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A Primer on Preprints

A Primer on Preprints

Marilyn H. Oermann and Leslie H. Nicoll

NURSE AUTHOR & EDITOR, 2020, 30(2), 5

Preprints are getting a lot of press lately: early dissemination of coronavirus research and a new health sciences server with a section especially for nursing are just two developments that are pushing preprints into the news. Many nurse authors, however, have lots of questions and are wondering whether they should post their articles to a preprint server before submitting to a journal for peer review and publication. Nursing journal editors also have questions about how they should handle manuscripts that have previously been posted to a preprint server and have a digital object identifier (DOI). Our goal is to unravel some of these mysteries with a general overview of preprints and then to provide information to help *Nurse Author & Editor* readers to begin to think through these issues.

WHAT IS A PREPRINT?

A preprint is a final version of a research report or other type of manuscript that is made available to readers prior to peer review. The manuscript is posted online on a preprint server (a repository), making the study fully accessible to all who are interested in the topic. Preprints offer open publication and rapid dissemination of research results.¹ Preprints have been common in some disciplines, such as mathematics and physics, for years⁵ and have been expanding in other fields over the last decade. Recent months have seen an explosion of numbers—during the pandemic (since January 2020), two preprint servers, bioRxiv (for biology; pronounced “bio-ar-chiv”) and medRxiv (for health sciences; pronounced “med-ar-chiv”), have posted nearly 3000 studies related to the novel coronavirus.⁸ The main benefit of preprints can be seen with the pandemic: results are disseminated quickly, possibly leading to new testing, treatments, and collaborative efforts. Although typically manuscripts posted as preprints are research reports, editorials, reviews, and other types of papers can also be made available on some of these servers.

The main reason preprints have expanded over the years, and even more recently, is the ability to share findings of research quickly. Although editors strive to be efficient, it can still take months for a manuscript to be reviewed, revised, re-reviewed, and accepted for publication in a scholarly journal. With preprints, manuscripts are made available to the public within a few days. This shortened time for dissemination is essential in developing areas of science and medicine. An important question that needs to be considered by nurse authors and researchers: does nursing research need to be shared with this same speed?

ADVANTAGES OF PREPRINTS

With preprints, researchers can document that their team was the first to make a discovery, find a new treatment, and report other results. When a preprint is uploaded to one of the preprint servers, it is timestamped, documenting when the

manuscript appeared on the server. This timestamp verifies the date the findings were reported. This process also serves as a way to follow the development of research and determine its relationship to other published work.³

By sharing drafts, authors can gather feedback on their study and manuscript before peer review, allowing them to modify it prior to submission to the journal. In some cases, the feedback may lead researchers to reexamine the data or their conclusions prior to when the research “reaches the published literature.”³ However, one study, which is available as a preprint on bioRxiv compared the completeness of research reporting in a sample of preprints to their published versions in peer reviewed journals. The peer reviewed articles had only a slightly higher quality of research reporting than the preprints.⁴

For researchers beginning their careers, preprints allow them to disseminate their research to establish their credibility.⁷ This pre-publication may be important when applying for grants, and because preprints can be listed on a curriculum vitae, they also may be of value when applying for promotion and tenure.

DISADVANTAGES OF PREPRINTS

As noted earlier, preprints are not peer reviewed. As an author, it is good practice to get feedback and critique from colleagues before submitting a manuscript *anywhere*, but you should be mindful of the fact that preprint articles are presented “as is.” Some disciplines, such as physics, have a “preprint mindset” which includes lively debate and vigorous commenting on the articles that are posted. Authors can use these comments to refine the presentation and improve their manuscript for journal submission. In nursing, however, this is not the culture or mindset. As noted below, 10 nursing focused articles posted on medRxiv have zero comments, as of this writing. If you post an article on a preprint server expecting substantive feedback to help with revisions, you are likely to be

disappointed. You are probably better off with the tried and true method of soliciting commentary from colleagues.

Discoverability is also an issue. Preprint articles are not currently indexed so if you post something, how will others find it? The National Library of Medicine (NLM) is exploring whether preprints should be indexed in PubMed Central, but this initiative is in its very early stages. Tweeting seems to be the main way that authors get the word out but that is very hit or miss. Again, authors should keep in mind that a preprint is a step in the publication process, not the endpoint. Final publication, in a peer reviewed journal, will ensure that your article is indexed in appropriate databases (eg, MEDLINE, Scopus, CINAHL) and people will be able to find your work.

Many journal editors include “novelty” as a criterion for acceptance and thus will not consider an article that has been posted to a preprint server.⁶ If you have a journal in mind for submission, you should determine if there are any restrictions regarding a manuscript’s provenance—presentation at a conference, published in a proceedings book, or being posted as a preprint—that would have an impact on future publication. If this information is not clear in the Guidelines for Authors, a query to the journal editor might be a wise idea.

Last is the issue of sustainability.⁶ Many preprint servers are funded by non-profit agencies and there are concerns about ongoing costs and archiving. Keep in mind that posting an article as a preprint should not be its final destination. You should follow through with the next step: publication in a peer reviewed journal. Thus if a preprint server should evaporate due to lack of funding, your article *should* be available in another place that has permanent archiving and indexing for discoverability. But as preprints in nursing are a relatively new phenomenon, the actual percentage of follow through from preprint to journal publication is unknown.

PREPRINT CONSIDERATIONS

There are currently more than 60 preprint servers.⁷ medRxiv (<https://www.medrxiv.org/>) is the preprint server for health sciences. Varied types of manuscripts on research studies related to healthcare can be uploaded to medRxiv. These include research articles, meta-analyses and systematic reviews, protocols, and data articles. However, medRxiv is not intended for descriptive articles, case reports, narrative literature reviews, editorials, and other non-databased papers. medRxiv was developed by Cold Spring Harbor Laboratory (CSHL), which is a not-for-profit institution, Yale University, and the BMJ; the server is owned by this collaborative. CSHL is not related to any specific publisher or journal.

There is nursing section at medRxiv for preprints, and when this article was written, there were 10 manuscripts with a nursing focus, published from September 2019 to June 2020. These 10 articles had generated tweets, but none had any comments for discussion. Of the 10 articles, one has subsequently been published in a journal. Table 1 provides a comparison of the medRxiv preprint and the published article. In a quick review of the two versions, there were differences between them, indicating that the peer review process did result in changes. Even so, both versions had typographical errors, such as a singular “patient” (when it should have been plural) and a missing verb, both in the first sentence of the abstract!

TABLE 1. PREPRINT VERSION COMPARED TO PUBLISHED VERSION

Source	Preprint: medRxiv	Journal: BMC Musculoskeletal Disorders
Availability	Open Access	Open Access

Timeline

Posted: 29 September 2019

Received: 25 September 2019

Accepted: 25 May 2020

Published: 29 May 2020

DOI

<https://doi.org/10.1101/19007237><https://doi.org/10.1186/s12891-020-03369-0>

Accesses

Abstract: 826

PDF: 429

Article: 78

Tweets

3

0

Comments

0

N/A

Citation

The global burden of pressure ulcers among patients with spinal cord injury: a systematic review and meta-analysis.

wondimeneh shibabaw shiferaw, Tadesse Yirga, Henok Mulugeta, Yared Asmare Aynalem

medRxiv 19007237; doi:
<https://doi.org/10.1101/19007237>

This article is a preprint and has not been peer-reviewed. It reports new medical research that has yet to be evaluated and so should not be used to guide clinical practice.

Shiferaw, W.S., Akalu, T.Y., Mulugeta, H. *et al.* The global burden of pressure ulcers among patients with spinal cord injury: a systematic review and meta-analysis. *BMC Musculoskeletal Disord* **21**, 334 (2020).
<https://doi.org/10.1186/s12891-020-03369-0>

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| Observations | <ol style="list-style-type: none">1. There is no mention in the published article of the preprint on medRxiv.
2. The medRxiv citation is presented as their recommendation on the preprint site, including odd capitalization of author names. However, if you open the PDF at the medRxiv site, the names are capitalized and presented correctly. This may seem like a small point, but it can lead to confusion. |
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Although preprints are not peer reviewed, they are vetted before being posted on the website. For example, bioRxiv and medRxiv use a two-stage vetting process.⁷ In the first stage, the manuscript is checked for plagiarism, Institutional Review Board approvals, a statement about conflicts of interest, and funding sources, among other areas. A second level review is to ensure the information does not have potential health or biosecurity risks. This screening is done by volunteers who have expertise in the field.¹ The screening generally takes four to five days.⁷

At the medRxiv website, there is a disclaimer on each preprint that indicates it is a preliminary work, is not peer reviewed, and should not be used to guide clinical practice or health behaviors. See Table 1 for an example of this language in a citation.

Many preprints have a digital object identifier (DOI), which provides a persistent link to the paper. The DOI also allows researchers and others to cite the pre-published findings and may encourage critique and discussions about the content prior to the published article.²

When the article is published in a peer reviewed journal, the preprint remains and should be linked to the published article. Some of the preprint servers

automatically add this link. However, in the example shown in Table 1, there is no linking to the preprint version of the article.

SUBSEQUENT PUBLICATIONS

Bourne et al.³ reported that most journals do not consider preprints a form of publication and did not reject submissions because of that. However, authors are cautioned to review the author guidelines for the journal they are considering for submission of the final manuscript for any preprint stipulations. The Committee on Publication Ethics (COPE) has guidance on preprints.⁵ They suggest that journal editors consider the following questions.

- If the journal will consider work previously posted on a preprint platform, any restrictions should also be determined; for example, must the preprint have been posted prior to journal submission or is simultaneous posting to a preprint platform and journal submission acceptable?
- Would journal editors allow posting of versions revised during peer review or following acceptance on a preprint server, or only the version initially submitted?

All editorial policies outlining the journals' position on preprints should be posted and made publicly available. As an author, you should also consider these questions.

CONCLUSION

Preprints are not new but they are emerging as a topic of conversation for nurse authors and journal editors. If you are an author and you are considering posting your article on a preprint server, our best advice is to consider this an interim step in the dissemination process. Your ultimate goal should be to publish your work in an appropriate, legitimate peer reviewed journal.

If you are the editor of a nursing journal, you should be thinking about the uptick in preprints and the creation of specific servers to host nursing content. You may receive submissions that have been published as a preprint with a DOI; the numbers of these types of manuscripts that you receive may be increasing. You should have specific information in your Guidelines for Authors and a clear understanding of how these manuscripts will be treated through the peer review process. Transparency around an article's past history and how that will be presented in the journal is also important. As an editor, you should have style guidelines for your journal articles to address these issues.

In nursing, will preprints become a forum for debate and discussion? An avenue for rapid diffusion of research findings? An accepted part of any author's publication and dissemination strategy? Time will tell the answers to these questions. For the moment, our advice is to become educated on issues related to preprints and make an informed decision if this is an appropriate platform to share the findings of your hard work.

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ABOUT THE AUTHORS

Marilyn H. Oermann, PhD, RN, ANEF, FAAN, is Thelma M. Ingles Professor of Nursing, Duke University School of Nursing, Durham, North Carolina, USA. She is Editor of *Nurse Educator* and the *Journal of Nursing Care Quality*. marilyn.oermann@duke.edu

Leslie H. Nicoll, PhD, MBA, RN, FAAN, is Editor-in-Chief of *Nurse Author & Editor* and *CIN: Computers, Informatics, Nursing*. She is co-author of *The Editor's Handbook*, 3rd ed. which was published in July 2019. [You can reach Leslie via the contact form on this site](#), and she will respond to you directly.

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