A DIY Project: When is a Structured Review Sufficient?

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The conceptual differences between a systematic and a structured review can be nuanced. The time and cost difference, however, is quite clear. How, then, can an investigator decide which to choose? A short Do-It-Yourself (DIY) guide with an example shows you how.

INTRODUCTION

One of the big cost differences between a systematic and a structured review is study attrition. To put this task in context, consider something we have all done: a student research paper. Finding the references (the study attrition) might have involved an afternoon or two of searching, with varying degrees of enthusiasm but always with too little time and money, until you had found the first free 20 or 30 plausible papers.

These sampling and selection methods, such as they are, lie between those done for professional-level reviews. To the right of the continuum are the reviews by experts. Acknowledged leaders, because of their insight, may speak to whatever handful of publications they personally like. No discernible study attrition methods are reported since the author's preference (or bias) is valued. To the left are systematic reviews. In contrast to expert reviews, systematic literature reviews are conducted in order to identify all of the individual estimates published and select them objectively and reproducibly. Indexing terms are kept broad, and even unlikely citations must be retrieved. Sensitivity is served at the expense of specificity. This study attrition strategy is justifiable if only the totality of the evidence will do, in order to aggregate a single effect size in a meta-analysis.

Structured reviews sit next to classic "full sensitivity" systematic reviews on the continuum. They are also systematic to the extent that they are conducted using scientific methods. However, in order to cut down the numbers of papers retrieved but then rejected, a structured literature review may be designed with a more targeted search and/or require key elements to be described in the abstract. Although a few true accepts will be lost, a structured review may be the more pragmatic design for those questions, budgets and timelines in which a full capture of the literature is not necessary or possible.

THE EXERCISE

In deciding which design is most appropriate for your research question, consideration needs to be given to just how much would be gained in a systematic review compared to a structured review?

For this example, we intentionally chose an obscure topic, eyelash growth, so that we could simulate a "complete" catch of citations indexed for an indication but with a small yield. We assumed that any plausible health outcome would be acceptable and that, as typical in most literature reviews, clinical and epidemiological studies of humans were desired. In conducting your own pilot study, you can simply use a sample of 100 abstracts from a search to predict yield.

Using PubMed, and limiting the search to humans and English language, we had 168 results. If the rules of a strict systematic review were applied, only unequivocally wrong articles could be rejected. Exclusion reasons would be those that can be applied without error to abstract content, and where no abstract exists, to the study title. Structured reviews limit selection further, perhaps by making an abstract mandatory or by requiring the details of indication and outcomes to be mentioned before a paper can be retrieved.

TYPES OF LITERATURE REVIEWS

	"Classic"	Structured	Student	Expert
	Commercial grade		Academic grade	
	Systematic		Non-systematic	
Sampling	Protocol-driven		Convenience-based	
Sensitivity	~100%			~1%
Bias				100%

figure 1

ELIGIBILITY CRITERIA

	Systematic Review	Structured Review
Exclusion Criteria	Wrong study type (case study, series, news) Not humans No "eyelash growth" possible	
		No abstract
Inclusion Criteria		Outcome in text: safety, efficacy, treatment, etc.
		"Eyelash growth" or similar terms in text

figure 2

THE RESULTS

Using the systematic review criteria above, 58 of the 168 abstracts identified were obvious rejects and 77 papers were eligible for retrieval for a 45.6% hit rate. As a DIY project, we retrieved only those papers that were publicly available to use as our next screening sample. Of the 32 papers found, more than half (56.2% or 18/32) answered the research question. If we applied the criteria of a structured review to the same set of abstracts, 45 articles would be judged worthwhile resulting in 42.9% less material to retrieve compared to the systematic review. Of the 21 papers found, 80.9% or 17/21 answered the research question. The structured method therefore proved sufficiently sensitive to find all but one of the accepted papers (17/18 or 94.4%). The remaining 5.6% of the final data were unique to the systematic review, but at a cost of 1 accept for every 11 papers retrieved (hit rate: 9%).

FINAL THOUGHTS

This exercise demonstrates that approximately 95% of final accepts found in a systematic review simulation were captured by a structured review method with 43% less material to screen. The sensitivity of a structured review relative to a systematic review will differ from topic to topic, so the above proportions cannot be assumed for every research question. Furthermore, there are study objectives in which only the rigor of a full sensitivity literature review will suffice and conversely, time and budget constraints that dictate a structured review. However, in those circumstances where sensitivity may be tempered somewhat with specificity, both should be considered. Using the methods above and an internet connection, investigators now can weigh for themselves the costs and gains to each approach.