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Challenges for publishing Brazilian scientific health journals

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Abstract *The article aims to bring to the attention of readers and potential authors some aspects of the difficulties faced by scientific editors of Public Health journals. It discusses critical aspects, highlighting the expectations of authors, readers, editors and publishers; and presents results of empirical studies on publishing predictors, types and quality of peer review, formal characteristics of the publishing process, the working process of two Brazilian and one foreign Public Health journal, ethical issues involving authors and editors, specific editorial challenges faced by Brazilian Public Health journals, and the future of publications in the open access model scenario.*

Key words *Scientific articles, Editorial ethics, Open access, Peer review, Public health*

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Introduction

The present article was prompted by the fact that a growing number of issues related to the publishing of scientific journals have been debated in different forums including graduate coordinators, scientific editors, indexing databases, graduate, and even undergraduate authors and students. Nevertheless, these discussions have shown that knowledge on several aspects involving scientific publication are scarcely understood or even completely misunderstood. Often, complex issues are dealt with simplistically. The article was prepared for a debate panel organized on the subject at the most recent Brazilian Public Health Congress.

This narrative review briefly discusses different aspects of scientific articles, the predictors for their acceptance by the most prestigious journals, the peer review process, comparison of formal characteristics of Brazilian and foreign Public Health journals, characteristics of the editorial process of three of these journals, ethical issues related to authorship and publishing, editorial challenges for Brazilian journals in the Public Health field, and finally a brief discussion on open access.

The different aspects of scientific articles

From the academic point of view, the publication of research results in scientific articles seeks to submit knowledge produced to peer analysis, a process essential to attain accurate knowledge, and to create a community of interest around certain themes and research subjects[1]. From the social perspective of researchers, the publication of scientific articles seems to fulfill two main objectives: assure acknowledgement of peers and assure precedence in discovery and authorship[2].

Presently, scientific articles are also commodities marketed by large commercial scientific publishers that hold the publishing rights of a considerable portion of what is produced globally. Publishers sell subscriptions of the periodicals they publish for universities and research institutes, and article prints requested by researchers. In addition to the use value of articles sold as commodities, there is the exchange value operating in symbolic exchange markets, where the number of published articles and their citations plays a relevant role in the evaluation processes of researchers and research groups, shaping the mechanisms of distribution of funds for research and training scholarships for youngresearchers[3].

The many sides of scientific articles are associated with the various expectations of different social agents involved in the publishing process. From the authors´ point of view, expectations include quick, meticulous, judicious and fair evaluation; correct editing; faithfulness to text; prompt publication; and academic and / or social impact of a publication. These expectations depend fundamentally on the quality of the article and the quality of a journal´s editorial process. Computerized systems and pre-analysis, tools for quicker assessment, peer review process, editorial quality, and journal prestige are crucial editorial elements to meet authors´ expectations[4].

As far as readers are concerned, their expectations are related to the relevance of and how current are the subjects discussed, the pioneering nature and accuracy of articles published, and to well written and presented texts[4]. In addition to the expectations of authors and readers, the expectations of scientific editors, including reception of adequately structured, relevant and interesting articles; and being able to count on a quality peer review process, professional publishing, and ample diffusion of findings published, must also be taken into account. Again, expectations depend substantially on the quality of the article and the editorial process, but also on the effort to obtain appropriate indexing for the journal and a growing impact factor. Another aspect to consider when dealing with editors is a journal´s editorial policy and its relationship to the broader science policy practiced in the country the journal is published in. Finally, the expectations of commercial publishers are to publish most of the relevant new knowledge, and to make a profit from subscriptions, sale of article prints and advertising, or from payment by authors in the open access system.

Thus, several aspects challenge the work of scientific editors, among which we propose to discuss the following: publication predictors, peer review issues, formal aspects of publishing, ethical behavior of authors and editors, concerns specific to Brazilian journals and the future of scientific publications.

Publication predictors

Editorial decisions are based on the originality, relevance, practicality, methodological quality of an article, target audience of the journal, and editorial policy. Many of these aspects are subjective, depending on the perception of the scientific editor and of the group of reviewers involved

in the peer review process[5]. Thus, some authors have decided to study the features that increase the likelihood of an article being accepted for publication.

One of these studies, from 2003, looked at articles submitted to the *British Medical Journal*, *The Lancet* and *Annals of Internal Medicine*. In the study period, the journals received 1,107 articles, 68 (6%) of which were accepted after peer review, 777 (70%) rejected upon pre-analysis and 262 (24%) rejected after peer review. The main predictors identified are presented in Table 1.

Each article was also analyzed according to a 22-item scale on methodological quality. The likelihood of acceptance was directly proportional to the quality score, reinforcing that a pre-analysis procedure is capable of identifying quality. The only editorial bias shown was the most frequent selection of authors of the same nationality of the journal[5].

The peer review process

The peer review process is at the center of the publication and diffusion of scientific work, and albeit criticized, remains the main mode of validation used by scientific journals. The peer review process presents a number of difficulties for scientific journal publishing, among which the following can be underscored: refusal to review, types of review, quality of review and skills of reviewers, economic and non-economic conflicts of interest.

One of the major difficulties for publishers has been to have a minimum number of good reviewers who respond to requests for reviews in a timely manner, avoiding delays in the publication of pre-selected articles. Tite and Schroter[6] conducted semi-structured interviews with referees from four journals published by the *British Medical Journal* editorial group to study the grounds for refusal. Interviews covered four major topics: reasons for declining or accepting a request for review, and view on financial and non-financial incentives.

The major factors for deciding to accept a request to review an article were the contribution of the article, relevance of the article to the reviewer's area of knowledge, the opportunity to learn something new with the article, sense of professional duty, and the journal's reputation. The least important factors were monetary compensation for the work, reputation of the authors of the manuscript, and academic reward for career.

Among the main reasons presented for refusal were conflict of deadlines with other tasks, receiving many requests for review from several journals, and very short deadlines to complete the review. Among the less important reasons were: reviewing many articles on the same topic, article size, comments not taken into account in previous reviews, lack of formal acknowledgement of the contributions of reviewers, and having to use the online reviewing system.

Respondents agreed that financial compensation was not effective given limited availability of time and that small incentives would not suffice to encourage reviewers. There was great agreement, however, with the following types of incentives: free access to the content of the journal, annual acknowledgement on the journal's website, feedback on editorial decisions and quality of the review made, and possibility to take part in the editorial body.

To avoid refusals, authors have been asked to name potential reviewers. Wager et al.[7] analyzed 100 submissions comparing reviews made by reviewers appointed by the authors to others chosen by the editors. There was no statistically significant difference in the quality or tone of the review made by both types of reviewers. Howev-

Table 1. Predictors of acceptance for publication in three selected journals, 2003.

Characteristics of article	OR (IC95%)
Randomized clinical trial or systematic review x Other designs	2,40 (1,18 - 5,00)
Qualitative or descriptive x quantitative methods	2,72 (1,42 – 5,21)
Sample size ⩾70 x < 70	2,39 (1,11 – 5,15)
Informed x not informed funding source	2,17 (1,13 – 4,15)
Author of country of publication x other countries	2,40 (1,37 – 4,20)
Statistically significant x non-significant results	0,85 (0,35 – 2,13)

Adapted from Lee et al.[5].

er, reviewers named by authors were more likely to recommend publication at the initial review stage. After authors made corrections requested, recommendations for acceptance were similar for both groups. The time taken to complete the review was the same for both groups. These results show that such a procedure does not compromise the quality of reviews or the seriousness of the peer review process.

The peer review process has been very much blamed for bias against new ideas, women and young researchers, contributors who change areas and faculty from less prestigious schools. Two policies have been adopted by editors in general: 'blind review, in which authors do not know the reviewers and vice versa, and open review in which both identities are revealed[8]. Open reviews make reviewers more cautious, avoiding unsubstantiated and sometimes offensive arguments, the use of ironic comments, and other forms of less respectful analysis of authors[9].

The *Biology Direct* journal has decided to publish any scientific article that three editorial board members agree to review. Even if all three opinions are negative, the article is published providing the authors agree to have the three negative reviews published alongside their article. The rationale is that even a not outstanding, but interesting enough article to make three respected scientists take time to review it, will bring a more positive than negative outcome when published. This radical proposal for the role of peer review seeks to minimize the biases pointed out above.

Several editors have been concerned with the quality of the reviews received and, in addition to adopting semi-structured review forms, have recommended that reviewers use evaluation scripts in order to improve their performance. These tools focus on the relevance and originality of the article, on methodological qualities and limitations, on the formal aspects of the text and on the use of a respectful and constructive tone toward the authors[10]. There are also a few online training initiatives for reviewers and structures for regular assessment of reviewers by editors and authors.

A study referred to by Grivell[11] analyzed the quality of reviews of an article in which eight errors were introduced regarding the design, analysis and interpretation of results. The altered article was sent to 420 reviewers and about half sent back their opinions. Only two of the errors were identified on average. Only 10% of the reviews identified four errors and 16% identified none. The study revealed that younger reviewers, those with the highest number of articles published and those better evaluated previously by editors performed better.

Callaham and Tercier[12] assessed the quality of 2,856 reviews given by 308 reviewers for the Annals of Emergency Medicine, trying to identify aspects of the experience and training of the reviewers capable of predicting a good review. Unfortunately the results showed that neither previous training nor experience in research and evaluation was able to adequately predict the quality of opinions (Table 2).

Another sensitive aspect of the peer review process are non-financial conflicts of interest as elements that can influence peer judgments, for example conflicts among disciplinary areas, author and reviewer rivalry and competition among institutions. To avoid such conflicts, reviewers can disclose conflict and reject the request for an opinion, authors can appoint reviewer names that would not be acceptable, authors can be assured the right to request a decision review whenever they feel affected, and the process can be blinded to avoid prejudice[13]. Chart 1 presents the ten rules proposed by Bourne and Korngreen[14] to guide the work of referees.

Formal characteristics of Public Health journals: comparison between Brazilian and foreign journals

The SciELO Public Health collection includes 15 journals, two of which international (Bulletin of the World Health Organization and Pan-American Journal of Public Health), two Spanish (Gaceta Sanitaria and Revista Española de Salud Publica),five Brazilian (Cadernos de Saúde Pública, Ciência & Saúde Coletiva, Interface, Revista Brasileira de Epidemiologia and Revista de Saúde Pública), and six from other Latin American countries. For the purpose of comparison the fifteen public health journals with the highest impact index in the JCR (Journal Citation Reports) in 2013were selected, one international (International Journal of Epidemiology) and the others foreign. The latest three issues of each periodical published in 2014 were analyzed.

JCR's foreign journals are predominantly published by scientific associations (40%) or commercial publishers (33%), while journals in the SciELO collection are published predominantly by multilateral organizations or health ministries (40%), or by higher education institutions (33%). Of the five Brazilian journals analyzed, two are published by Abrasco (Brazilian

Table 2. Experience, training and quality of reviews. Annals of Emergency Medicine.

Experience and training	Acceptable x unacceptable REVIEW (OR and 95%CI)	Excellent x satisfactory REVIEW (OR and 95%CI)
<10 years of experience	0.97 (0.93 – 1.01)	0.99 (0.97 – 1.02)
Academic title	1.09 (0.80 – 1.49)	1.06 (0.9 – 1.26)
Formal training in critical evaluation	1.14 (0.63 – 2.04)	0.98 (0.70 – 1.39)
Master's or PhD in Epidemiology, Statistics or Public Health	1.89 (0.91 – 4.00)	1.04 (0.70 – 1.53)
Editorial board	0.80 (0.43 – 1.52)	1.79 (1.26 – 2.54)*
Review of research grants	1.89 (1.01 – 3.44)*	1.19 (0.82 – 1.72)
Peer review for other journals	0.25 (0.04 – 1.64)	0.81 (0.40 – 1.64)
Principal investigator	0.79 (0.42 – 1.49)	1.01 (0.69 – 1.46)
University x teaching hospital or community service	1.85 (1.04 – 3.33)*	1.42 (1.01 – 1.99)*

Adapted from Callagham & Tercier[12].

Chart 1. Rules for reviewers.

1. Do not accept a review unless you can complete it by the deadline
2. Avoid conflicts of interest
3. Write opinions you would like to receive as author
4. As a reviewer you are responsible for what is published
5. Learn from and enjoy the review process
6. Develop a method that works for you
7. Spend your precious time on articles that deserve a good review
8. Maintain anonymity if it is a determination of the journal
9. Write clearly, be succinct and use a neutral tone but be decisive
10. Always use comments for the editor

Source: Bourne & Korngreen[14].

Association of Collective Health) and three are published by higher education institutions.

Foreign journals have a higher publication frequency, and among the fifteen analyzed, two are published fortnightly and eight published monthly. Quarterly publications (5 journals) prevail in the SciELO group, followed by bimonthly and monthly, each with four journals. There are no fortnightly journals. Of the Brazilian journals, two are quarterly, two are monthly and one is bimonthly.

The only journal with a distribution of articles from the five continents is the *Bulletin of the World Health Organization* with about 30% of the articles coming from Europe, 25% from North America and the other 45% distributed between Africa (16%), Asia (13%), Oceania (13%) and Latin America (3%). The other journals in the SciELO collection concentrate articles from their own continents. Most of the articles,over 90%, published by the two Spanish journals are from Europe. Of the Latin American journals, five have 100% of the articles coming from the region, another eight have between 74% and 96% of the articles coming from Latin America and the remainder from Europe and North America, including the *Pan-American Journal of Public Health*. Brazilian journals follow the same pattern. The *International Journal of Epidemiology* has articles from the five continents, but 55% of articles are European and only 0.9% from Latin America. Six journals publish articles predominantly of North American authors and five of both North American and European authors. Only one, *Environmental Research*, has 53% of the articles coming from Europe, 22% from Asia and 20% from North America.

English is the only accepted language for the 15 journals in the JCR group. In the SciELO collection, 11 journals publish articles in English and Spanish, English and Portuguese or exclusively in English. Four journals publish articles exclusively in Spanish and six periodicals publish articles in Portuguese, Spanish and English.

Most journals publish original articles, reviews, comments, brief communications and articles with potential practical application. Among foreign journals, two publish exclusively review articles and a larger number publishes comments when compared to those in the SciELO collection. Fewer journals in both groups publish other

types of articles such as methodological articles, news, special articles, theoretical essays, debate forums, interviews and photograph essays. Only one of the foreign journals publishes cartoons, glossaries, education and journalism.

All journals analyzed accept articles via peer-review process, with the exception of one journal that publishes review articles by invited authors, exclusively. All journals are indexed in one or more bibliometric databases. All journals in the JCR group are also indexed in the Scopus database as are the journals in the SciELO collection. In the latter group, 10 journals are also indexed in the JCR.

Considering the impact factor calculated by the JCR, foreign journals presented values between 2.890 (Social Science & Medicine) and 10.083 (The Lancet Global Health) with a median of 5.339, while SciELO collection journals showed values between 0.102 (Salud Colectiva) and 5.089 (Bulletin WHO) with a median of 0.881. The three Brazilian journals presented the following values: Revista de Saúde Pública (0.733), Ciência & Saúde Coletiva (0.881) and Cadernos de Saúde Pública (0.976).

Considering the impact index calculated on the Scopus database (cites per doc) values for foreign journals ranged between 3.001 and 9.583 with a median of 4.817, while in the SciELO collection values ranged between 0.082 and 4.172 with a median of 0.793. The performance of Brazilian journals on this database was the following: Interface (0.225), Revista Brasileira de Epidemiologia (0.686), Revista de Saúde Pública (0.858), Ciência e Saúde Coletiva (1.029) and Cadernos de Saúde Pública (1.231).

In the SciELO database, impact factors ranged between 0.036 (Revista de Salud Pública) and 0.476 (Revista de Saúde Pública) with a median of 0.268. All Brazilian journals had an impact factor above the median, except for Interface.

The h index calculated on the Scopus database ranged from 10 (The Lancet Global Health) to 194 (Environmental Health Perspectives) with a median of 119 in the JCR journal group. For the SciELO collection, the range was from 6 (Revista Cubana de Salud Publica e Salud Colectiva) to 113 (Bulletin WHO) with a median of 23. Only Interface and the Brazilian Journal of Epidemiology, among Brazilian journals, presented a value below the median.

The SCImago Journal and Country Rank presents, in addition to the aforementioned indicators, the proportion of journal items cited at least once during the following years, grouped into three-year periods. For the 2011-2013 period, the rate ranged from 52% to 97% for journals in the JCR group, and from 7% to 66% for those in the SciELO group. In the former group, the median was 75% and in the latter, 40% (Chart 2).

Characteristics of the editorial process of three journals: Revista de Saúde Pública (Brazil), Cadernos de Saúde Pública (Brazil) and Gaceta Sanitária (Spain)

In order to assess the characteristics of the editorial process we selected three publications for which the required data were available in articles or editorials of the publishers themselves, including two Brazilian and one Spanish journal in order to allow for external comparison.

Revista de Saúde Pública published by the São Paulo University School of Public Health was created in 1967 and has three scientific editors, one executive editor and sixteen associate editors, including over two thousand specialists among academics and professionals in the area, throughout the country and abroad[15].

Gaceta Sanitária published by the Spanish Society of Public Health and Sanitary Administration since 1988 has a director and an associate director, and ten associate editors in its editorial committee[16].

Cadernos de Saúde Pública published by the Fiocruz National School of Public Health since 1985 has an editorial board of three scientific editors and 21 associate editors[17].

The three journals analyzed have many similar aspects in their editorial process, highlighting the higher relative acceptance rate for *Gaceta Sanitária*, the higher relative proportion of original articles for Revista de Saúde Pública, the higher number of articles published for Cadernos de Saúde Pública, and the shorter time between submission and acceptance, and submission and publication for *Gaceta Sanitária* (Tabela 3).

Editorial issues involving the ethics of authorship

Editors have been apprehensive due to the occurrence of unacceptable misconduct of researchers, such as fraud or fabrication of results, duplicity of publications and plagiarism; and questionable research practices such as "slicing" a study subsequent to artificial division of results, repetition of the same article only with a larger sample size or replication of the study in distinct population groups without a clear rationale,

reference misuse, and artificial expansion of the number of authors[18].

Fabrication and fraud of results are among the misconducts considered most serious due to the damage they cause to science itself and the potential harm to human health in the case of biomedical research. It is very difficult to estimate the extent of these practices. A meta-analysis of 18 surveys estimated the self-reported frequency of data fabrication or falsification by researchers as 1.97% (95% CI 0.86 to 4.45)[18]. Retraction of articles is also evidence of errors, fraud, or ethical problems affecting 0.02% to 0.2% of articles. Different studies on retracted articles have found that 30 to 40% of retractions were motivated by fraud[19,20].

Retraction rates vary with the area of knowledge, and are higher in multidisciplinary research

Chart 2. Synthesis of the formal characteristics of the SciELO Public Health collection journals and the fifteen Public Health journals with the greatest impact on JCR.

Characteristic	JCR	SciELO
Institution in charge	Associations and commercial publishers	WHO / PAHO / MS and IES
Frequency	Monthly	Quarterly
Origin of articles	Continent of publication	Continent of publication
Language	Monolinguism	Multilinguism
Typology of articles	More comments and methodological articles	More discussion forums
Indexation	JCR + Scopus	Scopus + SciELO+ JCR
Impact Factor (JCR) median	5.339	0.881
Impact Factor (SCOPUS) median	4.817	0.793
Index h	119	23
% items quoted at least once	75%	40%

Table 3. Synthesis of the editorial data of Revista de Saúde Pública, Gaceta Sanitária and Cadernos de Saúde Pública, 2014.

Data	Revista de Saúde Pública	Gaceta Sanitária	Cadernos de Saúde Pública
Articles submitted	676	438	1699
Rejected in pre-analysis	61%	62%	65%
Rejected after external peer review	17%	7%	21%
Accepted for publication	22%	31%	14%
Articles by issue	21	20	24
Articles by number	126	122	287
Article typology:			
Original articles	83%	38%	59%
Comments	6%	-	6%
Reviews	6%	6%	4%
Short communications	4%	18%	9%
Methodological notes	-	16%	4%
Letters to the Editor	1%	-	3%
Debates	-	4%	6%
Book Reviews	-	10%	5%
Language of submission			
Portuguese	78%	-	57%
English	18%	-	35%
Spanish	4%	100%	8%
Processing Time:			
Submission – approval	7.6 months	2.8 months	
Submission – publication	12.8 months	9.0 months	

and life sciences. They are higher in countries where publications have monetary compensation (Australia, Germany, China, South Korea and Turkey), and lower in those where publications influence careers or institutional funding. Retractions are more common among authors with a less publications. Gender of the author, the number of authors and publication in high-impact journals are not predictors of retraction[19,20].

Duplicate publications refer to a paper that overlaps substantially one already published, without a clear, explicit reference to the previous publication (International Committee of Medical Journal Editors), and plagiarism is the appropriation of ideas, processes, results or words of another person without appropriately attributing it to the source (National Library of Medicine). Both are types of scientific misconduct responsible for a considerable portion of article retractions[21]. Citron and Ginsparg[22] used the arXiv repository (757,000 articles in physics, mathematics, and computer sciences) to study the reuse of texts (defined by the repetition of seven-word sequences). The authors classified the results in three categories: self-plagiarism (reuse by one or more of the authors of the original article), repetition of text with citation of the original source, and plagiarism (repetition without mention of the original source). The authors classified the articles in which more than 100 blocks of sequences of 7 words were reused as more severe, finding 11% of self-plagiarism, 1% of repetition of text with citation, and 0.2% of plagiarism. These articles are less frequently cited, often copy articles that are also rarely cited, often remaining unnoticed[22].

Editorial issues involving ethics of editors

In addition to the problems associated with the misconduct of researchers, ethics in publishing also includes aspects related to the behavior of editors and external reviewers. Editors work at the interface between authors, reviewers, and publishers, while being held accountable to the owners of journals, and therefore under several types of pressure and conflicts of interest.

Editorial conduct is subject to questioning as to the criteria used for article rejection or approval that may denote favoring the publication of certain authors to the detriment of others; privilege in the publication of articles from the editor´s research group or authorship; bias driven by institutional, regional, gender, generation or other issues; censorship to certain topics or methodological approaches. In addition to these aspects considered unfair by authors, there is misconduct regarding citation fabrication through different mechanisms such as incitement by the editor to cite previously published articles or agreed exchange of citations between different periodicals.

Editorial Challenges for Brazilian Journals

In addition to the aforementioned problems common to any publisher, the publication of scientific journals in Brazil has difficulties specific to countries with modest investments in science and technology and with research infrastructure still in its early stages.

The main problem shared by a substantial number of journals is financial sustainability. Practically every journal has problems with irregular and insufficient material, and human and financial resources. The incentive model established by Brazilian science and technology agencies prevents using resources to pay personnel, thus determining that patron institutions of journals cover all costs. The process for establishing and allocating funding amounts is not clear, with marked differences among journals[15,23-26]. Another difficulty is the poor or non-existing professionalization of important steps of the editorial process. The massive majority of journals do not have trained and adequately paid professionals to carry out executive publishing and editing activities.

The quality of peer review becomes more relevant in the Brazilian scenario where the size of the scientific community and language barrier hinder opportunities for broadening the number of reviewers. Some researchers are highly demanded by all journals, leading to higher refusal rates, delay in finishing opinions and loss of quality. As most articles are submitted in Portuguese the request for revision is also restricted to Brazilian researchers[15,23].

The quality of some steps in the publishing process is also affected by the lack of resources and "amateurism". The need to translate part of or the entire article into English is a challenge for all journals. The volume of articles and the shortage of translators with knowledge on the topics compromise the quality of translations and the international circulation of articles[25,26].

Another challenge for all publishers is increasing the scientific and social impact of published articles. If on the one hand, virtual tools facilitate the diffusion of knowledge, on the other, the volume of production eventually works

as an obstacle for the production of peripheral countries to be taken into account in the scientific scenario[23,24,27].

Another significant challenge is rendering scientific knowledge into practices and knowledge that can be engaged by practitioners, policy makers, health services and the general population. Despite the resources available today such as social networks, blogs, electronic journals popularizing science, this translation process is not easy and represents yet another task that requires professionalizing the editorial process.

The pursuit for greater internationalization in the publication of articles demanded by publishing funding agencies is another challenge faced by editors[17,24-26]. Brazilian journals are expected to attract articles from foreign authors to provide a more international character to journals, which in theory would increase the impact of a journal. This assumption, however, lacks empirical proof and disregards the fact that national, Brazilian or other journals, tend to publish authors from their own country or region. Only journals published by international entities have a greater diversity of authors.

The future of scientific publications: open access

Open access is a set of strategies to spread scientific production freely and without payment through the internet. There are currently four kinds of diffusion or different levels of openness of the contents of scientific journals: the closed system with access limited to subscribers or to purchase of article copies; the hybrid model in which part of the article has open access paid by the author, or is made available after an embargo of 6 to 12 months by the publisher; open access immediately after publication in institutional repositories (Green Road); or immediate open access on virtual libraries(Golden Road), such as PubMed Central (US NIH's National Library of Medicine), Public Library of Science (PLoS), Biomed central journals) or SciELO[28].

Between 2000 and 2015 the number of scientific journals in the Directory of Open Access Journals (DOAJ) grew from 741 to 10,439. In 2012, the country with the highest number of journals in the DOAJ was the United States with 1,260, Brazil ranking second with 782 journals. About 20% of the articles produced are available in open access worldwide[28].

A new feature of this movement is the transformation of the role of commercial publishers who faced with the growth of this trend have been preparing to acquire or have already acquired free-access periodicals such as BMC, increasing publication rates for authors as a pay-off to compensate for the loss of profits in the sale of subscriptions and access to reprints.

In 2014, the Nature and Palgrave Macmillan publishing group misrepresented the results of a survey of more than 30,000 researchers analyzing various aspects including preference or not for open access publications. The results presented by the publishing group emphasized that researchers were not aware that Welcome Trust (17%) and NIH (25%) funded surveys required open access circulation, and that 40% of researchers who had not published in open access expressed concern regarding the quality of these publications. Publishers opportunely ignored the fact that 57% of the authors who had already published in open access considered it the best option to "make knowledge available to everyone" and "to make articles more widely known", and believed that "open articles generate more citations"[29].

Other fallacious attempts to discredit open access include Bohannon's "experiment", which sent a fictitious article to open access journals, selecting a large number of those so called "predators," that is, the ones that use open access to cover up reprehensible practices such as fictitious editorial boards, invented impact factors, and blocks to identify plagiarism, among others[29]. Within the same context of defending the interests of commercial publishers is the gross criticism aimed at serious initiatives such as SciELO[30].

The struggle for open access and widespread dissemination of scientific knowledge has only just begun. There will still be many proposals and attempts by the major publishing houses to denigrate efforts in this direction and ensure at least some time for their extremely profitable business, given research is mostly funded by public resources, editorial work in its stage of academic merit is done freely by the scientific community, and editorial work is paid by the entities that maintain publications. Publishers put the product on the market and receive the profits for a product in which they have invested nothing.

Final remarks

We aimed by this narrative review to address some of many aspects that have mobilized the attention of those who in one way or anoth-

er are involved in the preparation, submission, evaluation and publishing of scientific articles. We aimed to focus in a synthetic way on several points that can give readers an idea of the complexity of the task faced by scientific editors in their relations with authors, reviewers, commercial and non-commercial publishers, and reference indexing bases.

The variety of topics brought up, although succinctly, can provide readers with a set of references and reflections on the different angles of the editorial process and help the debate that the academic community has been holding on important topics such as free access to information, reconfiguration of the peer review process, author and editorial ethics, requirements of index databases, among others.

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