, and procedures for data extraction and analysis. Publishing protocols and recording deviations with justifications provide a reasonable audit trail for readers. Comprehensive reporting allows others to replicate the study or apply its methods to different contexts, thereby enhancing the transferability of the findings. Providing this information also clarifies a review's scope, approach, and limitations.

Qualitative syntheses and narrative reviews require additional considerations, where transparency extends to articulating the philosophical and/or theoretical frameworks guiding the analysis, the iterative processes of theme development, and the publishing of reflexivity statements of the researchers. Reflecting on their roles and how their perspectives may have influenced interpretations enhances the dependability and credibility of their findings.

Realist reviews require transparency in explaining how context-mechanism-outcome (CMO) configurations were developed. Researchers should clearly justify how mechanisms and contextual factors influencing outcomes were identified and interpreted, providing a well-documented audit trail of their reasoning.

Transparency both strengthens the credibility of the review and supports stakeholders—including educators, curriculum designers, and policymakers—in interpreting and applying review findings effectively.

Conclusion

High-quality reviews in health professions education rest on three foundational principles: aligning the review type with the research question and purpose, adhering to methodological rigor in data collection and synthesis, and ensuring transparency through

detailed descriptions and justifications of the research process. By adhering to these three principles, review teams enhance the credibility, transferability, and dependability of their findings.

These principles strengthen the methodological integrity of reviews and ensure that the synthesized knowledge is trustworthy and relevant to stakeholders, ultimately advancing evidence-informed practices in health professions education.

Disclosure statement

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