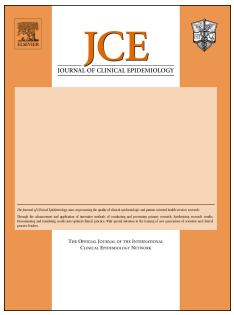

Methods proposed for monitoring the implementation of evidence-based research: a cross-sectional study

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Methods proposed for monitoring the implementation of evidence-based research: a cross-sectional study

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Abstract

Objectives: Evidence-based research (EBR) is the systematic and transparent use of prior research to inform a new study so that it answers questions that matter in a valid, efficient, and accessible manner. This study surveyed experts about existing (e.g. citation analysis) and new methods for monitoring EBR and collected ideas about implementing these methods.

Study design and setting: We conducted a cross-sectional study via an online survey between November 2022 and March 2023. Participants were experts from the fields of evidence synthesis and research methodology in health research. Open-ended questions were coded by recurring themes; descriptive statistics were used for quantitative questions.

Results: Twenty-eight expert participants suggested that citation analysis should be supplemented with content evaluation (not just what is cited, but also in which context), content expert involvement, and assessment of the quality of cited systematic reviews. They also suggested that citation analysis could be facilitated with automation tools. They emphasized that EBR monitoring should be conducted by ethics committees and funding bodies before the research starts. Challenges identified for EBR implementation monitoring were resource constraints and clarity on responsibility for EBR monitoring.

Conclusions: Ideas proposed in this study for monitoring the implementation of EBR can be used to refine methods and define responsibility but should be further explored in terms of feasibility and acceptability. Different methods may be needed to determine if the use of EBR is improving over time.

Keywords: evidence-based research; systematic reviews; evidence synthesis; monitoring; research waste; research value; research methodology

Highlights – What's new

Key findings

- Modifications to citation analysis were proposed, as well as ideas on how to facilitate citation analysis.
- Stakeholders that should be responsible for monitoring the implementation of the evidence-based research (EBR) approach were proposed, such as ethics committees, i.e. institutional review boards, and funding bodies.
- Challenges associated with monitoring the implementation of an EBR approach were identified.

What this adds to what is known?

- Citation analysis was the only known method for monitoring the EBR implementation up to now. The results of this study provide new ideas that should foster monitoring of EBR implementation in the future.

What is the implication and what should change now?

- Ideas proposed in the study should be tested in future studies, as well as the willingness of the identified stakeholders to take on the responsibility for EBR monitoring.

1. Introduction

Health sciences research must enhance its practices to minimize waste. Research waste arises when studies are inadequately designed, conducted, or reported. This diminishes both societal and scientific value [1, 2], diverting resources from impactful research. While scientific replication is essential for validating results, improving precision, and exposing misconduct [3], it is imperative to avoid unnecessary duplication [4]. Redundant studies can be avoided if researchers properly consider whether their planned study will provide a valuable contribution to medical science [5].

Evidence-based research (EBR) is the use of "*prior research in a systematic and transparent way to inform a new study so that it is answering questions that matter in a valid, efficient, and accessible manner*" [5]. In line with EBR principles, the rationale for conducting a new study should be based on results from prior studies, ideally through a systematic review (SR) or another appropriate type of evidence synthesis [6]. An EBR approach may reduce waste in research by ensuring that studies are only initiated when there is a documented need for them [7]. Failure to implement an EBR approach may be harmful to patients [8].

However, how best to monitor the implementation of EBR is unclear. By analyzing the protocols for new studies [9, 10] or reports of completed studies [11-14], one can verify whether those protocols or reports cited SRs to justify the need for the new study. This practice is called 'citation analysis', and a recent study described different methods for using this type of meta-research [15].

In this study, we surveyed experts in evidence synthesis and health research methodology to collect opinions and ideas about existing (e.g., citation analysis) and new methods for monitoring EBR and ideas about implementing these methods.

2. Methods

2.1. Ethics

The study protocol was approved by the Ethics Committee of the Catholic University of Croatia (approval number: 641-03/22-03/041; 498-15-06-22-003). Participants were provided written information detailing the study's purpose, the intention to publish results, and were informed that their participation constituted informed consent.

2.2. Study design and setting

A cross-sectional study was conducted via an online survey between November 2022 and March 2023.

2.3. Participants

Eligible participants were experts in evidence synthesis and health research methodology, defined as researchers with published research in the field.

We identified participants through convenience sampling of the personal contacts of the study's core author team who designed the protocol (LP, MMB, JZ, TM, SB, MY, MB, CL, WL, TPP, DP). We did not predefine the sample size but anticipated that 20 to 30 people would agree to participate. We sent potential participants an email (Supplementary file 1) with detailed information about the study (Supplementary file 2). Upon agreement to participate, we sent the survey (Supplementary file 3) and asked participants to return the completed survey via email. We invited participants who completed the survey to co-author this publication.

2.4. Survey

The core author team developed the survey, which was pilot tested in two rounds. The first test was conducted within the core author team. The second test was conducted externally with two researchers (KJJ, LM) who were later invited to be co-authors.

The first part of the survey consisted of two statements, one related to participants' input on citation analysis and another concerning the modified citation analysis, which included a question and an option for comments. The second part featured six questions about sufficient evidence that prior research was considered in a systematic and transparent way to inform the need for a new study and its design, new methods that could be used to monitor EBR implementation, material that should be monitored for EBR implementation (i.e. evaluated for the extent to which EBR practices have been applied), how should monitoring of EBR implementation be conducted, at what level should EBR implementation be monitored, and challenges associated with monitoring EBR implementation. The third part of the survey gathered participant data, as outlined in Supplementary file 3.

2.5. Analysis and expert review

We analyzed quantitative data using descriptive statistics and presented frequencies, percentages, medians and interquartile ranges (IQRs) with MedCalc software (MedCalc, Mariakerke, Belgium). Qualitative data were analyzed using a thematic analysis approach [16], where recurring themes were noted and counted. One author proposed the themes, other authors verified and refined the results.

After summarizing the results, a first draft of this manuscript was shared among all survey participants for revision, commenting, and elicitation of new ideas.

2.6. Raw data

Raw data are published on the Open Science Framework, except for the personal information on survey participants (https://osf.io/ma68d/).

3. Results

3.1. Characteristics of participants

Of 59 invited experts, 28 (47%) accepted to participate in the survey. Of the participants, 17 were men, 9 were women, and 2 did not report their sex. Median age was 48 years (IQR=15), and median experience in evidence synthesis or research methodology was 20 years (IQR=13). Participants were affiliated with institutions in Europe (N=14), North America (N=10), South America (N=3) and Australia (N=1).

3.2. Feedback regarding the citation analysis

3.2.1. Importance of the content and expertise

Participants stressed that relying solely on citation analysis for monitoring EBR is inadequate. They underscored the importance of assessing both content and context—going beyond identifying citations to scrutinizing what is being said about the cited articles. While automation of citation analysis was considered feasible to some extent, participants emphasized the essential role of individuals with content expertise in evaluating whether the cited article(s) genuinely reflected the use of EBR (quotes in Supplementary file 4).

3.2.2. Considering different types of evidence synthesis

The participants suggested that citation analysis should consider different types of evidence synthesis and the maturity of the field of the study being proposed (quotes in Supplementary file 4).

3.2.3. Challenges of citing systematic reviews and cherry-picking evidence

Multiple concerns were expressed related to the accuracy of citation analysis because a citation could reflect only a portion of the evidence and there may be many SRs on the same topic with heterogeneous results from the same body of evidence. While it was suggested that citation analysis could be a valuable approach to monitoring the use of EBR, it was highlighted that one disadvantage could be the tendency of authors to cherry-pick well-known papers on the topic. It was also observed that in some cases, an SR or other type of evidence synthesis is not needed to justify the conduct of a new study, particularly in emerging research areas, such as new epidemics (quotes in Supplementary file 4).

3.2.4. Citation analysis as a starting point

While recognizing the potential limitations of citation analysis because it can have various degrees of sophistication and can be more complex than expected, it was noted as a useful starting point (quotes in Supplementary file 4).

3.3. EBR approach when there is no published systematic review

When asked which other alternatives were acceptable in the absence of existing published SRs, most participants chose “Evidence of a systematic search of more than one electronic database with search terms and search dates” and “Citation of evidence synthesis (i.e., other than SRs), for example, a scoping review, a rapid review on the topic, an evidence map” (Table 1). It was deemed that sometimes a comprehensive mapping exercise is sufficient and an SR may not be needed.

It was also suggested that authors should report explicitly that a previous SR on the topic does not exist, and that the state of the literature is such that it is "ripe" for reviewing. This is particularly important when studying the effect of a new intervention or an emerging risk factor, when the research field is immature. For such cases, it was suggested that a report needs strong emphasis in the text that there is no pre-existing SR on the subject.

When there was a published SR that could be cited but is out of date, participants suggested supplementing the SR by searching for original studies that were published after the search date of the most recent SRs. Another suggestion was that researchers could refer to other information sources pointing to the research gaps (quotes in Supplementary file 4).

3.4. Sufficient "proof" that prior research was considered in a systematic and transparent way to inform the need for a new study and its design

Most participants indicated that a systematic search of more than one electronic database with search terms and search dates and/or cited SRs was sufficient "proof" that prior research was considered in a systematic and transparent way (Table 1).

Other suggestions included critically analyzing the quality of the current SRs and other types of evidence, and searching for overviews of reviews, preprints, and entries in trial registries. One expert indicated that the relevance of databases to the topic being examined would be more important than the number of databases searched (quotes in Supplementary file 4).

One expert indicated that it is enough to cite an SR or another type of evidence synthesis, and that the options offered in this question raise the bar too high. Conversely, another expert indicated that they could not think of a scenario that justifies why an SR or search is not necessary or feasible.

3.5. New suggestions for EBR monitoring

Participants provided several suggestions regarding how citation analysis could be refined or supplemented. These included the use of experts in the assessments, surveying a representative group of researchers or having paid experts conduct peer-review for new research studies instead of volunteers, and using artificial intelligence approaches and automation tools to find relevant SRs more efficiently (quotes in Supplementary file 4).

3.6. Material that should be monitored for EBR implementation

Regarding the materials that should be monitored for the extent of EBR implementation, most participants chose peer-reviewed manuscripts published in journals and study protocols, although many chose all options (Table 1). Six participants also provided specific comments concerning additional materials that should be considered for monitoring of EBR implementation. Two of these six participants suggested using preprints, one proposed SRs, and one suggested quality improvement projects and clinical practice guidelines (quotes in Supplementary file 4).

One expert, however, considered excluding grant proposals due to difficulty in obtaining them. Another provided comments concerning protocols and grant proposals. Another suggestion was excluding grant proposals in addition to theses and dissertations. Two participants suggested including ethical or institutional review board proposals (quotes in Supplementary file 4).

3.7. How should monitoring of EBR implementation be conducted, by whom and when

When asked about the preferred method for monitoring EBR implementation, participants overwhelmingly favored automation, particularly machine learning (Table 1). One participant proposed the use of crowdsourcing. Participants recognized the challenge of determining who should be responsible for monitoring the EBR approach (e.g., granting agencies, the authors, administrative

bodies, peer-reviewers) and when monitoring should occur. For example, the participants suggested that it might be too late in the process to expect peer reviewers to be responsible (quotes in Table 2).

Participants suggested that EBR implementation could be facilitated by incorporating EBR practices into the reporting guidelines for primary studies and suggesting a common phrase for the journal statement. Use of reporting standards and common text could then be used for monitoring (quotes in Table 2).

3.8. At what level should the implementation of EBR be monitored

Participants suggested that peer reviewers, editors, publishers, funding bodies, and ethics committees should conduct EBR monitoring (quotes in Supplementary file 4). Most participants indicated that the responsibility for EBR implementation monitoring should be taken by funders and ethics committees (e.g. institutional review boards) (Table 1).

Participants also suggested that preprints should be analyzed in addition to published studies. Some indicated that this would depend on the purpose of monitoring and whether one is checking individual studies or multiple studies. While recognizing that ethics committees would be ideal for EBR implementation monitoring, a reservation was expressed concerning whether it is realistic in the short term. Regarding monitoring by the administrators running research registries, it was indicated that such repositories do not have the resources to do this (quotes in Supplementary file 4).

3.9. Challenges associated with monitoring the EBR implementation

Participants' responses highlighted key challenges in implementing and monitoring EBR, covering themes such as resource constraints, methods for conducting citation analysis, differences between research fields, responsibility for EBR implementation monitoring, and facilitation of monitoring.

The predominant theme was resource constraints, encompassing limitations in time, funds, patience, attention to detail, incentives for monitoring EBR, and overall research capacity (quotes in Table 2). Participants stressed the importance of scrutinizing the rationale behind using an SR to justify a new study. Furthermore, they emphasized the significance of assessing the quality of cited SRs, suggesting that citation analysis should be complemented by critical appraisal of reporting and methodological quality (quotes in Table 2). The issue of misquoting and inaccurate citing was also acknowledged as a concern with potential consequences for perpetuating errors or misuse.

Participants mentioned differences between research fields as another challenge, with respect to the maturity of the field, availability of evidence and evidence synthesis, and their discoverability, which would impact the EBR approach to be monitored (quotes in Table 2).

Other challenges identified included insufficient knowledge and acceptance of the EBR approach among research end-users, insufficient knowledge about importance of the EBR approach, lack of training in evidence synthesis among end-users, as well as problems with the identification of relevant existing research or research gaps due to reporting biases, language restrictions, and different publication formats that can impede the identification of relevant existing research, and poor reporting.

4. Discussion

Our study addressed challenges and generated novel suggestions for both existing (e.g. citation analysis) and new methods to monitor EBR. It also gathered insights on the implementation of these methods, emphasizing the initiation of EBR practices during protocol development or study registration. Suggestions were provided for how to implement the EBR approach if no recent or relevant SR is available, when and who should conduct EBR monitoring, realistic strategies for EBR implementation, and challenges associated with it.

New suggestions regarding refining citation analysis were to include expert assessment to appraise the need for the new study, to enhance citation analysis by appraising the quality of cited SRs, and to facilitate efficient citation analysis by using artificial intelligence and automation tools.

However, there are challenges. Conducting a survey among a representative group of researchers to assess the need for a new study may not be realistic. Such a process would likely entail voluntary labor, like the current system of peer review, and it is unlikely that the “representative researchers” would have the willingness, time, and capacities to serve in such an effort. It is likely that many researchers would ignore such requests for input, just as many researchers ignore requests for data sharing [17] or peer review. Furthermore, adhering to the deadlines could be challenging even if researchers accept such tasks.

Additionally, a suggestion that new research should be peer-reviewed critically by paid experts in the field rather than by volunteers touches upon various challenges the research ecosystem is already experiencing. A suggestion that peer review should be remunerated is an issue with ramifications well beyond EBR. This would depend on the willingness of (commercial) publishers to pay (or compensate in some form) peer reviewers for their time and effort. Other incentives could include peer reviewer awards, letters to the institutions for good peer review and recognition of the peer review efforts by researchers’ institutions.

Participants suggested that other approaches could be used when an SR is not available or considered outdated, such as supplementing the search for original studies after the publication of an SR and clearly reporting that a relevant SR is not available. However, it was noted that it may be impossible to conclude that a relevant SR does not exist if the literature search for SRs was not done comprehensively.

Some tools may help researchers in identifying relevant SRs, such as Epistemonikos [18], and new artificial intelligence (AI)-powered tools, such as Elicit [19]. Considering the accelerated development, AI-powered tools for automated assessment of the research landscape could quickly become a useful resource to faster consider prior research during the conception and planning of new research.

Multiple participants highlighted that the EBR monitoring should take place before the initiation of the study. Gatekeepers in the very early phases (conception and question formulation) of a research project were defined as ethics committees (e.g., institutional review boards) and funding bodies. However, these two gatekeepers will not see and appraise all research. Many studies do not receive external funding, so there will be no opportunity for a funding body to evaluate them. Furthermore, many types of research are never sent to an ethics committee, either because they do not include human participants or animals (such as SRs or meta-research) or because some institutions provide waivers for some types of studies (such as cross-sectional studies on healthy individuals). Also, it is possible that ethics committees may not be concerned with EBR as they do not see it as their job to worry about this. It is unclear who would then conduct EBR monitoring for studies that are not funded externally and are not subject to an ethics committee review.

In 2023, Lakens described challenges the central ethical review board faced when evaluating study protocols with methodological flaws [18]. At the departmental level, they instituted a local review board that also evaluates proposed methods [18]. This suggestion sounds optimal for studies coming from academia – if the institutions could implement a methodological review board that would review every study protocol before it can proceed to an ethics committee or a funding body, such a

board could also oversee monitoring the EBR approach. However, there are challenges with implementing this approach. Participating in such a board could become a major hurdle for already-burdened academics. It is unclear how many institutions would have the capacity to establish such a methodological review board. Likewise, it is unclear whether it is reasonable to expect that ethics committees will conduct a methodological review during the ethics review because they are usually overburdened.

Proposals from this study regarding EBR implementation should be further examined in-depth with respect to the implications for researchers. It should be further explored whether the relevant stakeholders in the research ecosystem find it a reasonable expectation that so much effort is invested to justify a new study and whether there should be varying levels of emphasis on EBR depending on the nature of the research question, such as in terms of resource use and risk to participants.

Multiple actions could be implemented relatively quickly and without major resources to facilitate the awareness and implementation of the EBR concept. The assessment of studies conducted by funding bodies, ethics committees, editors, and peer reviewers could include dedicated questions/sections regarding the use of an EBR approach. Assessors would be asked to answer whether the need for a new study was adequately supported by either published evidence synthesis or *de novo* evidence synthesis/search conducted for the purpose of the proposed study. Journals could require a mandatory declaration about the implementation of EBR principles. This would be in line with the current requirement of many journals for authors to provide statements regarding author contributions, data availability, study funding, conflict of interest, and other related aspects. The use of the registered reports could be another potential solution.

Reporting guidelines, like Consolidated Standards of Reporting Trials (CONSORT), could explicitly request the incorporation of EBR principles. For instance, the CONSORT's checklist item #2a, asking for the "scientific background and explanation of rationale" might benefit from greater specificity

regarding EBR expectations [19]. The CONSORT 2010 Explanation and Elaboration already emphasizes the justification of a new trial in the introduction, suggesting a reference to an SR or acknowledgment of its absence. [20]. However, authors may adhere to the checklist without delving into accompanying detailed documents. Slight adjustments to such checklist items could precisely guide authors in demonstrating the EBR approach. This might involve indicating whether the need for a new study aligns with published evidence synthesis or a *de novo* search, or explaining why such synthesis/search was not applicable or feasible.

The main challenge for EBR implementation monitoring, according to participants, was resource constraints. Some of the challenges mentioned by the experts are associated with barriers and facilitators for EBR. In 2021, McLennan et al. published a study of practices and attitudes of Swiss stakeholders and international funders about conducting systematic evidence assessments to inform academic clinical trials [21]. Their qualitative study included 48 participants from various stakeholder groups, including primary investigators, funders and sponsors, clinical trial support organizations, and ethics committee members. All participants reported time and resources as barriers to conducting SRs but also indicated that the Swiss research ecosystem was not supportive of a systematic approach, unlike some other countries [21]. McLennan et al. also highlighted the important role of funding bodies and ethics committees. Furthermore, they highlighted the importance of universities in training students and researchers in evidence-based methods to raise awareness about the EBR approach [21].

For example, universities could expect that PhD theses should follow EBR principles and include an original SR if there is no up-to-date SR on the topic. This would be helpful for methods training and overview of the field, but also protects against duplication of effort. However, it is also worth noting that a study conducted in 2016 among directors of European PhD programs indicated that an SR was an acceptable part of a PhD thesis in only 47% of the surveyed PhD programs [22]. This could be because sometimes evidence synthesis is not considered original research [23], despite the fact that

SRs are widely recognized as original research by journal editors [24, 25]. A positive example in this respect, if implemented appropriately, is the University of Southern Denmark, which has a key goal that 25% of PhD students will undertake an SR as part of their PhD [26].

A strength of this research is that it followed an EBR approach in that it was initiated and designed based on a systematic search of topics related to EBR, including citation analysis [15]. Thus, the need for this study was identified as a result of empirical work. A team of expert methodologists in evidence synthesis designed and ran the survey, and the study provided useful conclusions. A limitation of this study is that we recruited a relatively small number of survey respondents and that we did not recruit participants outside of Europe, North America, South America and Australia. This may limit the generalizability as their opinions might not be representative of all experts in this field. Another limitation is the use of a survey, with its methodological biases. Furthermore, the survey did not ask respondents to consider how their responses might differ based on the purpose of monitoring EBR use. For instance, one could monitor individual investigators' use of EBR when proposing a new study or publishing results or there could be a broader monitoring of the implementation of EBR, such as in a field over time. Future work could delineate how to assess the use of the EBR approach, at what point and by whom and how this might differ for each purpose. This study is an early attempt to raise the profile of the issue and to initiate further work.

In conclusion, this study introduces innovative ideas to streamline citation analysis for the implementation of EBR monitoring and offers actionable suggestions. However, additional efforts are required to assess the feasibility of these ideas, refine methods, and establish responsibility for EBR implementation monitoring. It is recognized that diverse methods may be necessary to determine the improvement of EBR utilization over time.

Declarations

Ethics approval and consent to participate

Approval of an ethics committee: Ethics Committee of the Catholic University of Croatia approved the research protocol (approval number: 641-03/22-03/041; 498-15-06-22-003).

Informed consent: All participants were informed in writing about the purpose of the study and our intention to publish the report with the results of the study, and that their response to the questions was taken as informed consent to participate in the study.

Consent to publish

Not applicable

Availability of data and materials

Raw data collected within the study are published on Open Science Framework (link: https://osf.io/ma68d/), with the exception of the information about characteristics of the survey participants. Even though we will not collect any personal data in the raw data file, information about the participants' characteristics such as age, sex and years of experience could be considered as indirect identifiers, and thus we aim to publish those only in an aggregate form.

Competing interests

The authors have no competing interests to declare.

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Authors' contributions

All the listed authors qualify for the ICMJE (International Committee of Medical Journal Editors) authorship criteria. This was participatory research. At the time of the invitation, we wrote to the invited experts that they could be co-authors of the manuscript if they would participate in all the rounds of the study (initial ideas and further rounds of commenting on the proposed ideas). Besides providing responses to the initial set of questions, the preparation of this manuscript included multiple rounds of revisions of the text among the co-authors, where the co-authors added more ideas about the studied topic. The co-authors were asked to notify the corresponding author via email that they agreed with the final version to be submitted.

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Table 1. Participants' responses regarding methods for verifying the use of an evidence-based research approach* (N=28)

Questions and responses	N (%)
In case there is no current published systematic review, which other methods are acceptable as an "evidence-based approach"?	
Evidence of a systematic search of more than one electronic database with search terms and search dates	23 (82)
Citation of evidence synthesis (i.e. other than systematic reviews), for example, a scoping review, a rapid review on the topic, an evidence map	22 (79)
An explicit statement of why a systematic review/search is not necessary/feasible in a specific case	12 (43)
What could be sufficient "proof" that prior research was considered in a systematic and transparent way to inform the need for a new study and its design?	
Mention having done a systematic search of more than one electronic database with search terms and search dates that was conducted and/or cited systematic reviews	21 (75)
Mention having done a systematic search of at least one electronic database with search terms that was conducted and/or cited systematic reviews	17 (61)
Only citations to existing and current systematic reviews	13 (46)
Citations to other types of evidence synthesis, not only systematic reviews	11 (39)
At least report a full search strategy for more than one database with search dates and/or cited systematic reviews	15 (36)
An explicit statement about why a systematic review/search is not necessary/feasible in a specific case	7 (25)
Other	5 (18)
What material should be subject to monitoring of EBR implementation?	
Peer-reviewed manuscripts published in journals	25 (89)
Study protocols (reporting any type of studies in an online registry)	23 (82)
Grant proposals	19 (68)
Theses/dissertations	18 (64)
Other	6 (21)
How should monitoring of EBR implementation be conducted?	
Automated processes, including machine learning (e.g., Abstrackr)	16 (57)
Manually by researchers	13 (46)
Other	6 (21)
At what level should the implementation of EBR be monitored?	
Grant committees	24 (86)
Ethics committees (i.e., institutional review boards)	20 (71)
Journal editors	16 (57)
Article peer reviewers	14 (50)
Administrators running study registries or study protocol repositories	9 (32)

*Multiple answers were allowed. Abbreviations: N = number of responses, EBR = Evidence-based Research

Table 2. Participants' quotes regarding challenges associated with monitoring the evidence-based research (EBR) implementation

Theme	Quotes
Resource constraints	*"I think there's a key challenge in relation to capacity. Researchers are being asked to do more than ever with fewer resources".* *"It's yet another thing that someone needs to do and no one has the time."*
Methods for conducting citation analysis	*"For example, a systematic review might be cited in the report, but the explanation given in the text for why it supports the study might not be appropriate."* *"I don't see anything about critical appraisal. If an author cited systematic reviews, but these reviews had a lot of weaknesses and didn't really identify most of the available evidence, it would be hard to say that EBR was implemented.*
Differences between research fields	*"It is important not to have the same measurement rule for different types of research questions and research fields."* *"However, because ToE ["totality of evidence"] is content-specific, no specific citation tool can suffice."* *"The only question I have, in return, is whether the citation analysis includes a wide variety of potential sources that can be used to check if existing literature has been studied and identified, and not just RCTs and other types of reviews. This also depends on the maturity of the field if such work is available. And if not, if the "next-best-thing" (in terms of evidence) has been identified and cited."*
Who should monitor EBR approach and when	*"All of the entities listed in question 5 could, in theory, be involved. In real life though, they are not trained/prepared and/or do not have the time/resources to do this."* *"The study authors should make the most effort to monitor EBR. However, I believe that peer reviewers should take partial responsibility for the process. On the other hand, I recognize the peer reviewers' lack of time."* *"I think it needs to be monitored as early as possible, i.e. before the study gets funded or started. Otherwise the risk of research waste is high."* *"If we think that the monitoring should be done by administrators or by committees before the study is done, then these persons should have knowledge of evidence synthesis and its importance."*

Facilitating implementation and monitoring	*"Bad reporting; suggest to add this to reporting guidelines of primary studies"* *"If we want to enforce EBR, we may need a uniform protocol or text for a statement for journals. I am not sure if such items exist."*

Highlights – What's new

Key findings

- Modifications to citation analysis were proposed, as well as ideas on how to facilitate citation analysis.
- Stakeholders that should be responsible for monitoring the implementation of the evidence-based research (EBR) approach were proposed, such as ethics committees, i.e. institutional review boards, and funding bodies.
- Challenges associated with monitoring the implementation of an EBR approach were identified.

What this adds to what is known?

- Citation analysis was the only known method for monitoring the EBR implementation up to now. The results of this study provide new ideas that should foster monitoring of EBR implementation in the future.

What is the implication and what should change now?

- Ideas proposed in the study should be tested in future studies, as well as the willingness of the identified stakeholders to take on the responsibility for EBR monitoring.

The authors have no competing interests to declare.