Is it possible to focus EMTREE without loss of sensitivity when searching Embase for systematic reviews? Analysis of Cochrane Reviews and UK HTA reports

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Introduction

- Systematic reviews and health technology assessments (HTAs) require comprehensive literature searches

- MEDLINE and Embase are the most commonly searched databases when undertaking systematic reviews

- Overall search results for systematic reviews appear to be getting increasingly larger

- Focusing literature searches to '**Major**' EMTREE subject heading terms in Embase could significantly reduce the number of records retrieved

Introduction

Indexing terms from the Embase EMTREE thesaurus can be restricted to retrieve results where the EMTREE term is the main focus of the article

depression/ (284,668)

*depression/ (125,609)

4.4. When reading and analysing articles, indexers ensure that each relevant concept is identified by an index term. In addition, they designate selected terms representing the focus of the article as major terms. All other terms are (by extension) minor terms. Articles are indexed with an average of 3-4 major terms, and up to 50 minor terms are possible, though there is much variation. Since the major status of a searched index term identifies the most relevant records in a search, it is a useful tool to limit retrieval.[1]

Previous Investigations

- We investigated in-house KSR systematic reviews to see whether restricting EMTREE terms to focus (**RTF**) reduced the total number of Embase records retrieved without missing relevant studies

- We retrospectively tested Embase search strategies to compare:
    - Total number of records retrieved;
    - Number of included studies identified.

- Our investigations were unable to conclusively support our hypothesis[2]

Objective

- Our original sample was small and only investigated internal KSR reviews

- We wanted to investigate a larger sample of external systematic reviews/HTAs

- Investigate Cochrane reviews/UK National Institute for Health Research (NIHR) Health Technology Assessment reports

Methods

- Searched Cochrane Database of Systematic Reviews (CDSR)

  embase: Publication Year from 2010 to 2015, in Cochrane Reviews (Reviews only)

  Retrieved **3629** reviews; randomly selected **50**

- Searched PubMed for NIHR HTAs

  #1 "Health Technol Assess"[jour]

  #2 ("2010"[Date - Publication] : "3000"[Date - Publication])

  #3 systematic[ti]*

  #4 (#1 AND #2 AND #3)

  Retrieved **172** HTAs**;** randomly selected **50**

Methods

The randomly selected systematic reviews and HTAs were screened using the following inclusion criteria:

- Embase included in the literature searches;

- Embase searched via Ovid;

- Date restriction (2010-2015);

- Did not 'restrict to focus';

- Did not only search the Cochrane Group Trials Register;

- Free text used ti,ab or tw **NOT** sh, hw, mp or af;

- Search strategy no longer than 70 lines;

- No more than 20 included studies.

Methods

Those systematic reviews and HTAs that met the inclusion criteria were analysed to identify:

- total records retrieved with and without RTF EMTREE;

- yield of included records;

- Number Needed to Read (NNR) to detect relevant references.

Results: Cochrane reviews

Only **16** of the 50 randomly selected Cochrane reviews met the inclusion criteria.

Reviews were excluded because:

- database host was not Ovid (**11**);
- Cochrane Group trials register was searched (**10**);
- the field tag 'mp'* was used in the strategy (**8**);
- the Embase strategy was not reported (**5**).

*mp includes the 'Heading Word' field option where a single word is searched for in EMTREE

Results: Cochrane Reviews

- Search yield: **40%** average fewer records retrieved with RTF

- Sensitivity: original searches **95.5%**; RTF searches **94%**

- Number needed to read: original searches **308**; RTF searches **195**

Results: HTA reports

Just **17** of the 50 HTA reports met the inclusion criteria.

HTA reports were excluded because:

- the Embase strategy was not reported (**17**);

- database host was not Ovid (**2**);

- the field tag 'mp' or 'af'* was used in the strategy (**8**);

- the field tag 'sh' was used in the strategy (**1**);

- EMTREE terms were not available (**1**);

- did not search Embase (**2**);

- EMTREE terms were already RTF (**2**).

*af includes 'all fields'

Results: HTA Reports

- Search yield: **37%** average fewer records retrieved with RTF

- Sensitivity: original searches **87%**; RTF searches **79%**

- Number needed to read: original searches **398**; RTF searches **260**

Conclusions

- Main findings revolved around issues not anticipated beforehand

  poor search strategies; no Embase searches; cross database searches; Cochrane Trials Registers searched in preference to specific database searches, etc.

- Questions about systematic review searching quality rather than answers about the potential use of RTF EMTREE - Issues with the quality of the searches deflected from the principal reason for this investigation

- Further, larger samples were planned, but these investigations had already been undertaken, and published by CADTH[3]

Overall Conclusions

Caution when considering RTF:

- Confident of the sensitivity of the search strategy;

- Exhausted all means of reducing an extremely large number of records retrieved (unmanageable in the context of time and resources available);

- Compensate for using RTF with more sensitive searching elsewhere (in the search strategy and other databases)

References

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