Multimedia Retrieval
2018-2019
Scientific reports

Egon L. van den Broek
Global structure (1)

- Title, Abstract, keywords
- Introduction
- Methods
- Results
- Discussion
- References
(a) The whole structure is governed by the Results box; everything in the article must relate to and be connected with the data and analysis presented in the Results section.

(b) (1) The Introduction begins with a broad focus. The starting point you select for your Introduction should be one that attracts the lively interest of the audience you are aiming to address: the international readers of your target journal.

(3) The Introduction ends with a focus exactly parallel to that of the Results; often this is a statement of the aim or purpose of the work presented in the paper, or its principal findings or activity.

(2) Between these two points, background information and previous work are woven together to logically connect the relevant problem with the approach taken in the work to be presented to address the problem.

(c) The Methods section, or its equivalent, establishes credibility for the Results by showing how they were obtained.

(d) The Discussion begins with the same breadth of focus as the Results – but it ends at the same breadth as the starting point of the Introduction. By the end, the paper is addressing the broader issues that you raised at the start, to show how your work is important in the ‘bigger picture.’
Title: 4 strategies

1. Provide as much relevant information as possible, but be concise
2. Use keywords prominently
3. Choose strategically: noun phrase, statement, or question?
4. Avoid ambiguity in noun phrases

Rule of thumb: max. 10-12 (iff needed: 15) words
Abstract

• Check how many words are allowed
• Size in relation to main body size
• Science abstract versus management summary
• Grab attention!
• Keywords: Integrate in abstract and add separately when allowed
Introduction (1): statements’ 5 stages

1. about the field of research to provide the reader with a setting or context for the problem to be investigated and to claim its centrality or importance.

2. specifically about the aspects of the problem already studied by other researchers, laying a foundation of information already known.

3. that indicate the need for more investigation, creating a gap or research niche for the present study to fill.

4. giving the purpose/ objectives of the writer’s study or outlining its main activity or findings.

5. Optional ones that give a positive value or justification for carrying out the study.
Introduction (2): head, body & tail

• Start smooth; e.g., with a quote, joke, statistic or anecdote

• Background: Included or as a separate section

• End with an overview of the rest of the article
Background / Review (1)

• A structured/systematic literature review (e.g., PRISMA)

• A good search
  – http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/
Background / Review (2): The steps (1)

1. Formulate your research question.
2. Search for relevant literature in a structured way
   – Use the techniques of Keyword search, Backward search and Forward search to find appropriate sources. Determine which search terms and settings you will use, which databases you will access, etc.
   – Determine which sources you will use to answer your research question. Assess the quality and applicability of the sources you have found.
Background / Review (2): The steps (2)

3. Report the outcome of your search
   - Describe all aspects of your search, so it can be fully replicated. Use the PRISMA flow diagram and checklist to describe your search and discuss the (quality) criteria you used to evaluate the sources.
   - Answer your research question using the sources you have selected.
# PRISMA 2009 Checklist

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TITLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>1</td>
<td>Identify the report as a systematic review, meta-analysis, or both.</td>
</tr>
<tr>
<td><strong>ABSTRACT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured summary</td>
<td>2</td>
<td>Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.</td>
</tr>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td>3</td>
<td>Describe the rationale for the review in the context of what is already known.</td>
</tr>
<tr>
<td>Objectives</td>
<td>4</td>
<td>Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).</td>
</tr>
<tr>
<td><strong>METHODS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protocol and registration</td>
<td>5</td>
<td>Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number.</td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td>6</td>
<td>Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.</td>
</tr>
<tr>
<td>Information sources</td>
<td>7</td>
<td>Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.</td>
</tr>
<tr>
<td>Search</td>
<td>8</td>
<td>Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.</td>
</tr>
<tr>
<td>Study selection</td>
<td>9</td>
<td>State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).</td>
</tr>
<tr>
<td>Data collection process</td>
<td>10</td>
<td>Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.</td>
</tr>
<tr>
<td>Data items</td>
<td>11</td>
<td>List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>12</td>
<td>Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.</td>
</tr>
<tr>
<td>Summary measures</td>
<td>13</td>
<td>State the principal summary measures (e.g., risk ratio, difference in means).</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>14</td>
<td>Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$) for each meta-analysis.</td>
</tr>
</tbody>
</table>
# PRISMA 2009 Checklist

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<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of bias across studies</td>
<td>15</td>
<td>Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).</td>
</tr>
<tr>
<td>Additional analyses</td>
<td>16</td>
<td>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.</td>
</tr>
</tbody>
</table>

## RESULTS

| Study selection               | 17 | Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.                                                  |
| Study characteristics         | 18 | For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.                                                                   |
| Risk of bias within studies   | 19 | Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).                                                                                                       |
| Results of individual studies | 20 | For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot. |
| Synthesis of results          | 21 | Present results of each meta-analysis done, including confidence intervals and measures of consistency.                                                                                                              |
| Risk of bias across studies   | 22 | Present results of any assessment of risk of bias across studies (see Item 15).                                                                                                                                 |
| Additional analysis           | 23 | Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).                                                                                          |

## DISCUSSION

| Summary of evidence           | 24 | Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers). |
| Limitations                   | 25 | Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).                                             |
| Conclusions                   | 26 | Provide a general interpretation of the results in the context of other evidence, and implications for future research.                                                                                         |

## FUNDING

| Funding                      | 27 | Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.                                                                     |


For more information, visit [www.prisma-statement.org](http://www.prisma-statement.org).
A good search

• IP masking
  – VPN, Proxy, TOR, Public WiFi, ...

• Multiple search engines
  – Closed scientificDBs; see: http://www.uu.nl/en/university-library/searching-for-literature
  – WWW (Google Scholar = reference; but, also consider something else)
Methods

• participants/subjects
• materials and apparatus
• setting (can be combined with participants/subjects or procedure)
• design (can be integrated with procedure)
• procedure
Results (1): Reaching agreement

1. which data should be included;
2. what are the important points that form the story of the paper; and
3. what is/are the take-home message or messages.
Results (2): Focussing

1. What do my results say?
   – two sentences maximum, main points only, no background!

2. What do these results mean in their context?
   – i.e. what conclusions can be drawn from these results?

3. Who needs to know about these results? / Who’s the audience?

4. Why do they need to know?
   – Result’s contribution to the field?
   – What will others be missing if they don’t read your paper?
Results (3): Tables vs. Figures

<table>
<thead>
<tr>
<th>Most useful</th>
<th>Table</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>When working with</td>
<td>number</td>
<td>shape</td>
</tr>
<tr>
<td>When concentrating on</td>
<td>individual data values</td>
<td>overall patterns</td>
</tr>
<tr>
<td>When accurate or precise actual values are</td>
<td>most important</td>
<td>less important</td>
</tr>
</tbody>
</table>
Discussion (1)

• Brief presentation /summary of the main findings
• Interpretation of the results
• Assessment of study strengths and weaknesses
• Comparison of findings with previous studies
Discussion (2)

• Consideration of clinical and scientific implications
• If relevant, suggestions for future research
• Conclusions
• Punchline
References: evaluation criteria

• up-to-date
• good sources
• representative overview of the field
• critical references included
• well formatted
Referee’s criteria (1)

1. Is the contribution new?
2. Is the contribution significant?
3. Is it suitable for publication in the Journal?
4. Is the organization acceptable?
5. Do the methods and the treatment of results conform to acceptable scientific standards?
Referee’s criteria (2)

6. Are all conclusions firmly based in the data presented?
7. Is the length of the paper satisfactory?
8. Are all illustrations required?
9. Are all the figures and tables necessary?
10. Are figure legends and table titles adequate?
Referee’s criteria (3)

11. Do the title and Abstract clearly indicate the content of the paper?
12. Are the references up to date, complete, and the journal titles correctly abbreviated?
13. Is the paper excellent, good, or poor?