Evidence synthesis: How hard can it be?

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What is evidence synthesis and its purpose?

Evidence synthesis is a key component within the process of Evidence- Based Practice. "Evidence synthesis uses formal explicit rigorous methods to bring together the findings of studies already completed and to provide an account of the totality of what is known from that pre-existing research" (Gough et al. 2020, p. 1). It is the vital step before the overall research findings can be applied in individual and across healthcare practices, including policy making.

Why is evidence synthesis important and what are the challenges related to it?

As the findings arising from the evidence synthesis process are used to inform clinical and policy-decision making, it must conform to standards and be as robust as possible. Findings generated from biased and flawed research methods can lead to undesirable health outcomes and unnecessary costs to the patient/client and to the health system (Gough et al., 2020, Long et al., 2020).

Synthesising evidence is not an easy process, particularly for complex interventions (those which are multifaceted and interact at multiple levels and contexts) and for questions from a variety of perspectives and disciplines (such as allied health, psychology and education) (Gough et al. 2020, Higgins et al. 2019). Challenges in synthesising the evidence from these

disciplines or questions needing answers from these areas include limited evidence base reflecting the patient/client types (i.e., healthy vs unhealthy patients), varying contexts (i.e., high-income vs low-middle income country settings), health professionals administering the health intervention (i.e., different allied health disciplines vs other health professionals vs community health workers) and the cost of the treatment (i.e., public health coverage or out-of-pocket expenditure) (Flemming et al. 2021, Higgins et al. 2019).

Best practice evidence synthesis

With the movement towards Evidence-Based Practice, several organisations and professional groups worldwide, such as the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), the Cochrane Collaboration and the Campbell Collaboration, have exerted best efforts to provide guidance and resources to ensure the validity and robustness of evidence synthesis. The common message across these groups is ensuring the correct and transparent conduct and reporting of methods across ALL (not ANY) of the following steps: the development of the question, search for the best sources of evidence (databases, reports, etc.), assessment of the quality of the evidence sources and finally, synthesis of the evidence sources.

If the data to be synthesised are homogenous and possible to be pooled statistically, meta-analysis is the best approach to evidence synthesis. The Cochrane Collaboration provides comprehensive and detailed methods and additional tools to conduct meta-analysis. However, not all data can be pooled statistically. Narrative synthesis is the most common method if meta-analysis is not possible. However, narrative synthesis may be susceptible to bias due to the perspectives of the researchers or the other people, such as stakeholders, involved in the process (Popay et al. 2006). Therefore, to limit the potential bias, guidance and tools for narrative synthesis have been developed and made available to assist reviewers in the process. Popay et al. (2006) provide a set of guides and tools to conduct narrative synthesis in

a defensible and transparent manner and also related to the realist synthesis approach described by Pawson et al. (2004). Essentially, these methods focus on understanding how, why and for whom the intervention may work, conducting a preliminary synthesis based on a concept map, exploring relationships in the data and assessing the robustness of the synthesis. These processes could involve textual descriptions, data tabulation, vote counting and also content or thematic analysis. These processes are not linear and can occur at the same time.

Despite the availability of these guidance documents and tools in the last two decades, compliance with best practice methods and synthesis has not reached optimum levels (Uttley et al. 2023). Students, academics and researchers must ensure that they adhere to best practice evidence synthesis approaches and be transparent in their methods, to ensure the validity of findings and address important questions to guide practice at both individual and systems levels.

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