METHODS IN RESEARCH ON RESEARCH (MIROR)

Interventions to improve adherence to Reporting Guidelines in health research: a scoping review

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Introduction

• Approximately 85% of all biomedical research today is estimated to be wasted [Glasziou 2014]
  – In part, due to **incomplete or inaccurate reporting**

→ **Reporting guidelines** (RGs): sets of recommendations that help authors properly report research methods and findings (e.g. CONSORT, PRISMA)

➤ Have RGs improved completeness of reporting?
  – Yes, for some RGs
    • But **current levels of adherence are suboptimal**: 86% of reviews assessing adherence to RGs concluded that it was poor or suboptimal [Samaan 2013]

→ Further interventions to improve adherence to RGs have to be identified, implemented, and assessed

**Relevant definitions**

• **ADHERENCE**: Action taken by authors to ensure that a research report is compliant with the items recommended by the appropriate RG.
• **COMPLETE REPORTING**: Pertains to the state of reporting of a study report and whether it is compliant with the items recommended by the appropriate RG.
Scoping review objectives

– To **identify and classify interventions** to improve adherence to RGs described in the published and grey literature
  - Development of a typology of interventions to improve adherence to RGs

– To determine the **gaps in research** related to assessing the effect of interventions to improve adherence to RGs
  - To explore when and where future evaluations of interventions can be made
Scoping review methods

– Search strategy:
  • Database search in PubMed, EMBASE, Cochrane Library
  • Grey literature search

– Eligibility criteria:
  • Studies evaluating interventions aiming to improve adherence to RGs
  • Commentaries, editorials, letters, studies, and online sources describing other possible interventions that have been performed or suggested but never evaluated.
Scoping review methods

– Data extraction: In duplicate (independently)
  • Intervention evaluated or non-evaluated
  • Theoretical background of the intervention
  • Research stage: education, grant writing, protocol writing, manuscript writing, submission, journal peer review, author revision, copy-editing, and post-publication.
  • For evaluated interventions: details of the intervention, study design (e.g. RCT and before-after), RGs considered and format (checklist, bullet points and/or examples), effect of the intervention.

– Data synthesis: Categorization of the interventions
  • Training
  • Improved understanding
  • Encouraging adherence
  • Monitoring adherence and providing feedback
  • Collaboration among authors and experts
Scoping review results

PRISMA Flow diagram

References identified through database search (n = 2692)

References for title/abstract screening after deduplication (n = 1399)

References excluded (n = 964)

Additional references through forward citation searching (n = 24) and grey literature (n = 7)

References for full-text screening (n = 435)

References excluded (n = 357)

References describing evaluated interventions (n = 90)

References describing non-evaluated interventions (n = 19)

11 evaluated interventions

20 non-evaluated interventions
Scoping review results

• **31 interventions** to improve adherence to RGs identified (11 eval. / 20 non-eval.)

  – “Training”: 4 of 31 interventions
  – “Improved understanding”: 2 of 31 interventions
  – “Encouraging adherence”: 15 of 31 interventions
  – “Monitoring adherence and providing feedback”: 8 interventions
  – “Collaboration among authors and experts”: 2 interventions

❖ Development of a typology of interventions
Scoping review results

Typology of interventions to improve adherence to reporting guidelines

- Here we restrict to those related to journal policies and peer review

<table>
<thead>
<tr>
<th>TYPE OF INTERVENTION</th>
<th>MANUSCRIPT WRITING</th>
<th>MANUSCRIPT SUBMISSION</th>
<th>JOURNAL PEER REVIEW</th>
<th>AUTHOR REVISION</th>
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<tbody>
<tr>
<td>TRAINING</td>
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<tr>
<td>Improved UNDERSTANDING</td>
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<td>ENcouraging adherence</td>
<td>Author use of the writing aid tool COBWEB</td>
<td>Editorial statement endorsing certain RGs</td>
<td>Suggestion for peer reviewers to use RGs</td>
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<td></td>
<td>Author use of a structured approach for reporting research</td>
<td>Recommendation or requirement to follow RGs in the “Instructions to authors”</td>
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<td>Author markup of the manuscript to indicate where each RG item is addressed</td>
<td>Requirement to submit a RG checklist together with the manuscript indicating page numbers corresponding to each item</td>
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<td>Journal development of core versions of RGs containing key items</td>
<td>Editor’s questions to peer reviewers about whether the authors have followed RGs</td>
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<tr>
<td>MONITORING adherence and providing FEEDBACK</td>
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<td>Completeness of reporting check by editors</td>
<td>Email to authors to revise the manuscript according to RGs</td>
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<td>Peer review against RGs</td>
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<td>Internal peer review against RGs by a trained editorial assistant</td>
<td>Implementation of the tool WebCONSORT</td>
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<td>Implementation of the automatic tool StarReviewer</td>
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<td>COLLABORATION among authors and experts</td>
<td>Statistician involvement</td>
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</table>

IN BOLD: Evaluated interventions

RESEARCH STAGE
Scoping review results

Evaluated interventions

- 11 evaluated actions found in 90 references

  - 86 of 90 observational studies (before-after, cross sectional)

  Significant effect for:

  1. Author use of a structured approach to report research [Riveros 2013]
  2. Journal endorsement of RGs (slightly significant for CONSORT but not for other RGs) [Turner 2012, Stevens 2014]
  3. Completeness of reporting check by the editor [Pandis 2014]
  4. Emails to authors to revise the manuscript according to RGs [Hopewell 2012]

  - 4 of 90 RCTs [Cobo 2007, Cobo 2011, Barnes 2015, Hopewell 2016]

  Significant effect for:

  1. Author use of a writing aid tool (COBWEB) [Barnes 2015]
  2. Peer review against RGs [Cobo 2011]
Gaps in research on evaluating interventions to improve adherence to RGs

### Legend

1. **Circle size:** Number of studies evaluating each intervention
2. **Circle colour:** Study design (Blue: RCTs; Green: Observational studies)
3. **Circle fill:** Kind of RG implementation (Plain: checklist; stripes: bullet points and examples)

#### Gaps in research

1. Training and improved understanding
2. Early stages of research or after the process of author revision of the manuscript
Discussion

• **Journals**: Great efforts to improve adherence to RGs – although they should certainly do more
  – Implementation of RGs through the editorial process is warranted: journal endorsement of RGs without implementation is not having the desired effect

• **Other stakeholders** should take responsibility (medical schools, research funders, universities and other research institutions)
  – This scoping review provides a wide range of strategies

• Improving adherence: probably not depending only isolated actions, but **sets of interventions** performed
  • By different stakeholders
  • At different stages of research
Discussion

• **High level of evidence** should be required
  – Only 4 randomised trials ever assessed interventions (the other 86 references were observational studies)

  ✓ Future randomised trials should assess further interventions (considering research gaps identified)

• **Wider implementation of effective interventions**
  – Peer review against RGs [Cobo 2011]
  – Completeness of reporting check by trained editors [Pandis 2014]
  – Use of writing aid tools for authors such as COBWEB [Barnes 2015]

• **Contemporary publication culture** may undermine the potential effect of these interventions
  – Most scientists feel that primary evaluation tool of their research is the quantity rather than its quality [Tijdink 2016]
Future research

**Project 2:** To explore editors’ and authors’ perceptions on

- **Barriers and facilitators** associated with implementing in real editorial context a subset of the interventions identified in the scoping review

- **Further ideas** to improve adherence to RGs
  - Methods: Online qualitative survey

**Project 3:** To **implement and assess** an intervention in collaboration with BMJ Publishing Group
  - Methods: RCT