Guide to promoting the opening, transparency and reproducibility of research published by SciELO journals

September 17, 2018

1. Introduction

Transparency and openness of research processes and content is essential to enable the assessment, validation and reproducibility of the results, as well as to ensure the preservation and possibility of reusing data, codes and materials collected and used in the design, conduct and communication of published research. Consequently, articles that communicate research should indicate and refer to the availability of the content underlying the elaboration of the research and the results obtained.

With the aim of promoting the alignment of SciELO journals with best practices of open science communication, the SciELO Program has promoted the adoption of such practices with the proactive participation of all SciELO Network actors, especially the editors and staff of SciELO journals, through a process of knowledge accumulation that allows to reconcile the national conditions and priorities of research, disciplines, thematic areas and journals with the international state of the art [1]. In this sense, at the end of 2017 the topics "5.2.12 Open Access Policy and Alignment with Open Science" and "5.2.15. Availability of research data" from the SciELO Brazil Criteria [2] were updated in order to align them with the [Guidelines for Transparency and Openness Promotion (TOP) in Journal Policies and Practices](#) - TOP Guidelines[1].

To be in line with the advancement of best practices of open science communication, SciELO journals are called upon to define and progressively implement a plan for reviewing, updating and reformulating their editorial policies. To this end, the purpose of this guide is to assist SciELO journals in this process through the adoption of TOP Guidelines version 1.0.1.

The TOP Guidelines identify eight criteria or categories that journals should consider in transparency management policies, referencing and access to data, codes and materials used in research:

- C1. Citations
- C2. Data transparency
- C3. Analytic methods (code) transparency
- C4. Research materials transparency
- C5. Design and analysis transparency
- C6. Preregistration of studies
- C7. Preregistration of analysis plans
- C8. Replication

Yet according to the TOP Guidelines, journals may adopt and apply each of the 8 criteria at 3 levels of implementation that reflect the level of transparency that journals require from

---

[1] In order to promote greater openness and reproducibility of research and transparency in scientific practices and research published by journals, the [Center for Open Science](#) (COS), with the support of researchers, editors and funders, [3] elaborated the [Guidelines for Transparency and Openness Promotion (TOP) in Journal Policies and Practices](#) - TOP Guidelines), that are although guidelines created with a focus on scientific journals, may and have been adapted and adopted by publishers and funding agencies.

authors. Level 1 is the mildest and is identified by the verb *Disclose*, i.e., the journal merely states in the instructions to authors what the criterion means. Level 2 is identified by the verb *Require*, i.e., the journal states in the instructions to authors what the criterion means and requires its fulfillment as a condition to publish the article. Level 3 is the most rigorous and is identified by the verb *Verify*, i.e., the journal informs what the criterion means, enforces it, and verifies whether it has been met. The lack of definition on the adoption of any of the three levels is identified in the TOP Guidelines as Level 0.

SciELO's orientation is for journals to start implementing most of the criteria beginning with Level 1 as soon as possible, which will contribute to the process of knowledge accumulation by editors and authors.

2. Adoption of categories and levels

2.1. Citations

In a similar way to citing documents from the scientific literature (articles, books and etc.), it is important that the data, codes and research materials underlying the article are properly cited in the text and referenced in the references list.

The citations in the text and the respective references at the end of the article explicit the recognition of the original intellectual contributions of the respective authors of the cited contents.

The following chart identifies each of the levels of adoption of the Citations criterion.

Level 0	Level 1	Level 2	Level 3
Journal encourages citation of data, codes and materials or says nothing.	Journal describes how to cite data, codes and materials in the instructions to authors with clear rules and examples.	Article provides appropriate citation for data, codes and materials according to the instructions to authors.	Article is not published until providing appropriate citation for data, codes and materials according to the instructions to authors.

Adoption of Level 1 - Document in the instructions to authors how to cite data, codes and materials with examples[2].

Suggested model:

It is recommended that all data, codes and materials underlying the article and used in the design and conduct of the research are properly cited in the text and included in the references list, preferably with a persistent identifier such as DOI.

---

[2] For more information on citation of data, codes and materials consult the "Citation Guide for Research Data".

> *Example of data reference:*
> - *ANDRADE, Márcio. Estudo de genes em ratos albinos na América Latina. OSF [dataset], 2018, ASM0000v1. http://dx.doi.org/10.1590/0123-45620187214*
> - *…*

Adoption of Level 2 - Document in the instructions to authors how data, codes and materials should be cited and require authors to do so, according to the instructions provided[2].

Suggested model:

> *The data, codes and materials underlying the article and used in the design and conduct of the research should be properly cited in the text and included in the references list, preferably with a persistent identifier such as DOI.*
>
> *Example of data reference:*
> - *ANDRADE, Márcio. Estudo de genes em ratos albinos na América Latina. OSF [dataset], 2018, ASM0000v1. http://dx.doi.org/10.1590/0123-45620187214*
> - *…*

Adoption of Level 3 - Document in the instructions to authors how data, codes and materials should be cited with examples[2] and inform that the article will not be published until the citation is in compliance with what has been established by the journal.

Suggested model:

> *All data, codes and materials underlying the article and used in the design and conduct of the research should be properly cited in the text and included in the references list, preferably with a persistent identifier such as DOI. The article will not be published until the citations are in accordance with the examples below.*
>
> *Example of data reference:*
> - *ANDRADE, Márcio. Estudo de genes em ratos albinos na América Latina. OSF [dataset], 2018, ASM0000v1. http://dx.doi.org/10.1590/0123-45620187214*
> - *…*

2.2. Data, analytic methods (code), and research materials transparency

In setting up criteria for data, codes and research materials, journals should consider that:

- Authors should be instructed to maximize the accessibility and reuse of dataset (data, codes and materials) by choosing file formats from which data can be extracted efficiently (e.g., spreadsheets instead of PDF for tables and tabulated data).
- Dataset means all data (whether data, codes or materials) required to interpret and replicate the results presented in the article.

- Authors who use original data must:
  - Include all variables, treatment conditions and observations described in the manuscript;
  - Provide a complete list of the procedures used to collect, pre-process, clean or generate data;
  - Provide software codes, scripts, and other documentation sufficient to accurately reproduce all published results;
  - Provide research materials and description of procedures required to perform independent replication of published research [4].

The following chart identifies each level of adoption of data, codes, and research materials criteria:

	Level 0	Level 1	Level 2	Level 3
Data transparency	Journal encourages data sharing or says nothing.	Article indicates whether data is available and, if so, where to access it.	Data must be deposited in a trusted repository. Exceptions should be indicated in article submission.	Data must be deposited in a trusted repository, the reported analyzes will be reproduced independently prior to the publication of the article and the journal assigns a badge for meeting the requirements.
Analytic methods (code) transparency	Journal encourages code sharing or says nothing.	Article indicates whether codes are available and, if so, where to access them.	Codes must be deposited in a trusted repository. Exceptions should be indicated in article submission.	Codes must be deposited in a trusted repository and the reported analyzes will be reproduced independently prior to publication of the article.
Research materials transparency	Journal encourages material sharing or says nothing.	Article indicates whether research materials are available and, if so, where to access them.	Research materials must be deposited in a trusted repository. Exceptions should be indicated in article submission.	Research materials must be deposited in a trusted repository, the reported analyzes will be reproduced independently prior to publication of the article and the journal assigns a

				badge for meeting the requirements.

Adoption of Level 1 - Document in the instructions to authors that articles resulting from original research must be submitted with a section called "Data Availability"[3] informing whether the dataset is available and, if so, where to access it.

Suggested model:

All articles resulting from original research must be submitted with a section called "Data availability" stating whether the dataset is available and where to access it.

*Suggested texts for "**Data availability**" section:*

Non-available data	*The dataset supporting the results of this study is not publicly available.*
Available data	*The entire dataset supporting the results of this study was published in the article itself.*
	The entire dataset supporting the results of this study was published in the article and in the section "Supplementary materials".
	The entire dataset supporting the results of this study was made available in [repository name] and can be accessed in [URL or DOI].
	The entire dataset supporting the results of this study was made available in [repository name] with identifiers [list of identifiers].
	The entire anonymized dataset supporting the results of this study has been made available in [repository name] and can be accessed in [URL or DOI].
Data available upon request	*The entire dataset supporting the results of this study is available upon request to the corresponding author [name of the corresponding author]. The dataset is not publicly available due to [details of the reason for the restriction, e.g. contain information that compromises the privacy of the research participants].*
	The entire dataset supporting the results of this study is available upon request to [name of organization]. The dataset is not publicly available due to [details of the reason for the restriction, e.g. contain information that compromises the privacy of the research participants].

If the article is accepted for publication, "Data availability" will be published in the final article.

Adoption of Level 2 - Document in the instructions to authors that articles resulting from original research must be submitted with a section called "Data Availability"[3], that data

---

[3] "*Disponibilidade de dados*" in Portuguese and "*Disponibilidad de datos*" in Spanish.

must be deposited in a trusted repository[4] and that exceptions to data sharing for ethical or legal reasons must be informed in the submission of the article.

Suggested model:

All articles resulting from original research must be submitted with a section called "Data Availability" and its dataset must be deposited in a trusted repository. In case there are restrictions on the data sharing for ethical or legal reasons, they must be informed when submitting the article.

*Suggested texts for "**Data availability**" section:*

Available data	*The entire dataset supporting the results of this study was published in the article itself.*
	The entire dataset supporting the results of this study was published in the article and in the section "Supplementary materials".
	The entire dataset supporting the results of this study was made available in [repository name] and can be accessed in [URL or DOI].
	The entire dataset supporting the results of this study was made available in [repository name] and can be accessed in [URL or DOI].
	The entire anonymized dataset supporting the results of this study has been made available in [repository name] and can be accessed in [URL or DOI].
Data available upon request	*The entire dataset supporting the results of this study is available upon request to the corresponding author [name of the corresponding author]. The dataset is not publicly available due to [details of the reason for the restriction, e.g. contain information that compromises the privacy of the research participants].*
	The entire dataset supporting the results of this study is available upon request to [name of organization]. The dataset is not publicly available due to [details of the reason for the restriction, e.g. contain information that compromises the privacy of the research participants].

If the article is accepted for publication, "Data availability" will be published in the final article.

Adoption of Level 3 - Documenting in the instructions to authors that articles resulting from original research must be submitted with a section called "Data Availability"[3], that data must be deposited in a trusted repository[5], that exceptions to data sharing for ethical or legal reasons must be informed at submission of the article and that publication of the article is conditional upon verification of the replicability of the results.

Suggested model:

---

[4] For more information on repositories see "List of repositories for filing research data".
[5] For more information on repositories see "List of repositories for filing research data.

All articles resulting from original research must be submitted with a section called "Data Availability" and its dataset must be deposited in a trusted repository. In case there are restrictions on the sharing of data for ethical or legal reasons, they must be informed when submitting the article.

Suggested texts for "**Data availability**" section:

Available data	The entire dataset supporting the results of this study was published in the article itself.
	The entire dataset supporting the results of this study was published in the article and in the section "Supplementary materials".
	The entire dataset supporting the results of this study was made available in [repository name] and can be accessed in [URL or DOI].
	The entire dataset supporting the results of this study was made available in [repository name] with identifiers [list of identifiers].
	The entire anonymized dataset supporting the results of this study has been made available in [repository name] and can be accessed in [URL or DOI].
Data available upon request	The entire dataset supporting the results of this study is available upon request to the corresponding author [name of the corresponding author]. The dataset is not publicly available due to [details of the reason for the restriction, e.g. contain information that compromises the privacy of the research participants].
	The entire dataset supporting the results of this study is available upon request to [name of organization]. The dataset is not publicly available due to [details of the reason for the restriction, e.g. contain information that compromises the privacy of the research participants].

[Journal title] will check whether the results are replicable using the author's dataset and the methods of analysis, and the approval and publication of the article is conditioned to the replicability of the results.

If the article is accepted for publication, "Data availability" will be published in the final article.

2.3. Design and analysis transparency

As the standards for research reporting are highly dependent on the thematic area of research, we encourage journals to incorporate existing standards that best apply to the area and type of study [4, 5].

For a general outline on this category, we recommend reading topic 5 "Design and analysis transparency" of the TOP Guidelines.

Level 0	Level 1	Level 2	Level 3

Journal encourages design and analysis transparency or says nothing.	Journal describes standard for design and analysis transparency.	Journal requires adherence to the standard for design and analysis transparency.	Journal requires adherence to the standard for design and analysis transparency for article review and publication.

Adoption of Level 1 - Document in the instructions to authors the standards recommended by the journal for design and analysis transparency in the elaboration of research reports.

Suggested model:

> *It is recommended that before submitting the manuscript, authors verify that their article follows the appropriate standards to the subject of the research / type of study to disclose key aspects of the research design and analysis.*
> - *Observational studies in epidemiology: http://www.equator-network.org/reporting-guidelines/strobe/*
> - *…*
>
> *It is recommended that the checklist / form used be sent along with the article in the submission as a supporting document.*

Adoption of Level 2 - Document in the instructions to authors the standards required by the journal for design and analysis transparency in the elaboration of research reports.

Suggested model:

> *Before submitting, authors must verify whether their article follows the appropriate standards to the subject of the research / type of study to disclose key aspects of the research design and analysis.*
> - *Observational studies in epidemiology: http://www.equator-network.org/reporting-guidelines/strobe/*
> - *…*
>
> *In article submission, authors must confirm that they have revised the standards, whether any standards were relevant to the publication of the research, and confirm that they have adopted this standard in the article. The checklist / form used must be sent together with the article in the submission as a supporting document.*

Adoption of Level 3 - Document in the instructions to authors the standards required by the journal for design and analysis transparency in the elaboration of research reports and inform that the publication of the article is conditioned to the verification of adherence to the standards.

Suggested model:

> *Before submitting, authors must verify that their article follows the appropriate standards to the subject of the research / type of study to disclose key aspects of the research design and analysis.*
> - *Observational studies in epidemiology: http://www.equator-network.org/reporting-guidelines/strobe/*
> - *…*

In article submission, authors must confirm that they have revised the standards, whether any standards were relevant to the publication of the research, and confirm that they have adopted this standard in the article. The checklist / form used must be sent together with the article in the submission as a supporting document.

[Journal title] will verify that the appropriate standards have been adopted, and the approval and publication of the article is conditional on the verification of adherence to the standards.

2.4. Preregistration of studies and analysis plans

Preregistration of studies involves recording the study design, variables and treatment conditions, and the inclusion of an analysis plan involves the specification of the sequence of analyzes or the statistical model that will be reported, so that the preregistration of analysis plan replaces preregistration of study and highlights the distinction between confirmatory research and exploratory research.

	Level 0	Level 1	Level 2	Level 3
Preregistration of studies	Journal says nothing.	Article indicates whether there is a preregistration study and, if so, where to access it.	Article indicates whether there is a preregistration of study and, if so, allows access by the journal during peer review for verification.	Journal requires preregistration of study and provides link and badge for meeting requirements.
Preregistration of analysis plans	Journal says nothing.	Article indicates whether there is a preregistration with analysis plans and, if so, where to access it.	Article indicates whether there is a preregistration with the analysis plans and, if so, allows access by the journal during peer review for verification.	Journal requires preregistration of study with the analysis plans and provides link and badge for meeting requirements.

Adoption of Level 1 - Document in the instructions to authors that, during submission, the authors must inform whether there is a preregistration of the study / preregistration of analysis plan and, if so, where to access it.

Suggested model:

During submission, authors must indicate whether there is preregistration of the study / preregistration of the analysis plan and where to access it.

Adoption of Level 2 - Document in the instructions to authors that, during submission, the authors must inform whether there is a preregistration of the study / preregistration of analysis plan and make it available to the journal before publication for verification of validity.

Suggested model:

> *During submission, authors must indicate whether there is preregistration of the study / preregistration of the analysis plan and, if so, make it available to [journal title] prior to publication to verify validity.*

Adoption of Level 3 - Document in the instructions to authors that the articles will only be published if the research conducted was preregistered.

Suggested model:

> *Articles submitted for publication will only be published if the research conducted was preregistered. During submission, authors must indicate where to access preregistration.*

2.5. Replication

"The transparency standards above account for reproducibility of reported results based on the originating data and for sharing sufficient information to conduct an independent replication." [4]

Replication or reproducibility means to independently repeat the methodology of a research using the same materials.

Level 0	Level 1	Level 2	Level 3
Journal discourages submission of replication studies or says nothing.	Journal encourages submission of replication studies.	Journal encourages submission of replication studies and performs blind peer review.	Journal uses Registered Reports as a submission option to replicate studies with blind peer review before observing study results.

Adoption of Level 1 - Document in the instructions to authors the support by the journal to the submission of replication studies, mainly of studies published by the journal.

Suggested model:

> *[Journal title] encourages the submission of replication studies, mainly of studies published in this journal.*

Adoption of Level 2 - Document in the instructions to authors the support by the journal to the submission of replication studies and inform the elaboration of blind peer review.

Suggested model:

> *[Journal title] encourages the submission of replication studies, mainly of studies published in this journal.*
>
> *Replication studies are usually reviewed in two stages, with blind peer review.*
>
> *First step: in the initial presentation the authors must:*
> - *Inform in the cover letter that the manuscript is a replication study submission.*
> - *Submit a manuscript with abstract, introduction, and methods without the results and discussion sections, and the manuscript submitted must not indicate any information about the responses relevant to the results.*
> - *The methods must contain a complete analysis plan on what must be included in the full article.*
> - *If necessary, irrelevant results responses can be reported to demonstrate, for example, that experimental manipulations were effective or the outcome variables were measured reliably and according to distributive assumptions.*
>
> *Second step: if the submission goes through the initial review, the authors will send a complete manuscript for the second stage of the evaluation to confirm that the final report adequately responds to the concerns of the initial submission.*

Adoption of Level 3 - Document in the instructions to authors the use of [Registered Reports](#) as a submission option for replications studies.

Suggested model:

> *[Journal title] encourages the submission of replication studies and Registered Reports as a submission option for replication studies, mainly studies published in this journal.*
>
> *Replication studies are usually reviewed in two stages, with blind peer review.*
>
> *First step: in the initial presentation the authors must:*
> - *Inform in the cover letter that the manuscript is a replication study submission.*
> - *Submit a manuscript with abstract, introduction, and methods without the results and discussion sections, and the manuscript submitted must not indicate any information about the responses relevant to the results.*
> - *The methods must contain a complete analysis plan on what must be included in the full article.*
> - *If necessary, irrelevant results responses can be reported to demonstrate, for example, that experimental manipulations were effective or the outcome variables were measured reliably and according to distributive assumptions.*
>
> *Second step: If the submission goes through the initial review, the authors will send a complete manuscript for the second stage of the evaluation to confirm that the final report adequately responds to the concerns of the initial submission.*
>
> *The Registered Reports are reviewed in two stages.*
>
> *First step: in the initial presentation the authors must:*

> - *Inform in the cover letter that the manuscript is a presentation of a Registered Report and confirm that the data does not exist or that the results have not been observed.*
> - *Submit a manuscript with abstract, introduction, and methods without the results and discussion sections.*
> - *The methods must contain a complete analysis plan of what must be included in the full article.*
>
> *If the submission goes through the initial review, authors will receive an acceptance prior to data collection or analysis of results.*
>
> *Second step: authors must submit a complete manuscript and reviewers will assess to what extent authors followed the project and / or analysis registered and will evaluate the relevant criteria for non-outcomes.*

3. References

[1] PACKER, A.L. SciELO 20 Anos e o futuro dos periódicos: opine, comente, questione [online] SciELO em Perspectiva, 2018 [viewed 7 June 2018]

[2] SCIELO. Critérios SciELO Brasil: critérios, políticas e procedimentos para a admissão e a permanência de periódicos científicos na Coleção SciELO Brasil [online]. SciELO, 2017 [viewed 31 july 018]. Available from: http://www.scielo.br/avaliacao/Criterios_SciELO_Brasil_versao_revisada_atualizada_outubro_20171206.pdf

3] CENTER FOR OPEN SCIENCE. Standards for Promoting Reproducible Research in the Social-Behavioral Sciences [online]. COS, 2014 [viewed 29 June 2018]. Available from: https://docs.google.com/document/d/1JvswEe5X0aCY02zyCoyiFbdKlij24xUnuO2Qa6HJiIo/edit

[4] CENTER FOR OPEN SCIENCE. Diretrizes para Promoção da Transparência e Abertura nas Políticas e Práticas de Periódicos "Diretrizes TOP" [online]. OSF, 2018 [viewed 27 June 2018]. Available from: https://osf.io/us5yg/

[5] PACKER, A.L., et al. Os Critérios de indexação do SciELO alinham-se com a comunicação na ciência aberta [online]. SciELO em Perspectiva, 2018 [viewed 27 June 2018]. Available from: http://blog.scielo.org/blog/2018/01/10/os-criterios-de-indexacao-do-scielo-alinham-se-com-a-comunicacao-na-ciencia-aberta/

How to cite this document

SciELO. *Guideline on types of peer review within journal publishing flow* [online]. SciELO, 2018 [cited DD month YYYY]. Available from: _____.