

## Brazilian science: impacts far beyond the impact factor

### Ciência brasileira: impactos para muito além do fator de impacto

Sigmar de Mello Rode<sup>1</sup>, Germana Barata<sup>2</sup>

<sup>1</sup>Paulista State University. São José dos Campos, São Paulo, Brazil. ORCID: 0000-0002-4261-4217. sigmarrode@uol.com.br

<sup>2</sup>Corresponding author. Campinas State University. Campinas, São Paulo, Brazil. ORCID: 0000-0001-6064-6952. germana@unicamp.br

According to the Coordination for the Improvement of Higher Education Personnel (Capes in the Brazilian Portuguese acronym), the Qualis Periódicos system (translated to Qualis Journals) “is the set of procedures used by that institution to rank the quality of the intellectual production of graduate programs”<sup>1</sup>. It is designed to meet specific needs of the evaluation system and it is based on information provided by graduate programs. As a result, it provides a list with the classification of the journals used by the programs for the dissemination of their production on the evaluated quadrennium<sup>2</sup>.

In 2009, when Capes decided to create a larger number of strata to be able to reclassify journals, a decreasing scale was proposed according to the Impact Factor (IF) values: A1, A2, B1, B2, B3, B4, B5 and C. The then new classification had been

prepared based on the IF median of the journals, obtained from the Journal Citation Reports (JCR) and calculated annually by the ISI Web of Knowledge database. To calculate the median, a list of the journals in which each area of knowledge - according to Capes - publishes had been prepared. With this list, as well as the respective IF, the median for each area was calculated and the new stratification was prepared, which - depending on the field of knowledge - could incorporate another citation indexes such as Cites per Doc<sup>3</sup>.

Ten years later, in 2019, Capes issued a provisional Qualis proposal for the midterm review with a new ranking: A1, A2, A3, A4, B1, B2, B3, B4 and C, using primarily Scopus (CiteScore), Web of Science (IF) - commercial databases - and Google Scholar (h5 index), but leaving out the SciELO database, which indexes Brazilian open access journals. One

of the few advantages of the proposal was that the journal would be assigned a single Qualis, established meeting criteria of the so-called parent area<sup>4</sup>. This new proposal has been generating great discontent and well-founded manifestations of dissent in the academe<sup>5,6</sup> since it could result in the devaluation of the national scientific journals with the strengthening of internationalization criteria.

In 1955, an American researcher named Eugene Garfield, now considered one of the founders of bibliometrics and scientometrics, suggested an index to assess the relevance of publications indexed at the then Institute of Scientific Information (ISI), called Impact Factor (IF). The index would help librarians on identifying publications more efficiently and less subjectively. Since then, the IF has established itself as a means of evaluating journals in the most varied instances, being calculated annually by ISI for journals indexed in its database, and published by JCR<sup>7</sup>.

The IF is exclusive to the JCR and, for its calculation, the number of citations received by articles published in the journal in the two years prior to the evaluation, divided by the number of articles published in the same period, is taken into account. Among other well-documented issues<sup>8</sup>, IF is calculated only based on the indexed journals in the database, it can be manipulated and there is the issue that an article may be cited not necessarily because it is good, but to be contested due to some error in the methods employed or in the interpretation of the experimental results. In this indicator, the centrality is given to the scientific journal as a whole, although it influences the evaluation of articles and, consequently, the impact that the authors produced individually, in spite of the fact that about 20% of journals receives 80% of citations and about 23% of articles in the same journal do not receive a single citation and 51% receive from 1 to 5 citations only<sup>9</sup>.

The San Francisco Declaration on Research Assessment<sup>8</sup> (DORA) recommends, among other things, not to use journal-based metrics, such as IF, as

an indirect measure of the quality of individual research articles, to evaluate a researcher's contributions, or in hiring, promotion or financing decisions.

Although numerous institutions, researchers and academic entities are signatories of the DORA, we notice that the IF remains present and strong in shaping scientific policies. More than a tool to indicate the relevance of publications, the Impact Factor has strongly influenced scientific policies, university rankings, academic productivity and editorial policies in Brazilian journals.

Part of the limitations of the Qualis system is the difficulty of using a single measure for different areas of knowledge. Clearly, multidisciplinary journals end up undermined, as is the case of the Annals of the Brazilian Academy of Sciences (AABC in the Brazilian Portuguese acronym) which, with each change in Qualis, experiences a decrease or increase in the number of submissions for certain domains of knowledge<sup>10</sup>. This would also apply to multidisciplinary graduate programs whose students and professors publish in a wide range of journals from different parent areas.

Another of the limitations of the Qualis system is the overvaluation of international indexes previously referred to which display low participation of Brazilian journals and the traditionally less internationalized humanities and social sciences area. There are only 314 Brazilian journals (only 157 in the JCR)<sup>11</sup> that stand out for being considered mainstream publications, that is, they publish themes of international relevance as opposed to themes of national or local relevance. With this, the international output is valued at the expense of the national output. The same is true in the area of the exact and biomedical sciences as opposed to the humanities.

The Qualis system has left out the main indexing base of Brazilian scientific journals, the SciELO collection, even though a part of it is covered in both international databases. SciELO journals are recognized for national and local impact, with the highest number of citations

in the areas of social sciences, humanities, psychiatry, psychology, economics and business administration, as well as agrarian sciences<sup>12</sup> and public and collective health<sup>13</sup>, all of which stand out for citing the work of other Brazilian authors.

More than expanding the coverage of journals in the Scopus and Web of Science databases, it is necessary to broaden the impact indicators of the Brazilian publications. Starting with the inclusion of the SciELO collection, as well as journals considered relevant and not indexed - which correspond to 60% of journals registered by PhDs in their respective Lattes curricula<sup>14</sup> and other types of academic publications relevant to the humanities, such as book chapters and books, and complementary indicators such as the altmetrics.

The so-called alternative metrics (shortened to altmetrics) propose to measure the attention that articles and scientific documents have received on online platforms, such as social networks, blogs, news reports, government documents, Wikipedia, among others. In addition to removing the centrality of scientific journals, placing the value in the article itself, altmetrics recalls the numerous uses that a publication may attain in the digital age, whether making up government documents, appearing in the news, in the online encyclopedias' entries that help the understanding of concepts or even in social media posts that amplify the dissemination of research results on Facebook, Twitter and on YouTube videos. If academic publications are able to contribute to social debate and public policy, to foster classes and educational work, and to generate such valued citations, then the scholarly communication produced by the graduate programs, in the broad sense, is fulfilling its mission.

With each new Qualis update, the community requests improvements. However, Rita de Cássia Barradas Barata's conclusion still seems valid when

she evaluated the system in 2016: "it is necessary to combine different sources of information and impact indicators, seeking to minimize the limitations inherent to each one, and, finally, it is important to develop a system that allows comparison between different areas and eliminates the contradictions currently existing in the system"<sup>15</sup>.

It is time to rethink the weight of the Qualis system assessment as a determinant of editorial policies and as a driving force for scientific production. It is necessary to value the article itself, by the amount of readings and citations, regardless of the indexing database.

## References

1. CAPES. Ministério de Educação. Considerações sobre Qualis Periódicos e os critérios para a estratificação e uso dos mesmos na avaliação. 2016. [acesso em 18 de novembro de 2019]. Disponível em: [https://capes.gov.br/images/documentos/Qualis\\_periodicos\\_2016/Qualis\\_Servi%C3%A7o\\_Social\\_.pdf](https://capes.gov.br/images/documentos/Qualis_periodicos_2016/Qualis_Servi%C3%A7o_Social_.pdf)
2. Rocha-e-Silva M. O novo Qualis, ou a tragédia anunciada. *Clinics*. 2009; 64(1):1-4. doi: [10.1590/S1807-59322009000100001](https://doi.org/10.1590/S1807-59322009000100001)
3. Andriolo A, Souza AFM, Farias AQ, Barbosa AJA, França Netto AS, Hernandez AJ et al. Classificação dos Periódicos no sistema QUALIS da CAPES - A mudança dos critérios é URGENTE! *Arq Bras Endocrinol Metab*. 2010; 54(1):1-3. doi: [10.1590/S0004-27302010000100002](https://doi.org/10.1590/S0004-27302010000100002)
4. Capes. CAPES melhora ferramentas de avaliação da pós-graduação. [Internet]. 2019. [acesso em 18 de novembro de 2019] Disponível em: <https://www.capes.gov.br/36-noticias/9730-capes-melhora-ferramentas-de-avaliacao-da-pos-graduacao>
5. ABRASCO. Fórum de Coordenadores de Pós-Graduação em Saúde Coletiva. Apreciação da Proposta de Qualis Periódico referência. [Internet]. 2017. [acesso em 18 de novembro de 2019] Disponível em: <https://www.abrasco.org.br/site/coordenadoresdepos/wp-content/uploads/sites/2/2019/08/Carta-ABRASCO-sobre-Proposta-Qualis-Referencia.pdf>

6. Fundação Oswaldo Cruz. Carta aberta sobre a proposta do Qualis Periódicos. [Internet]. 2019. [acesso em 18 de novembro de 2019] Disponível em: [http://periodicos.fiocruz.br/sites/default/files/anexos/carta\\_FECF\\_criterios-Qualis-Capes\\_v2\\_Fitosassina\\_22082019\\_0.pdf](http://periodicos.fiocruz.br/sites/default/files/anexos/carta_FECF_criterios-Qualis-Capes_v2_Fitosassina_22082019_0.pdf)
7. Beuren IM, Souza JC. Em busca de um delineamento de proposta para classificação dos periódicos internacionais de contabilidade para o Qualis CAPES. R Cont Fin. 2008;19(46):44-58. doi: [10.1590/S1519-70772008000100005](https://doi.org/10.1590/S1519-70772008000100005)
8. DORA. San Francisco Declaration on Research Assessment. [Internet]. 2012. [acesso em 18 de novembro de 2019]. Disponível em: <https://sfdora.org/read>
9. Gargouri Y, Hajjem C, Lariviere V, Gingras Y, Carr L, Brody T et al. Self-Selected or Mandated, Open Access Increases Citation Impact for Higher Quality Research. PLoS One. 2010;5(10): e13636. doi: [10.1371/journal.pone.0013636](https://doi.org/10.1371/journal.pone.0013636)
10. Kellner AWA. The Qualis system: a perspective from a multidisciplinary journal. An Acad Bras Ciênc. 2017; 89(3):1339-1342. doi: [10.1590/0001-37652017893](https://doi.org/10.1590/0001-37652017893)
11. ABEC. Relatório de fator de impacto das revistas brasileiras 2017-2018. Disponível em: [https://www.abecbrasil.org.br/arquivos/fator\\_impacto17-18.pdf](https://www.abecbrasil.org.br/arquivos/fator_impacto17-18.pdf)
12. Mugnaini R, Noyons E, Packer AL. Fluxo de citações internacional: fontes de informação para avaliação de impacto científico no Brasil. Anais do 6o Encontro Brasileiro de Bibliometria e Cientometria: a ciência em rede. [Internet]. 2018. [acesso em 15 de novembro de 2019]. Disponível em: [http://ebbc.inf.br/ebbc6/docs/6EBBC2018v2018\\_07\\_27.pdf](http://ebbc.inf.br/ebbc6/docs/6EBBC2018v2018_07_27.pdf)
13. Packer AL. Indicadores de centralidade nacional da pesquisa comunicada pelos periódicos de Saúde Coletiva editados no Brasil Ciênc Saúde Coletiva. 2015;20(7):1983-1995. doi: [10.1590/1413-81232015207.07122015](https://doi.org/10.1590/1413-81232015207.07122015)
14. Mugnaini R, Dmaceno RJP, Digiampietri LA, Mena-Chalco JP. Panorama da produção científica do Brasil além da indexação: uma análise exploratória da comunicação em periódicos. Transinformação, 2019; 31:e190033. doi: [10.1590/2318-0889201931e190033](https://doi.org/10.1590/2318-0889201931e190033)
15. Barata RCB. Dez coisas que você deveria saber sobre o Qualis. RBPG. 2016;13(1):1-18. doi: [10.21713/2358-2332.2016.v13.947](https://doi.org/10.21713/2358-2332.2016.v13.947)