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# Interventions to improve adherence to reporting guidelines in health research: a scoping review protocol

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# Interventions to improve adherence to reporting guidelines in health research: a scoping review protocol

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## Abstract

**Introduction:** There is evidence that the use of some reporting guidelines, such as the Consolidated Standards for Reporting Trials (CONSORT), is associated with improved completeness of reporting. However, the current levels of adherence to reporting guidelines are suboptimal. Over the last few years, several actions aiming to improve compliance with reporting guidelines have been taken and proposed. We will conduct a scoping review of interventions to improve adherence to reporting guidelines that have been evaluated or suggested, in order to inform future interventions.

**Methods and analysis:** Our review will follow the Joanna Briggs Institute scoping review methods manual. We will search for relevant studies in MEDLINE, EMBASE, and Cochrane Library databases, as well as Google Scholar. The reference lists of included studies and the lists of studies citing them will be added.

One reviewer will screen the full list, which will be randomly split into two halves and independently screened by the other two reviewers. Two reviewers will perform data extraction independently. Discrepancies will be solved through discussion. The interventions found will be classified as assessed or suggested, as well as according to different criteria, in relation to the target population (journal policies, journal editors, authors, reviewers, funders, ethical boards, or others) or the research stage at which they are performed (design, conducting, reporting, or peer review). Descriptive statistical analysis will be performed.

**Ethics and dissemination:** All findings will be published in peer-reviewed journals. Results from this scoping review will contribute to a better understanding and a broader perspective on how the problem of adhering better to reporting guidelines has been tackled so far. This could be a major first step towards developing future strategies to improve compliance with reporting guidelines.

## Strengthens and limitations of the study

- Results from this scoping review will contribute to a broader perspective on how the problem of improving compliance with reporting guidelines has been addressed so far.
- This scoping review is part of a larger project whose ultimate goal is to explore what strategies to improve adherence to reporting guidelines could be implemented and formally assessed.
- A potential limitation could be the small number of eligible articles in the literature.
- As this is a scoping review, the quality of the evidence will not be assessed.

## Introduction

Reporting guidelines have been available since the inception of the CONSORT statement (1996), which provided a minimum set of recommendations for reporting randomized trials. From that time, different reporting guidelines for different study

types and clinical areas have been developed. In general, these guidelines provide advice on how to report research methods and findings (1).

Although the vast majority of reporting guidelines have not yet been assessed as to whether they help improve the reporting of research (2), for some of them, such as CONSORT, it has been shown that they enhance the completeness of reporting (3, 4). Saaman et al. examined the extent of adherence to reporting guidelines in different areas of health research since the creation of the CONSORT Statement (5). Some studies reported acceptable overall reporting quality and concluded that it has improved since the introduction of the CONSORT Statement. However, most of the reviews (43 of 50, 86%) concluded that more improvement is needed, or that the reporting quality was inadequate, poor, medium or suboptimal (5).

Consequently, several actions aiming to improve adherence to reporting guidelines have been taken over the last years. Writing aid tools such as WebCONSORT (6) have been developed and many journals explicitly endorse reporting guidelines (7). However, few of these interventions have been assessed and some of them have not been shown to have a benefit (2, 6). Further actions need to be taken to increase the current levels of adherence to reporting guidelines.

### Scoping review objective

The goal of this scoping review is to identify interventions aiming to improve adherence to reporting guidelines in health research. More specifically, in addition to quantify the effect of those already evaluated, our aim is to gather ideas suggested in the literature as possible interventions that could be implemented in the future. No scoping review on this subject has been performed so far.

## Methods

Our research objectives will be addressed using established scoping review methodology. Since we aim to provide a wide overview of this field (8), and map the key concepts underpinning this research area and the main sources and types of evidence available, we consider that performing a scoping review is the most suitable

approach to our problem (9). This protocol will follow the methodology manual published by the Joanna Briggs Institute for scoping reviews (10).

**Scoping review questions**

We aim to answer the following questions:

1. What interventions to improve adherence to reporting guidelines in health research have been evaluated?
2. What actions to improve adherence to reporting guidelines have been suggested in the literature?
3. For each intervention found in the questions 1 and 2 above,
    a) What was the target population of it? We will consider the following possible targets: journal policies, journal editors, authors, reviewers, funders, ethical boards, or others.
    b) What research stages does it affect? We will consider the following possible research stages: design, conducting, reporting, and peer review.
    c) In which health care area was it evaluated or suggested?
    d) What was the rationale behind it?
    e) In case that it was evaluated,
        a. How was it evaluated?
        b. What reporting guidelines does it consider?
        c. What was the effect of it on adherence to the reporting guidelines mentioned above?

**Inclusion criteria**

We will include:

1. Studies evaluating interventions aiming to improve the adherence to reporting guidelines in health research, irrespective of study design.
2. Commentaries, editorials, letters, and studies containing ideas or suggestions of interventions that can be implemented.

We will consider publications written in English, French, German, Catalan, and Spanish. The reporting guidelines considered will be those shown in the EQUATOR (Enhancing the QUAlity and Transparency Of Health Research) Network website (1) as "Reporting Guidelines for main study types" (see Table 1). In addition, we will also include QUOROM (Quality of Reporting of Meta-analysis) for systematic reviews, since it was the precursor of PRISMA.

**Search strategy**

We will search MEDLINE (via PubMed), EMBASE (via Ovid), and Cochrane Library databases, as well as Google Scholar, for relevant articles. The search will be limited to articles published after January 1996, since the CONSORT Statement was the first reporting guideline in biomedical research and it was elaborated in 1996. The search strategy has been developed with the help of a librarian of the Barcelona Tech. Table 2 shows the detailed search terms for MEDLINE.

The retrieved studies will be exported into the reference manager Mendeley. Following the removal of duplicates, one reviewer (DB) will first screen the titles and abstracts for eligibility before reading the full texts, while the other two reviewers (EC and JK) will be assigned and will screen one of the two random halves in which the full list will be divided. Second, the reviewers will thoroughly examine the full-text for all potentially eligible articles to confirm whether the study should be included or not. One reviewer (DB) will ensure literature saturation by searching the reference lists of included studies, as well as the lists of articles citing them. Disagreement will be addressed by consensus after discussion, and the third reviewer (EC or JK) will be consulted if no consensus is reached.

**Data extraction**

The selected articles will be exported into an Excel file, where the data extraction will be performed. Two authors (DB and JK) will independently extract data as shown below:

1. Publication characteristics: title, year of publication, author, design, and field of study.
2. Characteristics of the intervention:
    a. Classification as evaluated or suggested.
    b. Target: journal policies, authors, peer reviewers, journal editors, funders, ethical boards, or others.
    c. Research stage: design, conducting, reporting or peer review.
    d. Health care area where it was evaluated or suggested.
    e. Rationale.
    f. In case that it was evaluated, way of assessment, reporting guidelines considered, and effect of the intervention on adherence to those reporting guidelines.
3. Overall conclusions by the authors.

If further information is needed, we will contact the authors of the included studies. Any disagreement will be solved by discussion.

**Synthesis and reporting of results**

The interventions found will be first divided in two groups: the ones that have already been evaluated and the ones that have not. For each group, the interventions will be classified according to their target population, as well as to the research stage at which they are performed or suggested. The general characteristics of included studies will be summarized. In addition, for the group of evaluated interventions, we will describe how the authors assess them, what reporting guidelines they consider, and what their effect on adherence to those reporting guidelines is. Descriptive statistical analysis will be performed.

A checklist for reporting scoping reviews, the "Preferred Reporting Items for Systematic Reviews and Meta-Analysis: extension for Scoping Reviews (PRISMA-ScR)", is currently under development (11). If it is available by the time of reporting the results of the scoping review, it will be used.

## Discussion

The aim of this review is to identify and classify interventions to improve adherence to reporting guidelines. We believe that having a wide picture of how the problem of adhering better to reporting guidelines has been tackled so far, as well as investigating what further actions have been suggested, is critical to facing the problem of improving adherence to reporting guidelines with a broader perspective.

This scoping review is part of a larger project whose ultimate goal is to explore what strategies to improve adherence to reporting guidelines could be implemented and formally assessed. The results of this review could send a message to funders, authors, editors and reviewers about what has already been done to face this critical problem, and about what else could be done from now on. We believe that this review could be a major first step towards developing future strategies to improve adherence to reporting guidelines.

**Funding:** This scoping review belongs to the ESR 14 research project from the Methods in Research on Research (MiRoR) project, which has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 676207.

**Authors' contributions:** All authors contributed to conceptualizing and designing the study. DB and EC drafted the manuscript. IB, DM, DGA, and JK made major revisions. All authors read and approved the final version of the manuscript.

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**Competing interests:** None declared.

**Ethics approval:** Not required.

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**Table 1**

Description of the acronyms and full names of the reporting guidelines shown in the EQUATOR website as "Reporting Guidelines for main study types".

| Acronym | Full name |
|---|---|
| CONSORT | Consolidated Standards of Reporting Trials |
| STROBE | Strengthening the Reporting of Observational Studies in Epidemiology |
| PRISMA | Preferred Reporting Items for Systematic Reviews and Meta-Analyses |
| SRQR | Standards for Reporting Qualitative Research |
| COREQ | Consolidated criteria for Reporting Qualitative research |
| STARD | Standard Protocol Items: Recommendations for Interventional Trials |
| TRIPOD | Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis |
| SQUIRE | Standards for Quality Improvement Reporting Excellence |
| CHEERS | Consolidated Health Economic Evaluation Reporting Standards |
| SPIRIT | Standard Protocol Items: Recommendations for Interventional Trials |
| PRISMA-P | Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols |
| CARE | Case Report |
| AGREE | Appraisal of Guidelines, Research and Evaluation |
| ARRIVE | Animal Research: Reporting In Vivo Experiments |
| RIGHT | Reporting Tool for Practice Guidelines in Health Care |

**Table 2**

Search terms for MEDLINE (from January 1, 1996, to March 31, 2017) via PubMed. These terms are modified for the search in other databases.

| Steps | Search terms |
|---|---|
| S1 | impact* [tw] |
| S2 | improv* [tw] |
| S3 | enhanc* [tw] |
| S4 | boost* [tw] |
| S5 | increas* [tw] |
| S6 | influenc* [tw] |
| S7 | effect [tw] |
| S8 | S1 **OR** S2 **OR** S3 **OR** S4 **OR** S5 **OR** S6 **OR** S7 |
| S9 | compliance [tw] |
| S10 | adherence [tw] |
| S11 | completeness [tw] |
| S12 | "quality of reporting" [tw] |
| S13 | "reporting quality" [tw] |
| S14 | S9 **OR** S10 **OR** S11 **OR** S12 **OR** S 13 |
| S15 | "Consolidated Standards of Reporting Trials"[tw] **OR** CONSORT[tw] |
| S16 | "Strengthening the Reporting of Observational Studies in Epidemiology"[tw] **OR** STROBE[tw] |
| S17 | "Preferred Reporting Items for Systematic reviews and Meta-Analyses"[tw] **OR** PRISMA[tw] |
| S18 | "Standards for Reporting Qualitative Research"[tw] **OR** SRQR[tw] |
| S19 | "Consolidated criteria for Reporting Qualitative research"[tw] **OR** COREQ[tw] |
| S20 | "Standard Protocol Items: Recommendations for Interventional Trials"[tw] **OR** STARD[tw] |
| S21 | "Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis"[tw] **OR** TRIPOD[tw] |
| S22 | "Standards for Quality Improvement Reporting Excellence"[tw] **OR** SQUIRE[tw] |
| S23 | "Consolidated Health Economic Evaluation Reporting Standards"[tw] **OR** CHEERS[tw] |
| S24 | "Standard Protocol Items: Recommendations for Interventional Trials"[tw] **OR** SPIRIT[tw] |
| S25 | "Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols"[tw] **OR** PRISMA-P[tw] |
| S26 | "Quality of Reporting of Meta-analysis"[tw] **OR** QUOROM[tw] |
| S27 | "Case Report"[tw] **AND** CARE[tw] |
| S28 | "Appraisal of Guidelines, Research and Evaluation"[tw] **AND** AGREE[tw] |
| S29 | "Animal Research: Reporting In Vivo Experiments"[tw] **AND** ARRIVE[tw] |
| S30 | "Reporting Tool for Practice Guidelines in Health Care"[tw] **AND** RIGHT[tw] |
| S31 | S15 **OR** S16 **OR** S17 **OR** S18 **OR** S19 **OR** S20 **OR** S21 **OR** S22 **OR** S23 **OR** S24 **OR** S25 **OR** S26 **OR** S27 **OR** S28 **OR** S29 **OR** S30 |
| S32 | S8 **AND** S14 **AND** S31 |
| S33 | S32 **AND** "1996/01/01"[PDAT] : "2017/01/31"[PDAT] |

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## Abstract

**Introduction:** There is evidence that the use of some reporting guidelines, such as the Consolidated Standards for Reporting Trials (CONSORT), is associated with improved completeness of reporting in health research. However, the current levels of adherence to reporting guidelines are suboptimal. Over the last few years, several actions aiming to improve compliance with reporting guidelines have been taken and proposed. We will conduct a scoping review of interventions to improve adherence to reporting guidelines in health research that have been evaluated or suggested, in order to inform future interventions.

**Methods and analysis:** Our review will follow the Joanna Briggs Institute scoping review methods manual. We will search for relevant studies in MEDLINE, EMBASE, and Cochrane Library databases. Moreover, we will carry out

lateral searches from the reference lists of the included studies, as well as from the lists of articles citing the included ones. One reviewer will screen the full list, which will be randomly split into two halves and independently screened by the other two reviewers. Two reviewers will perform data extraction independently. Discrepancies will be solved through discussion. In addition, this search strategy will be supplemented by a grey literature search. The interventions found will be classified as assessed or suggested, as well as according to different criteria, in relation to their target (journal policies, journal editors, authors, reviewers, funders, ethical boards, or others) or the research stage at which they are performed (design, conducting, reporting, or peer review). Descriptive statistical analysis will be performed.

**Ethics and dissemination:** A paper summarizing the findings from this review will be published in a peer-reviewed journal. This scoping review will contribute to a better understanding and a broader perspective on how the problem of adhering better to reporting guidelines has been tackled so far. This could be a major first step towards developing future strategies to improve compliance with reporting guidelines in health research.

## Strengths and limitations of the study

- Results from this scoping review will contribute to a broader perspective on how the problem of improving compliance with reporting guidelines has been addressed in the published literature thus far.
- This scoping review is part of a larger project whose ultimate goal is to explore what strategies to improve adherence to reporting guidelines could be implemented and formally assessed.
- A potential limitation could be the small number of eligible articles in the literature.
- As this is a scoping review, the quality of the evidence will not be assessed.

## Introduction

Reporting guidelines have been available since the inception of the CONSORT statement (1996), which provided a minimum set of recommendations for reporting randomized trials. From that time, different reporting guidelines for different study types, data, and clinical areas have been developed. In general, these guidelines provide advice on how to report research methods and findings (1).

Although the vast majority of reporting guidelines have not yet been assessed as to whether they help improve the reporting of research (2), for some of them, such as CONSORT, it has been shown that they may enhance the completeness of reporting (3, 4).

Dozens of systematic reviews have explored the extent of adherence to different reporting guidelines in some areas of health research (5-9). Saaman et al. (10) went one step further and performed a systematic review of systematic reviews assessing adherence to reporting guidelines. As they considered a broad range of clinical areas and study designs since the creation of the CONSORT Statement, their results provided a global picture of compliance with reporting guidelines in health research. The authors determined that, although some studies reported acceptable overall reporting quality and stated that it has improved since the introduction of the CONSORT Statement, most of the reviews (43 of 50, 86%) concluded that more improvement is needed, or that the reporting quality was inadequate, poor, medium or suboptimal. For this reason, the authors outlined some recommendations to enhance adherence to reporting guidelines and encouraged action to develop strategies to improve the current state of completeness of reporting.

In recent years, different initiatives aiming to improve adherence to reporting guidelines have been proposed, and some of them have already been evaluated. For example, writing aid tools such as WebCONSORT (11) have been developed and assessed, the influence of statistician involvement on quality of reporting has been evaluated (12), and different studies have investigated the effect of explicitly endorsing reporting guidelines on completeness of reporting (3, 4, 13, 14). While some

of these actions have not been shown to have a benefit (11, 12), others report better but still suboptimal levels of reporting (4, 5, 13 14). Therefore, further actions have to be taken to enhance the current levels of compliance with reporting guidelines.

As mentioned, several reviews have analyzed the quality of reporting in different clinical areas and for different studies (5-10), but no scoping review investigating what actions have been taken or suggested in order to improve compliance with reporting guidelines has been performed so far. Given the low levels of completeness of reporting in health research observed (10) and the urgent need of taking further actions to mitigate this problem, performing such a scoping review is warranted.

The goal of this scoping review is to identify interventions aiming to improve adherence to reporting guidelines in health research. More specifically, in addition to quantify the effect of those already evaluated, our aim is to gather ideas suggested in the literature as possible interventions that could be implemented in the future.

# Methods

Our research objectives will be addressed using established scoping review methodology. Since we aim to provide a wide overview of this field (15), and map the key concepts underpinning this research area and the main sources and types of evidence available, we consider that performing a scoping review is the most suitable approach (16). This protocol will follow the methodology manual published by the Joanna Briggs Institute for scoping reviews (17).

## Scoping review questions

We aim to answer the following questions:

1. What interventions to improve adherence to reporting guidelines in health research have been evaluated?
2. What actions to improve adherence to reporting guidelines have been suggested in the literature?
3. For each intervention found in the questions 1 and 2 above,

a) What was the target? We will consider the following possible targets: journal policies, journal editors, authors, reviewers, funders, ethical boards, or others.
b) What research stages does it affect? We will consider the following possible research stages: design, conducting, reporting, and peer review.
c) In which health care area was it evaluated or suggested?
d) What was the rationale behind it?
e) In cases where it was evaluated,
    a. How was it evaluated?
    b. What reporting guidelines does it consider?
    c. What was the effect on adherence to the reporting guidelines mentioned above?

**Inclusion criteria**

We will include:

1. Studies evaluating interventions aiming to improve the adherence to reporting guidelines in health research, irrespective of study design.
2. Commentaries, editorials, letters, and studies containing ideas or suggestions of interventions that can be implemented.

The reporting guidelines considered will be those shown in the EQUATOR (Enhancing the QUAlity and Transparency Of Health Research) Network website (1) as "Reporting Guidelines for main study types" (see Table 1). In addition, we will also include QUOROM (Quality of Reporting of Meta-analysis) for systematic reviews, since it was the precursor of PRISMA.

**Exclusion criteria**

We will consider the following languages: English, French, German, Catalan, and Spanish. Publications not written in any of those languages will be excluded.

**Search strategy**

We will search MEDLINE (via PubMed), EMBASE, and Cochrane Library databases for relevant articles. The search will be limited to articles published between 1 January 1996 and 31 March 2017, given that the CONSORT Statement is considered the first reporting guideline in biomedical research and it was published in 1996. The search strategy has been developed with the help of a librarian of the Barcelona Tech. Table 2 and Table 3 show the detailed search terms for MEDLINE and EMBASE. The search terms for Cochrane Library are analogue to those used for EMBASE.

The retrieved studies will be exported into the reference manager Mendeley, which will be subsequently used to remove the duplicates. One reviewer (DB) will first screen the titles and abstracts for eligibility before reading the full texts, while the other two reviewers (EC and JK) will be assigned and will also screen the titles and the abstracts of one of the two random halves in which the full list will be divided. This process will be carried out in Mendeley. Second, the reviewers will thoroughly examine the full-text for all potentially eligible articles to confirm whether the study should be included or not. One reviewer (DB) will ensure literature saturation by searching the reference lists of included studies, as well as the lists of articles citing them, according to PubMed. Disagreement will be addressed by consensus after discussion, and the third reviewer (EC or JK) will be consulted if no consensus is reached.

In addition, we will perform a grey literature search, including websites of networks promoting the use of reporting guidelines (i.e. EQUATOR Network), organizations that offer resources for reviewers (i.e. Publons), work groups of medical journal editors (i.e. ICMJE), biomedical journal publishers (i.e. BMJ Publishing Group), or funding agencies (i.e. NIH). In addition, a non-systematic search in Google Scholar will be performed.

The search will start in early May 2017.

**Data extraction**

The selected articles will be exported into an Excel file, where the data extraction will be performed. Two authors (DB and JK) will independently extract data as shown below:

1. Publication characteristics: title, year of publication, author, design, country of origin, and field of study.
2. Characteristics of the intervention:
    a. Classification as evaluated or suggested.
    b. Target: journal policies, authors, peer reviewers, journal editors, funders, ethical boards, or others.
    c. Research stage: design, conducting, reporting or peer review.
    d. Health care area where it was evaluated or suggested.
    e. Rationale.
    f. In case that it was evaluated, way of assessment, reporting guidelines considered, and effect of the intervention on adherence to those reporting guidelines.
3. Overall conclusions by the authors.

If further information is needed, we will contact the authors of the included studies. Any disagreement will be solved by discussion.

**Synthesis and reporting of results**

The interventions found will be first divided in two groups: the ones that have already been evaluated and the ones that have not. For each group, the interventions will be classified according to their target population, as well as to the research stage at which they were performed or suggested. The general characteristics of included studies will be summarized. In addition, for the group of evaluated interventions, we will describe how the authors assessed them, what reporting guidelines they considered, and what their effect on adherence to those reporting guidelines was. Descriptive statistical analysis will be performed.

A checklist for reporting scoping reviews, the "Preferred Reporting Items for Systematic Reviews and Meta-Analysis: extension for Scoping Reviews (PRISMA-ScR)", is currently under development (18). However, according to its developers, it is highly unlikely that the checklist will be published before we report the results of the review.

## Discussion

The aim of this review is to identify and classify interventions to improve adherence to reporting guidelines. We believe that having a wide picture of how the problem of adhering better to reporting guidelines has been tackled so far, as well as investigating what further actions have been suggested, is critical to facing the problem of improving adherence to reporting guidelines with a broader perspective.

This scoping review is part of a larger project whose ultimate goal is to explore what strategies to improve adherence to reporting guidelines could be implemented and formally assessed. The results of this review could send a message to funders, authors, editors and reviewers about what has already been done to face this critical problem, and about what else could be done from now on. We believe that this review could be a major first step towards developing future strategies to improve adherence to reporting guidelines.

**Funding:** This scoping review belongs to the ESR 14 research project from the Methods in Research on Research (MiRoR) project, which has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 676207.

**Authors' contributions:** All authors contributed to conceptualizing and designing the study. DB and EC drafted the manuscript. IB, DM, DGA, and JK made major revisions. All authors read and approved the final version of the manuscript.

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**Competing interests:** None declared.

**Ethics approval:** Not required.

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**Table 1**

Description of the acronyms and full names of the reporting guidelines shown in the EQUATOR website as "Reporting Guidelines for main study types".

| Acronym | Full name |
|---|---|
| CONSORT | Consolidated Standards of Reporting Trials |
| STROBE | Strengthening the Reporting of Observational Studies in Epidemiology |
| PRISMA | Preferred Reporting Items for Systematic Reviews and Meta-Analyses |
| SRQR | Standards for Reporting Qualitative Research |
| COREQ | Consolidated criteria for Reporting Qualitative research |
| STARD | Standard Protocol Items: Recommendations for Interventional Trials |
| TRIPOD | Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis |
| SQUIRE | Standards for Quality Improvement Reporting Excellence |
| CHEERS | Consolidated Health Economic Evaluation Reporting Standards |
| SPIRIT | Standard Protocol Items: Recommendations for Interventional Trials |
| PRISMA-P | Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols |
| CARE | Case Report |
| AGREE | Appraisal of Guidelines, Research and Evaluation |
| ARRIVE | Animal Research: Reporting In Vivo Experiments |
| RIGHT | Reporting Tool for Practice Guidelines in Health Care |

**Table 2**

Search terms for MEDLINE (from January 1, 1996, to March 31, 2017) via PubMed.

| Steps | Search terms |
|---|---|
| S1 | impact* [tw] |
| S2 | improv* [tw] |
| S3 | enhanc* [tw] |
| S4 | boost* [tw] |
| S5 | increas* [tw] |
| S6 | influenc* [tw] |
| S7 | effect [tw] |
| S8 | S1 **OR** S2 **OR** S3 **OR** S4 **OR** S5 **OR** S6 **OR** S7 |
| S9 | compliance [tw] |
| S10 | adherence [tw] |
| S11 | completeness [tw] |
| S12 | "quality of reporting" [tw] |
| S13 | "reporting quality" [tw] |
| S14 | S9 **OR** S10 **OR** S11 **OR** S12 **OR** S 13 |
| S15 | "Consolidated Standards of Reporting Trials"[tw] **OR** CONSORT[tw] |
| S16 | "Strengthening the Reporting of Observational Studies in Epidemiology"[tw] **OR** STROBE[tw] |
| S17 | "Preferred Reporting Items for Systematic reviews and Meta-Analyses"[tw] **OR** PRISMA[tw] |
| S18 | "Standards for Reporting Qualitative Research"[tw] **OR** SRQR[tw] |
| S19 | "Consolidated criteria for Reporting Qualitative research"[tw] **OR** COREQ[tw] |
| S20 | "Standard Protocol Items: Recommendations for Interventional Trials"[tw] **OR** STARD[tw] |
| S21 | "Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis"[tw] **OR** TRIPOD[tw] |
| S22 | "Standards for Quality Improvement Reporting Excellence"[tw] **OR** SQUIRE[tw] |
| S23 | "Consolidated Health Economic Evaluation Reporting Standards"[tw] **OR** CHEERS[tw] |
| S24 | "Standard Protocol Items: Recommendations for Interventional Trials"[tw] **OR** SPIRIT[tw] |
| S25 | "Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols"[tw] **OR** PRISMA-P[tw] |
| S26 | "Quality of Reporting of Meta-analysis"[tw] **OR** QUOROM[tw] |
| S27 | "Case Report"[tw] **AND** CARE[tw] |
| S28 | "Appraisal of Guidelines, Research and Evaluation"[tw] **AND** AGREE[tw] |
| S29 | "Animal Research: Reporting In Vivo Experiments"[tw] **AND** ARRIVE[tw] |
| S30 | "Reporting Tool for Practice Guidelines in Health Care"[tw] **AND** RIGHT[tw] |
| S31 | S15 **OR** S16 **OR** S17 **OR** S18 **OR** S19 **OR** S20 **OR** S21 **OR** S22 **OR** S23 **OR** S24 **OR** S25 **OR** S26 **OR** S27 **OR** S28 **OR** S29 **OR** S30 |
| S32 | S8 **AND** S14 **AND** S31 |
| S33 | S32 **AND** "1996/01/01"[PDAT] : "2017/03/31"[PDAT] |

**Table 3**

Search terms for EMBASE (from January 1, 1996, to March 31, 2017).

| Steps | Search terms |
|---|---|
| S1 | impact*:ti,ab |
| S2 | improv*:ti,ab |
| S3 | enhanc*:ti,ab |
| S4 | boost*:ti,ab |
| S5 | increas*:ti,ab |
| S6 | influenc*:ti,ab |
| S7 | effect:ti,ab |
| S8 | S1 **OR** S2 **OR** S3 **OR** S4 **OR** S5 **OR** S6 **OR** S7 |
| S9 | compliance:ti,ab |
| S10 | adherence:ti,ab |
| S11 | completeness:ti,ab |
| S12 | "quality of reporting":ti,ab |
| S13 | "reporting quality":ti,ab |
| S14 | S9 **OR** S10 **OR** S11 **OR** S12 **OR** S 13 |
| S15 | "Consolidated Standards of Reporting Trials":ti,ab **OR** CONSORT:ti,ab |
| S16 | "Strengthening the Reporting of Observational Studies in Epidemiology":ti,ab **OR** STROBE:ti,ab |
| S17 | "Preferred Reporting Items for Systematic reviews and Meta-Analyses":ti,ab **OR** PRISMA:ti,ab |
| S18 | "Standards for Reporting Qualitative Research":ti,ab **OR** SRQR:ti,ab |
| S19 | "Consolidated criteria for Reporting Qualitative research":ti,ab **OR** COREQ:ti,ab |
| S20 | "Standard Protocol Items: Recommendations for Interventional Trials":ti,ab **OR** STARD:ti,ab |
| S21 | "Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis":ti,ab **OR** TRIPOD:ti,ab |
| S22 | "Standards for Quality Improvement Reporting Excellence":ti,ab **OR** SQUIRE:ti,ab |
| S23 | "Consolidated Health Economic Evaluation Reporting Standards":ti,ab **OR** CHEERS:ti,ab |
| S24 | "Standard Protocol Items: Recommendations for Interventional Trials":ti,ab **OR** SPIRIT:ti,ab |
| S25 | "Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols":ti,ab **OR** PRISMA-P:ti,ab |
| S26 | "Quality of Reporting of Meta-analysis":ti,ab **OR** QUOROM:ti,ab |
| S27 | "Case Report":ti,ab **AND** CARE:ti,ab |
| S28 | "Appraisal of Guidelines, Research and Evaluation":ti,ab **AND** AGREE:ti,ab |
| S29 | "Animal Research: Reporting In Vivo Experiments":ti,ab **AND** ARRIVE:ti,ab |
| S30 | "Reporting Tool for Practice Guidelines in Health Care":ti,ab **AND** RIGHT:ti,ab |
| S31 | S15 **OR** S16 **OR** S17 **OR** S18 **OR** S19 **OR** S20 **OR** S21 **OR** S22 **OR** S23 **OR** S24 **OR** S25 **OR** S26 **OR** S27 **OR** S28 **OR** S29 **OR** S30 |
| S32 | S8 **AND** S14 **AND** S31 |
| S33 | S32 AND **AND** [1996-2017]/py **NOT**[3-31-2017]/sd |

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# Interventions to improve adherence to reporting guidelines in health research: a scoping review protocol



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# Interventions to improve adherence to reporting guidelines in health research: a scoping review protocol

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## Abstract

**Introduction:** There is evidence that the use of some reporting guidelines, such as the Consolidated Standards for Reporting Trials (CONSORT), is associated with improved completeness of reporting in health research. However, the current levels of adherence to reporting guidelines are suboptimal. Over the last few years, several actions aiming to improve compliance with reporting guidelines have been taken and proposed. We will conduct a scoping review of interventions to improve adherence to reporting guidelines in health research that have been evaluated or suggested, in order to inform future interventions.

**Methods and analysis:** Our review will follow the Joanna Briggs Institute scoping review methods manual. We will search for relevant studies in MEDLINE, EMBASE, and Cochrane Library databases. Moreover, we will carry out

lateral searches from the reference lists of the included studies, as well as from the lists of articles citing the included ones. One reviewer will screen the full list, which will be randomly split into two halves and independently screened by the other two reviewers. Two reviewers will perform data extraction independently. Discrepancies will be solved through discussion. In addition, this search strategy will be supplemented by a grey literature search. The interventions found will be classified as assessed or suggested, as well as according to different criteria, in relation to their target (journal policies, journal editors, authors, reviewers, funders, ethical boards, or others) or the research stage at which they are performed (design, conducting, reporting, or peer review). Descriptive statistical analysis will be performed.

**Ethics and dissemination:** A paper summarizing the findings from this review will be published in a peer-reviewed journal. This scoping review will contribute to a better understanding and a broader perspective on how the problem of adhering better to reporting guidelines has been tackled so far. This could be a major first step towards developing future strategies to improve compliance with reporting guidelines in health research.

## Strengths and limitations of the study

- Results from this scoping review will contribute to a broader perspective on how the problem of improving compliance with reporting guidelines has been addressed in the published literature thus far.
- This scoping review is part of a larger project whose ultimate goal is to explore what strategies to improve adherence to reporting guidelines could be implemented and formally assessed.
- A potential limitation could be the small number of eligible articles in the literature.
- As this is a scoping review, the quality of the evidence will not be assessed.

## Introduction

Reporting guidelines have been available since the inception of the CONSORT statement (1996), which provided a minimum set of recommendations for reporting randomized trials. From that time, different reporting guidelines for different study types, data, and clinical areas have been developed. In general, these guidelines provide advice on how to report research methods and findings (1).

Although the vast majority of reporting guidelines have not yet been assessed as to whether they help improve the reporting of research (2), for some of them, such as CONSORT, it has been shown that they may enhance the completeness of reporting (3, 4).

Dozens of systematic reviews have explored the extent of adherence to different reporting guidelines in some areas of health research (5-9). Saaman et al. (10) went one step further and performed a systematic review of systematic reviews assessing adherence to reporting guidelines. As they considered a broad range of clinical areas and study designs since the creation of the CONSORT Statement, their results provided a global picture of compliance with reporting guidelines in health research. The authors determined that, although some studies reported acceptable overall reporting quality and stated that it has improved since the introduction of the CONSORT Statement, most of the reviews (43 of 50, 86%) concluded that more improvement is needed, or that the reporting quality was inadequate, poor, medium or suboptimal. For this reason, the authors outlined some recommendations to enhance adherence to reporting guidelines and encouraged action to develop strategies to improve the current state of completeness of reporting.

In recent years, different initiatives aiming to improve adherence to reporting guidelines have been proposed, and some of them have already been evaluated. For example, writing aid tools such as WebCONSORT (11) have been developed and assessed, the influence of statistician involvement on quality of reporting has been evaluated (12), and different studies have investigated the effect of explicitly endorsing reporting guidelines on completeness of reporting (3, 4, 13, 14). While some

of these actions have not been shown to have a benefit (11, 12), others report better but still suboptimal levels of reporting (4, 5, 13 14). Therefore, further actions have to be taken to enhance the current levels of compliance with reporting guidelines.

As mentioned, several reviews have analyzed the quality of reporting in different clinical areas and for different studies (5-10), but no scoping review investigating what actions have been taken or suggested in order to improve compliance with reporting guidelines has been performed so far. Given the low levels of completeness of reporting in health research observed (10) and the need of taking further actions to mitigate this problem, we consider that performing such a scoping review is warranted.

The goal of this scoping review is to identify interventions aiming to improve adherence to reporting guidelines in health research. More specifically, in addition to quantify the effect of those already evaluated, our aim is to gather ideas suggested in the literature as possible interventions that could be implemented in the future.

## Methods

Our research objectives will be addressed using established scoping review methodology. Since we aim to provide a wide overview of this field (15), and map the key concepts underpinning this research area and the main sources and types of evidence available, we consider that performing a scoping review is the most suitable approach (16). This protocol will follow the methodology manual published by the Joanna Briggs Institute for scoping reviews (17).

### Scoping review questions

We aim to answer the following questions:

1. What interventions to improve adherence to reporting guidelines in health research have been evaluated?
2. What actions to improve adherence to reporting guidelines have been suggested in the literature?
3. For each intervention found in the questions 1 and 2 above,

a) What was the target? We will consider the following possible targets: journal policies, journal editors, authors, reviewers, funders, ethical boards, or others.
b) What research stages does it affect? We will consider the following possible research stages: design, conducting, reporting, and peer review.
c) In which health care area was it evaluated or suggested?
d) What was the rationale behind it?
e) In cases where it was evaluated,
    a. How was it evaluated?
    b. What reporting guidelines does it consider?
    c. What was the effect on adherence to the reporting guidelines mentioned above?

**Inclusion criteria**

We will include:

1. Studies evaluating interventions aiming to improve the adherence to reporting guidelines in health research, irrespective of study design.
2. Commentaries, editorials, letters, and studies containing ideas or suggestions of interventions that can be implemented.

The reporting guidelines considered will be those shown in the EQUATOR (Enhancing the QUAlity and Transparency Of Health Research) Network website (1) as "Reporting Guidelines for main study types" (see Table 1). In addition, we will also include QUOROM (Quality of Reporting of Meta-analyses) for systematic reviews, since it was the precursor of PRISMA.

**Exclusion criteria**

We will consider the following languages: English, French, German, Catalan, and Spanish. Publications not written in any of those languages will be excluded.

**Search strategy**

We will search MEDLINE (via PubMed), EMBASE, and Cochrane Library databases for relevant articles. The search will be limited to articles published between 1 January 1996 and 31 March 2017, given that the CONSORT Statement is considered the first reporting guideline in biomedical research and it was published in 1996. The search strategy has been developed with the help of a librarian of the Barcelona Tech. Table 2 and Table 3 show the detailed search terms for MEDLINE and EMBASE. The search terms for Cochrane Library are analogue to those used for EMBASE.

The retrieved studies will be exported into the reference manager Mendeley, which will be subsequently used to remove the duplicates. One reviewer (DB) will first screen the titles and abstracts for eligibility before reading the full texts, while the other two reviewers (EC and JK) will be assigned and will also screen the titles and the abstracts of one of the two random halves in which the full list will be divided. This process will be carried out in Mendeley. Second, the reviewers will thoroughly examine the full-text for all potentially eligible articles to confirm whether the study should be included or not. One reviewer (DB) will ensure literature saturation by searching the reference lists of included studies, as well as the lists of articles citing them, according to PubMed. Disagreement will be addressed by consensus after discussion, and the third reviewer (EC or JK) will be consulted if no consensus is reached.

In addition, we will perform a grey literature search, including websites of networks promoting the use of reporting guidelines (i.e. EQUATOR Network), organizations that offer resources for reviewers (i.e. Publons), work groups of medical journal editors (i.e. ICMJE), biomedical journal publishers (i.e. BMJ Publishing Group), or funding agencies (i.e. NIH). In addition, a non-systematic search in Google Scholar will be performed.

The starting date of the search is 8 May 2017.

**Data extraction**

The selected articles will be exported into an Excel file, where the data extraction will be performed. Two authors (DB and JK) will independently extract data as shown below:

1. Publication characteristics: title, year of publication, author, design, country of origin, and field of study.
2. Characteristics of the intervention:
    a. Classification as evaluated or suggested.
    b. Target: journal policies, authors, peer reviewers, journal editors, funders, ethical boards, or others.
    c. Research stage: design, conducting, reporting or peer review.
    d. Health care area where it was evaluated or suggested.
    e. Rationale.
    f. In case that it was evaluated, way of assessment, reporting guidelines considered, and effect of the intervention on adherence to those reporting guidelines.
3. Overall conclusions by the authors.

If further information is needed, we will contact the authors of the included studies. Any disagreement will be solved by discussion.

**Synthesis and reporting of results**

The interventions found will be first divided in two groups: the ones that have already been evaluated and the ones that have not. For each group, the interventions will be classified according to their target population, as well as to the research stage at which they were performed or suggested. The general characteristics of included studies will be summarized. In addition, for the group of evaluated interventions, we will describe how the authors assessed them, what reporting guidelines they considered, and what their effect on adherence to those reporting guidelines was. Descriptive statistical analysis will be performed.

A checklist for reporting scoping reviews, the "Preferred Reporting Items for Systematic Reviews and Meta-Analysis: extension for Scoping Reviews (PRISMA-ScR)", is currently under development (18). However, according to its developers, it is highly unlikely that the checklist will be published before we report the results of the review.

## Discussion

The aim of this review is to identify and classify interventions to improve adherence to reporting guidelines. We believe that having a wide picture of how the problem of adhering better to reporting guidelines has been tackled so far, as well as investigating what further actions have been suggested, is critical to facing the problem of improving adherence to reporting guidelines with a broader perspective.

This scoping review is part of a larger project whose ultimate goal is to explore what strategies to improve adherence to reporting guidelines could be implemented and formally assessed. The results of this review could send a message to funders, authors, editors and reviewers about what has already been done to face this critical problem, and about what else could be done from now on. We believe that this review could be a major first step towards developing future strategies to improve adherence to reporting guidelines.

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**Authors' contributions:** All authors contributed to conceptualizing and designing the study. DB and EC drafted the manuscript. IB, DM, DGA, and JK made major revisions. All authors read and approved the final version of the manuscript.

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**Competing interests:** None declared.

**Ethics approval:** Not required.

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| CARE | Case Report |
| AGREE | Appraisal of Guidelines, Research and Evaluation |
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|---|---|
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| S2 | improv* [tw] |
| S3 | enhanc* [tw] |
| S4 | boost* [tw] |
| S5 | increas* [tw] |
| S6 | influenc* [tw] |
| S7 | effect [tw] |
| S8 | S1 **OR** S2 **OR** S3 **OR** S4 **OR** S5 **OR** S6 **OR** S7 |
| S9 | compliance [tw] |
| S10 | adherence [tw] |
| S11 | completeness [tw] |
| S12 | quality of reporting [tw] |
| S13 | reporting quality [tw] |
| S14 | S9 **OR** S10 **OR** S11 **OR** S12 **OR** S 13 |
| S15 | Consolidated [tw] Standards [tw] Reporting [tw] Trials [tw] **OR** CONSORT[tw] |
| S16 | Strengthening [tw] Reporting [tw] Observational [tw] Studies [tw] Epidemiology[tw] **OR** STROBE[tw] |
| S17 | Preferred [tw] Reporting [tw] Items [tw] Systematic [tw] reviews [tw] Meta-Analyses [tw] **OR** PRISMA[tw] |
| S18 | Standards [tw] Reporting [tw] Qualitative Research[tw] **OR** SRQR[tw] |
| S19 | Consolidated [tw] Criteria [tw] Reporting [tw] Qualitative [tw] Research[tw] **OR** COREQ[tw] |
| S20 | Standard [tw] Protocol [tw] Items [tw] Recommendations [tw] Interventional [tw] Trials[tw] **OR** STARD[tw] |
| S21 | Transparent [tw] Reporting [tw] multivariable [tw] prediction [tw] model [tw] Individual [tw] Prognosis [tw] Diagnosis[tw] **OR** TRIPOD[tw] |
| S22 | Standards [tw] QUality [tw] Improvement [tw] Reporting [tw] Excellence[tw] **OR** SQUIRE[tw] |
| S23 | Consolidated [tw] Health [tw] Economic [tw] Evaluation [tw] Reporting [tw] Standards[tw] **OR** CHEERS[tw] |
| S24 | Standard [tw] Protocol [tw] Items [tw] Recommendations [tw] Interventional [tw] Trials[tw] **OR** SPIRIT[tw] |
| S25 | Preferred [tw] Reporting [tw] Items [tw] Systematic [tw] Review [tw] Meta-Analysis [tw] Protocols[tw] **OR** PRISMA-P[tw] |
| S26 | Quality [tw] Reporting [tw] Meta-analyses[tw] **OR** QUOROM[tw] |
| S27 | Case [tw] Report [tw] **AND** CARE[tw] |
| S28 | Appraisal [tw] Guidelines [tw] Research [tw] Evaluation[tw] **AND** AGREE[tw] |
| S29 | Animal [tw] Research [tw] Reporting [tw] Vivo [tw] Experiments[tw] **AND** ARRIVE[tw] |
| S30 | Reporting [tw] Tool [tw] Practice [tw] Guidelines [tw] Health [tw] Care[tw] **AND** RIGHT[tw] |
| S31 | S15 **OR** S16 **OR** S17 **OR** S18 **OR** S19 **OR** S20 **OR** S21 **OR** S22 **OR** S23 **OR** S24 **OR** S25 **OR** S26 **OR** S27 **OR** S28 **OR** S29 **OR** S30 |

| | |
|---|---|
| S32 | S8 **AND** S14 **AND** S31 |
| S33 | S32 **AND** "1996/01/01"[PDAT] : "2017/03/31"[PDAT] |

**Table 3**

Search terms for EMBASE (from January 1, 1996, to March 31, 2017).

| Steps | Search terms |
|---|---|
| S1 | impact*:ti,ab |
| S2 | improv*:ti,ab |
| S3 | enhanc*:ti,ab |
| S4 | boost*:ti,ab |
| S5 | increas*:ti,ab |
| S6 | influenc*:ti,ab |
| S7 | effect:ti,ab |
| S8 | S1 **OR** S2 **OR** S3 **OR** S4 **OR** S5 **OR** S6 **OR** S7 |
| S9 | compliance:ti,ab |
| S10 | adherence:ti,ab |
| S11 | completeness:ti,ab |
| S12 | “quality of reporting”:ti,ab |
| S13 | “reporting quality”:ti,ab |
| S14 | S9 **OR** S10 **OR** S11 **OR** S12 **OR** S 13 |
| S15 | “Consolidated Standards of Reporting Trials”:ti,ab **OR** CONSORT:ti,ab |
| S16 | “Strengthening the Reporting of Observational Studies in Epidemiology”:ti,ab **OR** STROBE:ti,ab |
| S17 | “Preferred Reporting Items for Systematic reviews and Meta-Analyses”:ti,ab **OR** PRISMA:ti,ab |
| S18 | “Standards for Reporting Qualitative Research”:ti,ab **OR** SRQR:ti,ab |
| S19 | “Consolidated criteria for Reporting Qualitative research”:ti,ab **OR** COREQ:ti,ab |
| S20 | “Standard Protocol Items: Recommendations for Interventional Trials”:ti,ab **OR** STARD:ti,ab |
| S21 | “Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis”:ti,ab **OR** TRIPOD:ti,ab |
| S22 | “Standards for Quality Improvement Reporting Excellence”:ti,ab **OR** SQUIRE:ti,ab |
| S23 | “Consolidated Health Economic Evaluation Reporting Standards”:ti,ab **OR** CHEERS:ti,ab |
| S24 | “Standard Protocol Items: Recommendations for Interventional Trials”:ti,ab **OR** SPIRIT:ti,ab |
| S25 | “Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols”:ti,ab **OR** PRISMA-P:ti,ab |
| S26 | “Quality of Reporting of Meta-analysis”:ti,ab **OR** QUOROM:ti,ab |
| S27 | “Case Report”:ti,ab **AND** CARE:ti,ab |
| S28 | “Appraisal of Guidelines, Research and Evaluation”:ti,ab **AND** AGREE:ti,ab |
| S29 | “Animal Research: Reporting In Vivo Experiments”:ti,ab **AND** ARRIVE:ti,ab |
| S30 | “Reporting Tool for Practice Guidelines in Health Care”:ti,ab **AND** RIGHT:ti,ab |
| S31 | S15 **OR** S16 **OR** S17 **OR** S18 **OR** S19 **OR** S20 **OR** S21 **OR** S22 **OR** S23 **OR** S24 **OR** S25 **OR** S26 **OR** S27 |

| | |
|---|---|
| | **OR** S28 **OR** S29 **OR** S30 |
| S32 | S8 **AND** S14 **AND** S31 |
| S33 | S32 **AND** [1996-2017]/py **NOT** [31-3-2017]/sd |

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