

What if your dissertation aims fail?

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INTRODUCTION

Dissertation is an important part of postgraduate curriculum. The budding scholar acquires the skills required to conduct research and present it in an appropriate manner in his dissertation. Successful dissertation work is often published in journals and contributes significantly to the domain knowledge. As dissertation is the first major research work conducted by the postgraduate, a 'positive' outcome is considered desirable. However, owing to the inherent uncertainty associated with good and meaningful research, dissertations often encounter a 'negative' outcome at the end of the work. Many of these 'negative' studies with wealth of relevant information often fail to reach even the thesis rack of the college library. The researcher moves on to more 'meaningful' studies and the effort and patient suffering associated with the 'failed' study is forgotten and wasted.

This article aims to introduce researchers to new initiatives started by major publishing groups to prevent this wastage of preprint data. We also discuss other implications of such initiatives, on research in general, and the challenges faced in standardizing clinical data. 'Preprint' here means a preliminary document or data that the author intends eventually to publish in a journal, often in a revised form, though publication in a peer-reviewed journal is not mandatory. The online archive of the preprint material is called a 'preprint server'.

BioMed central research notes

BioMed Central (BMC) is an online publisher providing open access to peer-reviewed biological and medical research articles.^[1] BMC Research Notes is one of their publications providing a forum for researchers to

publish their 'negative results' or data collected during 'failed' studies. Researchers can also publish small-scale studies which are not suitable for conventional journal publications or updates to previous studies. However, it is a new initiative and the publishers are still working on domain-specific data standards. All publications are peer-reviewed fully and published in a referable format. *BMC Research notes* is indexed by Pubmed and Google scholar.

Journal of negative results in biomedicine

JNRBM is another peer-reviewed, open access, online journal published by BMC for complete studies and not published elsewhere because of negative outcome.^[2] The publisher levies an article-processing charge to cover the cost of open access publishing.

Nature precedings

Nature Publishing group (NPG) is a division of MacMillan Publishers Ltd, publishers of several scientific journals. NPG started a free online service called '*Nature Precedings*' in 2007 for researchers to share preliminary findings.^[3] Manuscripts published on nature precedings are citable but not peer-reviewed. *Nature precedings* accepts posters and presentations as well and supports community features like tagging, rating and searching. However, at present, *Nature precedings* does not accept manuscripts describing the results of clinical trials or those making specific therapeutic claims.

SciTopics

SciTopics is a free online knowledge sharing service from Elsevier Publishers.^[4] However, only invited authors can post information on a topic. SciTopics is also searchable and supports features like commenting.

IJDVL brief reports

This journal also accepts short reports of preliminary studies under the category 'Brief Reports'.^[5] Brief reports are peer-reviewed and Pubmed indexed like other articles and can be freely downloaded from the journal website.

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Advantages of preprint servers

The preprint servers offer several advantages to the research community and the author. The research community could benefit from the data and information gained during the study that would otherwise be wasted. It will help young researchers avoid the 'mistakes' committed by their predecessors and avoid re-inventing the wheel. The preprint studies can also work as pilot studies so that the researchers can anticipate certain outcomes. It will also help in improving the study design and statistical analysis. These servers also serve as the best source of dissertation ideas.

The preprint servers provide a forum for researchers to publish small scale studies which would not be accepted as full-scale studies and studies with 'negative' results. They will also help researchers claim priority in inventions and ownership of ideas. It is possible to showcase incremental improvement in study methods and updates to previous research. Since most of the preprint servers are online services, supporting community features, authors can receive immediate feedback from other researchers. Features like commenting and rating will help authors identify errors and omissions at the earliest.

Licensing

Most of the preprint servers make the contents available under the creative commons license.^[6] In short, creative commons license means that the content may be quoted, copied and disseminated for any purpose, but only if the original source is correctly cited. However, there are many versions of creative commons license and the licensing schemes of individual publishers differ. The creative commons license allows the author to publish the completed study in any other journal and personal websites. Since preprint servers are new, many of the journals do not have a clear policy on publications of manuscripts already published in preprint servers, even if it is submitted to the journal in a revised form. Many journals still follow the Ingelfinger rule^[7] to reject the materials published on preprint servers.

Reliability of preprint data

Some publishers argue that preprint servers with non-peer-reviewed material confuse the online readers and pose a threat to traditional medical journals.^[8,9] However, most of the researchers are aware of the intrinsic weakness of draft data in terms of reliability and are expected to do their own filtering of information.

The preprint materials have similar dependability to papers presented at conferences,^[10] but faster and cheaper information distribution through preprint servers would lead to better research and reduce the impact of publication bias from selective publication of 'positive' studies. As most of the preprint servers are indexed and searchable, the risk of plagiarism and debates over ownership of ideas are also reduced.

Clinical data standardization^[11]

The explosive growth in the field of genomics can be attributed to publicly available repositories of genomic sequence data.^[12] It is a common practice for researchers to publish even draft genomic data online.^[13] This encourages international collaboration that helps the research community. A similar approach to standardize and archive clinical data could have an impact on clinical research as well.

Clinical data is different from genomic sequence data in many ways. It is non-homogenous and can be qualitative or quantitative. The units of measurement can be different and the observations depend on environmental factors. Confidentiality is important in handling clinical data and there could be several unforeseen ethical considerations. In spite of these limitations efforts must be made to standardize, archive and share clinical data online. This would improve evidence based approach. Meta-analysis can be done at the primary data level. Errors and omissions in study-design and implementation can be easily spotted. Novel analytic methods can be used by other researchers leading to better insights. Though registration of clinical trials is often mandatory for publication,^[14] sharing of clinical data is not a common practice now.

CONCLUSION

Preprint servers have been in vogue in other fields like Physics for a long time.^[15] However, biomedical preprint servers are relatively new. A 'negative' result for dissertation study does not mean that the data collected or even the inference is irrelevant. The scientific community would benefit from the data, if made publicly available. Since preprint servers contain non-peer-reviewed materials, researchers should know how to separate the wheat from the chaff. Though clinical data is not amenable for standardization, efforts should be made to archive and share clinical data so that medical journals become better mediums for research data propagation than they are at present.

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