

ORIGINAL ARTICLE

# Searching for qualitative health research required several databases and alternative search strategies: a study of coverage in bibliographic databases

Tove Faber Frandsen<sup>a,\*</sup>, Frederik Alkier Gildberg<sup>b,c</sup>, Ellen Boldrup Tingleff<sup>b,c,d,e</sup>

<sup>a</sup>Department of Design and Communication, Kolding, University of Southern Denmark

<sup>b</sup>Department of Psychiatry Middelfart, Research & Development Unit, Middelfart, Region of Southern Denmark

<sup>c</sup>Department of Regional Health Research, Center for Psychiatric Nursing and Health Research, Odense, University of Southern Denmark

<sup>d</sup>Department of Clinical Research, OPEN, Odense Patient data Explorative Network, Odense University Hospital, Odense, University of Southern Denmark

<sup>e</sup>The Department of Nursing, Vejle and Health Sciences Research Center, Odense, UCL University College

Accepted 19 June 2019; Published online 25 June 2019

## Abstract

**Objective:** Retrieving the qualitative literature can be challenging, but the number and specific choice of databases are key factors. The aim of the present study is to provide guidance for the choice of databases for retrieving qualitative health research.

**Study Design and Setting:** Seventy-one qualitative systematic reviews, from the Cochrane Database of Systematic Reviews and JBI database of Systematic Reviews and Implementation Reports, including 927 qualitative studies, were used to analyze the coverage of the qualitative literature in nine bibliographic databases.

**Results:** The results show that 94.4% of the qualitative studies are indexed in at least one database, with a lower coverage for publication types other than journal articles. Maximum recall with two databases is 89.1%, with three databases recall increases to 92% and maximum recall with four databases is 93.1%. The remaining 6.9% of the publications consists of 1.3% scattered across five databases and 5.6% that are not indexed in any of the nine databases used in this study.

**Conclusion:** Retrieval in one or a few—although well selected—databases does not provide all the relevant qualitative studies. The remaining studies needs to be located using several other databases and alternative search strategies. © 2019 Elsevier Inc. All rights reserved.

**Keywords:** Qualitative health research; Database coverage; Qualitative systematic reviews; Bibliographic databases; Retrieval; Cochrane Database of Systematic Reviews; JBI database of Systematic Reviews and Implementation Reports

## 1. Introduction

Although originally developed to answer questions regarding effectiveness of health interventions, there is now a wide variety of review approaches to choose between [1]. Specifically, with regard to qualitative synthesis approaches, a wide range of approaches exist, including metaethnography, meta-aggregation, realist syntheses, thematic analyses, qualitative content analyses, and in some cases, narrative

synthesis and scoping reviews may also lend themselves to synthesis of qualitative findings [2]. Overall, a qualitative systematic review focuses on summarizing, analyzing, and/or interpreting to provide answers or gain a deeper understanding of the what, how, or why of a phenomenon [3], it but can also serve other purposes [2], for example, qualitative systematic reviews are appropriate for exploring barriers and facilitators to health care or user views. They can complement other research designs [2] and inform policy and practice [3]. Because of the growing volume of qualitative studies within health care, there is an increasing need for—and interest in—methods to systematically review and integrate/synthesize findings and theoretical insights from original qualitative studies. Systematic qualitative reviews offer the opportunity to increase the transferability of qualitative findings and strengthen their credibility because they become more convincing if found across a number of studies [3].

**Funding:** There has been no significant financial support for this work that could have influenced its outcome.

**Conflict of interest:** The authors wish to confirm that there are no known conflicts of interest associated with this publication.

\* Corresponding author. Department of Design and Communication, University of Southern Denmark, Universitetsparken 1, 6000 Kolding, Denmark. Tel.: +45 65501351

E-mail address: [t.faber@sdu.dk](mailto:t.faber@sdu.dk) (T.F. Frandsen).

**What is new?**

- A total of 94.4% of the included studies in qualitative reviews are indexed in at least one of nine databases. Coverage is higher for journal articles.
- Using four databases it is possible to retrieve 93.1% of the publications.
- Retrieval in one or a few databases does not provide all the relevant qualitative literature and the remaining studies needs to be located using several other databases and alternative search strategies.

Regardless of type, systematic reviews require rigorous methods and use an explicit and predetermined methodology, involving the formulation of a specific empirical research question and a comprehensive, carefully documented search strategy [3,4]. However, the qualitative systematic review can be challenging, particularly with regard to the literature search process. There are several challenges when searching for qualitative studies [5]. Absence of clear concepts or descriptions related to qualitative methods as well as the late introduction of indexing terms for qualitative literature are some of these challenges. This makes it difficult and time consuming to identify relevant studies [6]. Moreover, there is a lack of expertise in locating qualitative research because the existing methods have largely been developed for quantitative studies. Only a limited number of studies have investigated methods specifically for locating qualitative studies [6], and although several different approaches are suggested in the literature, few have been investigated empirically [7].

Specifically regarding the choice of databases, existing literature suggests that multiple databases are needed to locate the relevant research [4,8–16], considering the scattered distribution of the research across a number of different disciplines—and thus journals [6]. Although the number of databases searched in systematic reviews has increased over time [17,18], qualitative systematic reviews are often based on literature searches in a few databases although the retrieval of relevant studies is considerably diminished if only a few databases are included [19–21]. Furthermore, CINAHL seems to yield a high number of relevant studies, including many unique studies not available in other databases [22]. Thus, the number of databases and the choice of databases are important to retrieve relevant studies to include in a qualitative systematic review. However, regarding the choice of databases, the existing literature only provides advice or recommendations [5,23]. Studies that empirically have tested database coverage of qualitative health research are either limited to a single case study, covering one or a few topics [24–31], or to only one database [22]. Thus, “there is an

ongoing need for database comparison case studies across a wider variety of subtopics, thereby building up a body of evidence on retrieval for qualitative research” (5, p 9).

In light of the above, the aim of the present study is to provide guidance for the choice of databases for retrieving qualitative health research across a wide variety of topics. More specifically, this study addresses the coverage of qualitative health research in a wide range of bibliographic databases and analyzes the total number of both indexed and unique records in each database.

**2. Methods**

The present study analyzes the coverage of the qualitative literature in a selection of bibliographic databases using the included qualitative studies from qualitative systematic reviews as data material.

*2.1. Systematic review selection*

Cochrane Database of Systematic Reviews (Cochrane) and JBI database of Systematic Reviews and Implementation Reports (JBI) were used to identify high quality qualitative reviews within the area of health research. This pool of studies was selected because of the two organisations’ development of tools and guidelines to conduct qualitative systematic reviews and because they are recognized as producers of systematic reviews undergoing rigorous scrutiny [32–35].

All JBI reviews were extracted for screening. However, as Cochrane includes very few qualitative reviews, they were located using the three-word simple filter: qualitative, findings, and interviews [29].

Reviews from 2013 to 2017 were included to ensure a contemporary knowledge base and to include reviews with similar methodological standards. Older reviews have different characteristics, because the methodological standards of reviews have increased, for example, most journals now require the use of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist and flow diagram [36]. All potentially eligible reviews within the stated timeframe were imported into Covidence [37], without consideration to particular areas of qualitative health research literature. In line with the inclusion and exclusion criteria of this study, as stated in Table 1, the inclusion of qualitative studies in these reviews was determined by the use of quality assessment tools developed for qualitative studies. JBI uses JBI Critical Appraisal Checklist for Qualitative Research [38]. Cochrane reviews apply a wide variety of tools [39] although the Critical Appraisal Skills Programme tool for qualitative studies is the one most commonly used [39]. Two authors (T.F.F. and E.B.T.) screened titles and abstracts independently, followed by a full-text reading. Disagreements between the

**Table 1.** Inclusion and exclusion criteria of the present study

Inclusion criteria	Exclusion criteria
All reviews in JBI and Cochrane that include qualitative studies (e.g., qualitative evidence synthesis, mixed methods systematic review)	Reviews not including any qualitative studies (e.g., mixed methods reviews only including quantitative studies)
All studies that use any tool for quality assessment of qualitative studies	

authors were resolved by consensus discussions throughout the process.

### 2.2. Data extraction (selection of studies from the included qualitative systematic reviews)

Only studies that used qualitative methods are included in the analysis. The selection is based on the quality assessment performed by the authors of the specific review: If the authors of the review assessed the quality of the study, using a tool specifically developed for qualitative studies, the study was considered qualitative.

### 2.3. Bibliographic database selection

Little guidance is available on which databases to search and how to prioritize. Consequently, the databases searched in this study were selected based on our expectation that they are index qualitative studies. Medline and thus PubMed are consistently reported to be the most frequently used databases [5]. As some of the included studies are theses and dissertations, a database indexing these document types might be relevant. In addition, a wide range of databases include qualitative health research across various topics [5], and consequently, the following databases ( $n = 9$ ) were searched: PubMed, CINAHL, Scopus, ERIC, Embase, Web of Science, PsycINFO, ProQuest Dissertations and Theses Global, and Sociological Abstracts.

### 2.4. Analysis

For each included study, the following information was recorded:

- ID of review (to analyze differences across reviews)
- Cochrane or JBI review
- Publication type (journal article, thesis, book)
- Indexing in the selected databases

- Unique indexing in the databases (i.e., not available in other databases)
- Year of publication

## 3. Results

Seventy-one reviews (65 from JBI and 6 from Cochrane) with 927 qualitative studies (an average of 13.1 studies per review) were included. See Appendix 1 for an overview of included reviews and the number of qualitative studies included in these reviews. The included reviews address a wide range of topics within health research.

First of all, low database coverage is not caused by over-representation of a few reviews as all reviews have at least 50% included publications that are indexed in at least one database.

Furthermore, there is little overall difference in coverage between the included publications in Cochrane and JBI reviews in the nine databases and coverage is 95 and 93%, respectively.

As shown in Table 2, most of the 927 publications are journal articles (91.9%), followed by master's theses and PhD theses (6.6%). Publications that could not be determined in regard to publication types failed to be identified through database searches in bibliographic databases and by using general search engines.

Most of the 927 publications are indexed in at least one database (94.4%). Virtually, all the journal articles and three-quarters of the theses were indexed in at least one database. Only one of the remaining 14 studies (reports, books, conference, or unknown) was indexed. Consequently, not surprisingly, these results indicate that publication type is tied to indexing. If a publication is not a journal article, the chance of being indexed in one of the included databases is reduced greatly.

Together, the nine selected databases indexed 875 of the 927 included studies (ranging from 29 to 776 as can be seen in Table 3). Scopus indexes the most (84%), followed by PubMed (72%) and Embase (72%). However, some of the publications are indexed in several databases. Some publications are indexed in as many as eight of the nine databases, and therefore, unique hits should be taken into account. The databases all produce unique results—which are publications only available in that database (ranging from 1 to 24). ProQuest Dissertations and Theses Global has the highest share of unique records (29% of the unique hits), which is due to the indexing of dissertations and theses that are not extensively covered in other databases.

**Table 2.** Publication types of the included studies

	Journal article	Thesis	Unknown	Report	Book	Conference
Number of publications	852	61	6	5	2	1
Share of included studies ( $n = 927$ )	91.9%	6.6%	0.6%	0.5%	0.2%	0.1%
Indexed in at least 1 database	97.2%	75.4%	0%	0%	50%	0%

**Table 3.** Retrieved records and unique hits

Database	Number of retrieved records	Share of records ( <i>n</i> = 927)	Number of unique records	Share of the unique records in data set ( <i>n</i> = 82)
PubMed	671	72.3%	8	9.8%
CINAHL	541	58.4%	19	23.2%
Scopus	775	83.6%	21	25.6%
ERIC	29	3.1%	1	1.2%
Embase	665	71.7%	2	2.4%
Web of Science	553	59.6%	1	1.2%
PsycINFO	396	42.7%	3	3.7%
Sociological Abstracts	95	10.2%	3	3.7%
ProQuest Dissertations and Theses Global	51	5.5%	24	29.3%
Not indexed in any of the above	0	5.6%	52	N/A

ProQuest Dissertations and Theses Global is followed by Scopus (26%) and CINAHL (23%), whereas PubMed only retrieves 10% of the unique records and the remaining databases even fewer. Although some databases may retrieve a high number of retrieved records, the analysis shows that some of these (e.g., Embase or Web of Science) produce few unique records.

Based on information on unique hits, an analysis of the combinations of databases can be made. Table 4 is an overview of different combinations of the databases and the retrieved records.

It should be noted that, by using the nine databases, the maximum number of publications are retrieved; however, as 5.6% of the included studies are not indexed in any of the nine databases, a total of 94.4% of the publications is retrieved. Consequently, adding the remaining five databases to the four increases the retrieval from 93.1% to 94.4%, whereas the rest needs to be found using alternative search strategies or databases beyond the nine databases included in this study. The results on indexed publications are available in the last row.

A combination of PubMed and CINAHL (two commonly recommended databases for qualitative reviews) retrieves 82% of the publications. Scopus and CINAHL as well as Scopus and ProQuest Dissertations and Theses Global retrieve 89% and 89%, respectively. Consequently, only using two databases to search for qualitative studies, we are only able to retrieve less than 90% of the relevant

studies. Next step is thus to combine three databases. A combination of three databases should leave PubMed out and focus on Scopus, CINAHL, and ProQuest Dissertations and Theses Global. These three databases provide us with 92% of the publications. Adding PubMed increases the retrieval to 93% of the publications. Maximum recall with four databases is thus 93%.

#### 4. Discussion

The analysis shows that four databases provide 93.1% of the publications and the remaining few publications are scattered across several databases. The analyses also show that 5.6% are not indexed in any of the nine databases. These results are consistent with the recommendation that several databases should be searched [5,6,16] when conducting systematic reviews. The suggestion brought forward by, for example, Vassar and Yerokhin [8] that retrieval is diminished considerably if only a few databases are searched is supported according to the findings in this present study. Retrieval in one or a few—although well selected—databases does not provide all the relevant studies. Using three to four databases does provide us with about 90% of the relevant studies. This supports results from studies within other areas of health research [16,40].

Furthermore, our results show that three databases in particular, that is, ProQuest Dissertations and Theses Global, CINAHL, and Scopus contribute with a large

**Table 4.** Retrieved records and combinations of databases

Retrieved records	P + C	S + C	S + Pro	P + C + Pro	S + C + Pro	S + C + P + Pro
Number of retrieved records	763	827	825	790	854	864
Share of publications in % ( <i>n</i> = 927)	82.2%	89.1%	88.9%	85.1%	92.0%	93.1%
Share of indexed publications in % ( <i>n</i> = 876)	87.1%	94.4%	94.2%	90.2%	97.5%	98.6%

Abbreviations: P, PubMed; C, CINAHL; S, Scopus; Pro, ProQuest Dissertations and Theses Global.

number of unique records. CINAHL is mentioned in the existing literature as being particularly relevant for qualitative health research [22,41] and our results confirm that. Scopus is a very large database that even contains several other databases, for example, Medline and Embase. Considering the size of the database, it may not come as a surprise that the database retrieves many of the included studies. However, it is probably more surprising that ProQuest Dissertations and Theses Global is among the three databases with the most unique records, and this result is closely connected to the great use of dissertations and theses in the selected reviews.

The results show that 5.6% of the included publications are not indexed in one of the nine databases used in this study. Consequently, to retrieve these other search strategies may prove to be valuable. Handsearching can in some cases lead to the identification of additional relevant studies, whereas in other cases, the time-consuming effort is not rewarded with additional relevant studies [42,43]. In this study, we find a low coverage of gray literature in the databases. Searching specifically for gray literature may also be a valuable supplement to the traditional database searches, but again, it varies [44].

The following limitations should be considered in regard to this study.

First of all, the results are limited to finding what is included in the selected reviews. A low number of database searches may lead to an improvement of retrieval in this study, whereas thorough literature searches using many alternative sources and strategies may lead to a reduction in our retrieval. Hence, there is a need for reviews that can be considered to be of a gold standard with a comprehensive and transparent description of the search strategy in the review. In this study, only reviews from JBI and Cochrane were included. An alternative approach would be to search for qualitative reviews in a wide selection of databases and assess their quality.

Second, it was determined whether a publication was indexed in nine bibliographic databases. A publication may be indexed and yet very difficult to retrieve because of indexing problems, such as tools for incremental query optimization or history function. Google Scholar is an example of a database with extensive coverage but severe limitations of the search interface [45]. The included databases vary in terms of journals covered, search facilities and restrictions, as well as update frequency [46]. Consequently, being indexed is not the same as being retrievable. However, in this study, the two concepts were separated, and this study focused on coverage.

Third, nine databases that are often recommended for locating qualitative health research were chosen. However, adding more databases could have resulted in fewer publications not being indexed, although the incremental gain of adding more databases would be small. For this study, databases often used were chosen, and the aim was not to provide a full examination in every possible database but

rather to identify the databases that index qualitative health research for systematic reviews across a wide variety of topics, to assist literature researchers to prioritize them.

Finally, only reviews that used an evaluation tool for qualitative research were included. Although the justification of critical appraisal in qualitative health reviews has been debated by qualitative researchers in recent years [3], this study was based on qualitative systematic reviews with acknowledged high methodological standards, that is, including critical appraisal [5,36]. Whether the exclusion of scoping reviews, traditional reviews, and so forth, not using critical appraisal of the included studies, has had a significant impact on the results of this study is not possible to answer.

## 5. Conclusion

The results of this study imply that, a few well-selected databases retrieve a relatively high percentage of qualitative health research; however, a full and thorough search requires more databases and alternative search strategies. If only two databases are to be selected, it can be difficult to single out the two most relevant because all combinations retrieve less than satisfactory. However, regarding the choice of three databases, Scopus, CINAHL, and ProQuest Dissertations and Theses Global provide the greatest retrieval, that is, 92%. Adding PubMed as the fourth increases the retrieval to 93.1% of the publications. The benefit of including of ProQuest Dissertations and Theses Global is to identify unique studies over and above general databases. The remaining 6.9% of the publications in this study consists of 1.3% scattered across five databases and 5.6% that are not indexed in any of the nine databases used in this study. The identification of the qualitative health research requires the use of multiple databases and alternative search techniques.

## Acknowledgments

The authors are grateful to Astrid Koch Vestergaard for assistance with data collection.

## Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jclinepi.2019.06.013>.

## References

- [1] Munn Z, Stern C, Aromataris E, Lockwood C, Jordan Z. What kind of systematic review should I conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. *BMC Med Res Methodol* 2018;18:5.

- [2] Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Info Libr J* 2009;26:91–108.
- [3] Green J, Thorogood N. *Qualitative methods for health research*. London: SAGE, Los Angeles; 2018.
- [4] Bayliss SE, Davenport CF, Pennant ME. Where and how to search for information on the effectiveness of public health interventions - a case study for prevention of cardiovascular disease. *Health Info Libr J* 2014;31:303–13.
- [5] Booth A. Searching for qualitative research for inclusion in systematic reviews: a structured methodological review. *Syst Rev* 2016;5:74.
- [6] Saini M, Shlonsky A. *Systematic synthesis of qualitative research*. New York: Oxford University Press; 2012:208.
- [7] Mohammed MA, Moles RJ, Chen TF. Meta-synthesis of qualitative research: the challenges and opportunities. *Int J Clin Pharm* 2016;38:695–704.
- [8] Vassar M, Yerokhin V, Sinnett PM, Weiher M, Muckelrath H, Carr B, et al. Database selection in systematic reviews: an insight through clinical neurology. *Health Info Libr J* 2017;34:156–64.
- [9] Aagaard T, Lund H, Juhl C. Optimizing literature search in systematic reviews - are MEDLINE, EMBASE and CENTRAL enough for identifying effect studies within the area of musculoskeletal disorders? *BMC Med Res Methodol* 2016;16:1–11.
- [10] Rathbone J, Carter M, Hoffmann T, Glasziou P. A comparison of the performance of seven key bibliographic databases in identifying all relevant systematic reviews of interventions for hypertension. *Syst Rev* 2016;5:27.
- [11] Levay P, Raynor M, Tuvey D. The contributions of MEDLINE, other bibliographic databases and various search techniques to NICE public health guidance. *Evid Based Libr Inf Pract* 2015;10(1):50–68.
- [12] Halladay CW, Trikalinos TA, Schmid IT, Schmid CH, Dahabreh IJ. Using data sources beyond PubMed has a modest impact on the results of systematic reviews of therapeutic interventions. *J Clin Epidemiol* 2015;68:1076–84.
- [13] Cohen JF, Korevaar DA, Wang J, Spijker R, Bossuyt PM. Should we search Chinese biomedical databases when performing systematic reviews? *Syst Rev* 2015;4(1):23.
- [14] Lorenzetti DL, Topfer LA, Dennett L, Clement F. Value of databases other than medline for rapid health technology assessments. *Int J Technol Assess Health Care* 2014;30(2):173–8.
- [15] Golder S, Wright K, Rodgers M. The contribution of different information sources to identify adverse effects of a medical device: a case study using a systematic review of spinal fusion. *Int J Technol Assess Health Care* 2014;30(4):423–9.
- [16] Ahmadi M, Ershad-Sarabi R, Jamshidiorak R, Bahaodini K. Comparison of bibliographic databases in retrieving information on telemedicine. *J Kerman Univ Med Sci* 2014;21(4):343–54.
- [17] Lam MT, McDiarmid M. Increasing number of databases searched in systematic reviews and meta-analyses between 1994 and 2014. *J Med Libr Assoc* 2016;104(4):284–9.
- [18] Golder S, Loke YK, Zorzela L. Some improvements are apparent in identifying adverse effects in systematic reviews from 1994 to 2011. *J Clin Epidemiol* 2013;66:253–60.
- [19] Golder S, Loke YK, Wright K, Sterrantino C. Most systematic reviews of adverse effects did not include unpublished data. *J Clin Epidemiol* 2016;77:125–33.
- [20] Li L, Tian J, Tian H, Moher D, Liang F, Jiang T, et al. Network meta-analyses could be improved by searching more sources and by involving a librarian. *J Clin Epidemiol* 2014;67:1001–7.
- [21] Jones CW, Keil LG, Weaver MA, Platts-Mills TF. Clinical trials registries are under-utilized in the conduct of systematic reviews: a cross-sectional analysis. *Syst Rev* 2014;3(1):126.
- [22] Wright K, Golder S, Lewis-Light K. What value is the CINAHL database when searching for systematic reviews of qualitative studies? *Syst Rev* 2015;4:104.
- [23] Nelson HD. *Systematic reviews to answer health care questions*. Philadelphia: Lippincott Williams & Wilkins; 2014.
- [24] Gallacher K, Bhautesh J, Deborah M, Sara M, David B, Patricia E, et al. Qualitative systematic reviews of treatment burden in stroke, heart failure and diabetes - methodological challenges and solutions. *BMC Med Res Methodol* 2013;13:10.
- [25] Wright JM, Cottrell DJ, Mir G. Searching for religion and mental health studies required health, social science, and grey literature databases. *J Clin Epidemiol* 2014;67:800–10.
- [26] Stansfield C, Kavanagh J, Rees R, Gomersall A, Thomas J. The selection of search sources influences the findings of a systematic review of people's views: a case study in public health. *BMC Med Res Methodol* 2012;12:55.
- [27] Pearson M, Moxham T, Ashton K. Effectiveness of search strategies for qualitative research about barriers and facilitators of program delivery. *Eval Health Prof* 2011;34(3):297–308.
- [28] Papaioannou D, Sutton A, Carroll C, Booth A, Wong R. Literature searching for social science systematic reviews: consideration of a range of search techniques. *Health Info Libr J* 2010;27:114–22.
- [29] Flemming K, Briggs M. Electronic searching to locate qualitative research: evaluation of three strategies. *J Adv Nurs* 2007;57:95–100.
- [30] Shaw RL, Booth A, Sutton AJ, Miller T, Smith JA, Young B, et al. Finding qualitative research: an evaluation of search strategies. *BMC Med Res Methodol* 2004;4:5.
- [31] Barroso J, Gollop CJ, Sandelowski M, Meynell J, Pearce PF, Collins LJ. The challenges of searching for and retrieving qualitative studies. *West J Nurs Res* 2003;25(2):153–78.
- [32] Taylor B, Francis K. *Qualitative research in the health sciences: methodologies, methods and processes*. New York, NY: Routledge, Milton Park, Abingdon, Oxon; 2013.
- [33] Pearson A. *Evidence-based review in policy and practice, an issue of nursing clinics*, e-book. Philadelphia, PA: Elsevier Health Sciences; 2014.
- [34] Moseley AM, Elkins MR, Herbert RD, Maher CG, Sherrington C. Cochrane reviews used more rigorous methods than non-cochrane reviews: survey of systematic reviews in physiotherapy. *J Clin Epidemiol* 2009;62:1021–30.
- [35] Collier A, Heilig L, Schilling L, Williams H, Dellavalle RP. Cochrane Skin Group systematic reviews are more methodologically rigorous than other systematic reviews in dermatology. *Br J Dermatol* 2006;155:1230–5.
- [36] Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gotzsche PC, Ioannidis JP, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLoS Med* 2009;6(7):e1000100.
- [37] Veritas Health Innovation Ltd. *Covidence systematic review software*. Melbourne, Australia: VH Innovation; 2017.
- [38] Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: methodological guidance for systematic reviewers utilizing meta-aggregation. *Int J Evid Based Healthc* 2015;13(3):179–87.
- [39] Noyes J, Booth A, Flemming K, Garside R, Harden A, Lewin S, et al. Cochrane Qualitative and Implementation Methods Group guidance paper 3: methods for assessing methodological limitations, data extraction and synthesis, and confidence in synthesized qualitative findings. *J Clin Epidemiol* 2018;97:49–58.
- [40] Hartling L, Featherstone R, Nuspl M, Shave K, Dryden DM, Vandermeer B. The contribution of databases to the results of systematic reviews: a cross-sectional study. *BMC Med Res Methodol* 2016;16:127.

- [41] Subirana M, Sola I, Garcia JM, Gich I, Urrutia G. A nursing qualitative systematic review required MEDLINE and CINAHL for study identification. *J Clin Epidemiol* 2005;58:20–5.
- [42] Hopewell S, Clarke M, Lefebvre C, Scherer R. Handsearching versus electronic searching to identify reports of randomized trials. *Cochrane Database Syst Rev* 2007;(2):MR000001.
- [43] Richards D. Handsearching still a valuable element of the systematic review. *Evid Based Dent* 2008;9(3):85.
- [44] Ogilvie D, Egan M, Hamilton V, Petticrew M. Systematic reviews of health effects of social interventions: 2. Best available evidence: how low should you go? *J Epidemiol Community Health* 2005;59:886–92.
- [45] Boeker M, Vach W, Motschall E. Google Scholar as replacement for systematic literature searches: good relative recall and precision are not enough. *BMC Med Res Methodol* 2013;13:131.
- [46] Falagas ME, Pitsouni EI, Malietzis GA, Pappas G. Comparison of PubMed, Scopus, Web of science, and Google Scholar: strengths and weaknesses. *FASEB J* 2008;22(2):338–42.