



COMMENTARY

The spectrum of knowledge synthesis methods: From big picture overview to targeted deep dive

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Knowledge synthesis is the systematic process of gathering, appraising, and analyzing previously published knowledge in different forms on a particular question or issue.¹ A well-conducted knowledge synthesis offers a clear picture of the state of knowledge in a given field by identifying research gap as well as new topic of research by highlighting patterns of current study findings, and conforming conflicting findings to a deeper understanding of a topic. There are various types of knowledge synthesis methods that have emerged to meet the various needs of varying research questions, even though the systematic review is arguably the most well-known version of the process in the modern era.

Over the recent decades, there has been increasing recognition of the value of knowledge synthesis for advancing informed decision making. In this era of digitalization, where information is widely accessible and sometimes overwhelming, systematic knowledge synthesis ensures that practitioners, researchers, and decision-makers have access to the most reliable and relevant knowledge. It assists in putting research findings into practice by making sure that policies and interventions are supported by the greatest available data. Furthermore, by identifying what is already known and what needs further investigation, knowledge synthesis helps to prevent duplication of research.

Knowledge Synthesis methods consist of three fundamental steps: [a] comprehensive and systematic search, [c] rigorous screening, and [b] methodical analysis (FIGURE 1).^{2, 3, 4} Any type of knowledge synthesis should have a comprehensive systematic search of literature ensured. This allows the researchers

HIGHLIGHTS

1. The process of incorporating and placing previously published research findings into a cohesive understanding of a certain subject is known as knowledge synthesis.
2. A comprehensive and systematic search and rigorous screening process of papers or documents to identify the final set to analyze is a cornerstone of a high quality knowledge synthesis.
3. The synthesis depth varies from obtaining broad overviews to in-depth analyses based on research needs and objectives.

to make sure that they have all the possible documents/publications identified for the synthesis. The thoroughness of this screening further lays the foundation for a robust knowledge synthesis.

Different types of Knowledge Synthesis stem mainly from the variation in 'methodical analysis' approach. Further, the depth and breadth of analysis is dependent on the research question.² Some research questions require providing a broad overview of a subject area, others necessitate a more focused examination of specific issues, and certain research questions demand an intensive analysis of complex relationships, intervention effectiveness, contextual factors, or conflicting findings in a particular topic. FIGURE 2 shows a typology of major knowledge synthesis methods based on the depth of analysis. Details of different knowledge synthesis and the methods can be found elsewhere.^{3, 4, 5, 6}

The primary factor that guides the choice of knowledge synthesis methods is the research objectives. For that, several factors should be kept in mind.



FIGURE 1 Fundamental steps of knowledge synthesis

A clearly defined research question is very important as different methods are suited for various types of inquiries, including quantitative, qualitative, narrow, broad questions. The comprehensiveness of search and screening process also aligns with the research question.

A knowledge synthesis team needs members with content expertise and technical expertise in search strategies, screening, data extraction, and analysis methods. The intensive the analysis, the more the methodological skillset is needed for the researchers. For example, conducting a meta-analysis requires advanced statistical skills. If meta-regression needs to be added, that also involves mastering complex statistical techniques. To undertake a meta synthesis, advanced qualitative methods skill is required. Additionally, the team members should have strong project management skills and clear communication abilities for team collaboration. The composition of the team may vary depending on the specific type of knowledge synthesis being conducted, but having a diverse team with complementary skills is crucial for a successful and high-quality output.

The team need to develop a working plan considering the time frame and resources available for conducting the knowledge synthesis. The intensive knowledge synthesis projects generally would require more time in comparison to the big-picture overview knowledge synthesis.

It is always important to understand the target audience for the knowledge synthesis. Academic audience tend to

need the intensive knowledge synthesis, whereas the program or service audience tend to need the overview knowledge synthesis.

Researchers should be skilled in knowledge synthesis methods because these skills are essential for producing high-quality, impactful research and knowledge translation. Command of these methods enables researchers to critically evaluate and integrate findings

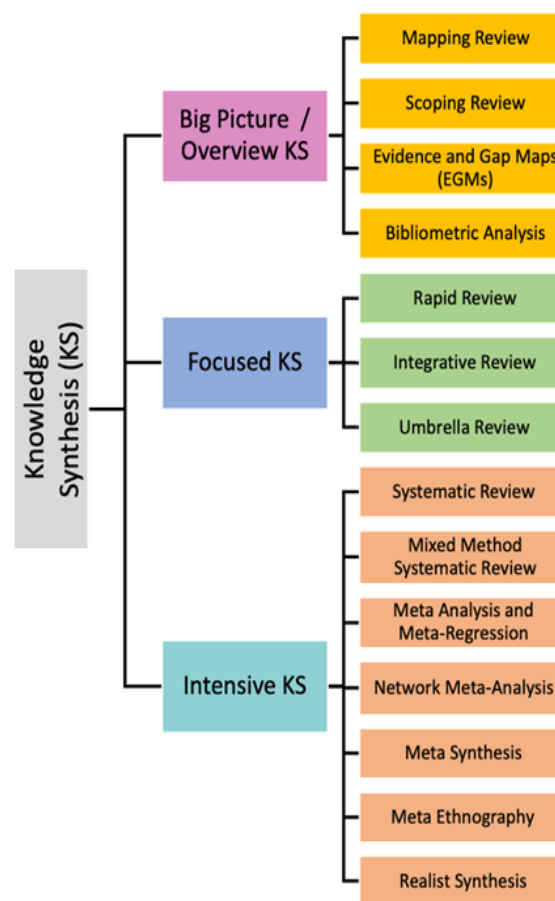


FIGURE 2 Different types of knowledge synthesis methods based on the depth of analysis

from diverse studies, enhancing the robustness and credibility of their conclusions. Furthermore, proficiency in knowledge synthesis is crucial for identifying gaps in the literature, which can inform the design of future studies and contribute to the advancement of the field. In addition, researchers with strong synthesis skills are better equipped to communicate their findings to a broader audience, including policymakers and practitioners, thereby increasing the societal impact of their work.

Acknowledgments

We take full responsibility for the content of this paper. We acknowledge the use of Grammarly (<https://www.grammarly.com/>) for assistance with English language editing. All suggestions were critically reviewed and revised to ensure the integrity of our own expressions.

Author contributions

Conception and design: TCT. *Acquisition, analysis, and interpretation of data:* TCT, NC. *Manuscript drafting and critical revision:* TCT, NC. *Approval of the final version of the manuscript:* NC. *Guarantor of accuracy and integrity of the work:* TCT, NC.

Funding

We did not receive any funding for this commentary.

Conflict of interest

We do not have any conflict of interest.

Ethical approval

Not applicable

Data availability statement

Not applicable

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