Facilitating the identification of qualitative, quantitative and mixed methods studies

Pilot evaluation study of a database filter for mixed studies reviews

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BACKGROUND

Mixed studies review
• is mixed methods research applied to literature review
• includes studies with diverse designs

Quantitative studies
Qualitative studies
Mixed Methods studies
PROBLEM

- Identification of empirical research with diverse study designs is highly time and resource consuming
- No database filter to retrieve studies with qualitative, quantitative and mixed methods research designs
PURPOSE

Assessment of a mixed filter

• Pilot study to assess a new database filter for mixed studies reviews (the ‘mixed filter’)
• Mixed filter: A collection of search terms to identify qualitative, quantitative and mixed methods studies in bibliographic databases

RESEARCH QUESTION

What are the precision, sensitivity and specificity of the mixed filter?
METHODS (1)

**Pilot study in Medline**
- We developed a mixed filter with specialized librarians
- The filter includes different keywords and subject headings for:
  - qualitative (e.g., focus group)
  - quantitative (e.g., survey)
  - mixed methods (e.g., mixed adj5 method*)

METHODS (2)

**Sampling**
- Database records: Title, authors, source, and abstract
- A mix of records reporting
  - empirical studies: ‘empirical records’
  - non-empirical work: ‘non-empirical records’
- A mix of sources: 2 extreme cases
  - Highest impact factor: Annals of Family Medicine (AFM)
  - Lowest impact factor: Journal of Family Practice (JFP)
- A mix of empirical records reporting qualitative, quantitative, and mixed method research
- Articles published in 2010-2014
**METHODS (3)**

**Precision, sensitivity, and specificity (Hersh, 2003)**

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<thead>
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</tr>
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<tbody>
<tr>
<td>Relevant</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>Not relevant</td>
<td>c</td>
<td>d</td>
</tr>
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</table>

High precision ≥ 50% = a : (a+c)
High sensitivity ≥ 80% = a : (a+b)
High specificity ≥ 50% = d : (c+d)

**Measurement**

- Relevant: Empirical record
- Retrieved: Found by the mixed filter

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**METHODS (4)**

- All records without filter imported into specialized software (Distiller SR).
- Coded ‘empirical’ when they mentioned a research question/objective, a qualitative or quantitative data collection/analysis, and results.
- Identification, import and coding repeated with the filter.
- Descriptive statistics using Excel.
METHODS (4)

1. Import records to Distiller software
2. Code empirical or not
   - research question/objective
   - qualitative or quantitative data collection/analysis
   - results.
3. Descriptive statistics with Excel
4. Repeat after running filter

RESULTS

<table>
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<tr>
<td>Relevant</td>
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<td>15 (b)</td>
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<tr>
<td>Not relevant</td>
<td>316 (c)</td>
<td>375 (d)</td>
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</tbody>
</table>

High precision ≥ 50% = a + b
High sensitivity ≥ 80% = a / (a + b)
High specificity ≥ 50% = d / (c + d)

- Precision = 83.5%
- Sensitivity = 95.6%
- Specificity = 81.3%
- Precision = 4.5%
- Sensitivity = 100%
- Specificity = 54.3%
DISCUSSION (1)

Mixed filter
- High sensitivity
- High specificity

With respect to literature reviews
- High sensitivity means that most of the relevant records are retrieved
- Sensitivity is the most important measure

DISCUSSION (2)

Mixed filter
- High precision (AFM)
- Low precision (JFP)
  - Sensitivity 100%
  - Low precision means that empirical records are diluted in a pool of non-empirical records

Possible explanation
Low precision of the mixed filter when records look like empirical research, contain words like research and claim to be research, but are not research
LIMITATION

- Only two cases, but extreme cases
- Possible transferability of results of extreme case analysis to larger samples
- Considering that our results might be transferable to bibliographic databases with a variety of journals, our hypotheses regarding the mixed filter are:
  - High sensitivity and specificity
  - Precision associated with the proportion of empirical records

CONCLUSION

Mixed filter
- Future study will test this hypothesis in other journals and disciplines (larger sample)
- We plan to compare the performance of our mixed filter to that of future automated text classification (no such system yet for mixed studies reviews).
REFERENCES

