

Research Dissemination: Guiding the Novice Researcher on the Publication Path

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Dissemination is an important part of translational research. When the results of high-quality studies reach a wide audience of peers, they provide an evidence base that can guide practice and improve patient care and safety. From proposal to publication, the authors provide the novice researcher with advice on ethics, tips on selecting a journal, a summary of manuscript requirements, and a brief outline of the submission process and outcomes. By demystifying these processes and outlining some of the basic requirements, the authors hope to encourage novice researchers to engage in quality research and prepare them for disseminating their results.

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Osteopathic principles and practices have been validated on the basis of expert opinions, case reports, case series, and observational studies.¹ However, more rigorous studies on these osteopathic practices are needed to provide stronger scientific evidence to support their efficacy in patient care.¹⁻⁹ This endeavor has become particularly compelling because of the integration of osteopathic manipulative medicine into mainstream medical treatments.

Osteopathic clinicians, as researchers and educators, need to contribute to the osteopathic scientific knowledge base through research and scholarly work to improve clinical and educational practice. The dissemination of research findings and scholarly work provides the means to share knowledge that translates to substantially improved patient care and safety.¹⁰⁻¹² Such dissemination can be referred to as *translational research*, which underscores that the results of biomedical research should be used to improve patient care.¹⁰

For much of the history of basic science research, little or no “thought of practical ends”—or clinical application of the research findings—was given.¹³

The 3 main modes of research dissemination are (1) poster presentation, (2) conference paper or podium presentation, and (3) peer-reviewed journal publication. Among these 3 modes, peer-reviewed journal publication has been the traditional route for sharing and translating research and may come after a poster or conference presentation. The peer review process is designed to ensure fair and impartial treatment of the research submitted for consideration. It provides a platform for critique of the research rationale, design, data collection and analysis, and conclusions by experts in the field.

The objective of the present article is to provide novice research authors with a digestible guide to the publication process (*Figure 1*). Submission for publication might seem daunting and thus may prevent researchers from following through with the dissemination process. However, guidelines supported by best practices can serve as a roadmap for the

novice research author to increase the likelihood of acceptance of a submitted manuscript for publication in a peer-reviewed journal.

Initial Considerations

Working With a Mentor

It is advisable that medical students, residents, and other novice researchers seek the guidance of a mentor when engaging in research and scholarly work. Mentors model appropriate research behaviors, answer questions about the research process, and direct mentees to appropriate resources.¹⁴ The mentorship relationship is one that can enhance knowledge and skill and motivate inexperienced researchers to engage in the process with self-confidence.¹⁴⁻¹⁸

Institutional Review Board Approval

Many journals require that institutional review board (IRB) approval is received before the research is conducted. The IRB's main goal is to ensure the protection of human participants in association with the risks involved with the research. Although not common practice, investigators in quality improvement projects should obtain an IRB waiver or exemption approval to avoid potential dissemination problems. Quality improvement projects are often for internal consumption and not generally considered research. However, most of these projects involve human participants and, when results of such studies are disseminated, they cross the threshold of becoming generalizable knowledge and so qualify as research.

Ethical Conduct

Published articles become the evidence on which bedside decisions are made and translated into patient care.¹⁹ Therefore, ethical research conduct is of utmost importance to medical science. Inaccuracies can have negative consequences for patient care and safety as well as legal ramifications. Plagiarism is a serious ethical misconduct

in scientific research.¹⁹⁻²¹ Researchers have the responsibility to ensure that their writing is original and that their manuscript accurately credits its sources appropriately. One example of plagiarism is copying text from another source without enclosing it in quotation marks, with or without the source cited.^{19,20}

Another unethical practice in medical research publishing is the use of ghostwriters and honorary authors. Ghostwriters write large portions of a manuscript, but they do not get credit for authorship.^{20,22,23} Honorary authors, on the other hand, are given authorship credit, but they do not make substantial contributions to the research or manuscript.^{20,22} Such activity may go as far as falsifying the results of a study to support a particular research outcome, but the authorship credit is given to researchers who are known in the field.^{20,22} These practices usually occur in industry-supported research, especially in the development of new drugs.²⁴ However, the actual prevalence of ghost and honorary authorship is unknown in biomedical journals.^{20,22} These dishonest actions corrupt the integrity of science.²²

Identifying a Target Journal

When selecting a journal for manuscript submission, authors should consult journal websites to review the following considerations:

- **Aim and scope**—Research submissions must align with the aim and scope of the target journal.
- **Target audience**²⁵—A study in the field of orthopedics will likely not be of interest to ophthalmologists.
- **Authorship requirements**—Some journals do not accept submissions from medical students, and others require that submissions by residents have an attending physician in the authorship.
- **Impact factor**—A high impact factor signifies a broad reach of a journal.²⁶ However, it does not represent the journal's quality.¹⁹ An impact factor is discipline-dependent; hence, it precludes comparisons across disciplines.²⁷ *JAMA: The Journal of the American*

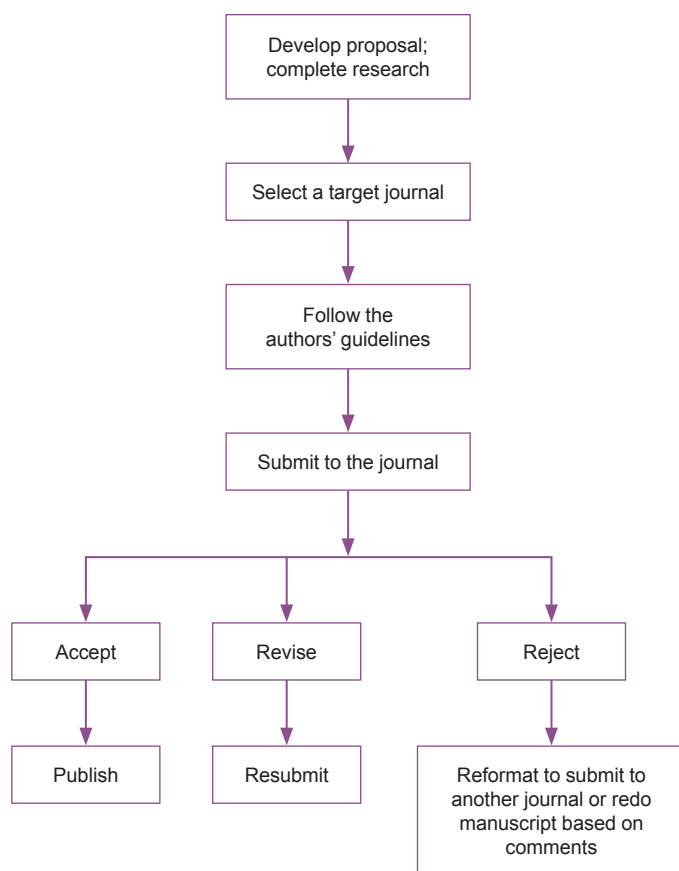


Figure 1.
Research dissemination process
for peer-reviewed journal publication.

Medical Association, for example, comprises many topics, has a wider audience, and has a high impact factor. Osteopathic journals, on the other hand, have a smaller readership, a more limited scope of topics, and lower impact factors (*Table*). Therefore, although the impact factor may be an important consideration, it should not be overly emphasized.

- **Cost**—Some journals have author fees associated with manuscript publication. These fees can range from \$50 to more than \$3000, especially for online open-access journals.²⁸

The Writing Process

A well-written proposal can serve as a great starting point for developing the final manuscript.^{29,30} A research proposal usually consists of 3 of the 6 sections of a manuscript: the introduction or background, the methods, and the references. Hence, a proposal constitutes one-half of the draft manuscript.

The final manuscript will also include the abstract, results, discussion, and conclusion. After the manuscript is written, the author may choose to hire a professional editor to help ensure proper grammar and readability and assist with the final formatting of the manuscript in accordance with the journal's requirements. Tools are available to help streamline the writing process and ensure the accuracy of citations and original writing. *Figure 2* lists some common editorial tools that can facilitate manuscript preparation.^{19,22}

Author Guidelines

Journals provide instructions for authors that specify the formatting requirements, the word count limit, and the sections required (*Table*). Formatting details include layout, margins, font type and size, and line spacing. Other guidelines to note include the graphics specifications (eg, file size and format) and limitations. The competition for publication is great, and journals are just as particular about the presentation of the submission as they are the validity of content.²⁵ Therefore, it is important to read the guidelines thoroughly to ensure that the style and format meet the journal's requirements.

Manuscript Components

As previously stated, a manuscript usually consists of an abstract and 6 main sections: introduction or background, methods, results, discussion, conclusion, and references.

Abstract

The abstract is a brief synopsis of the article that provides an overview of the article's purpose, methods, results, and conclusion.

Introduction or Background

The background and context of the research as well as the objective, hypothesis, and research question are presented in the introduction. The author should root the study in the scientific literature to support the research rationale. A thorough literature review reveals the gaps that the current research project aims to address.

Methods

Details on the “who,” the “what,” and the “how” of the study design are provided in the methods section. A statistician or methodologist can be of help throughout the study process. A statistician clarifies research questions and hypotheses, defines study variables, chooses an appropriate study design, defines the study population and relevant sample, designs data collection tools, defines the outcome measures, and provides statistical analysis and assistance with data interpretation. The methodology is critical for the validity of the study results. Flawed methodology will not produce useful results that can be published and translated into patient care.

Results

Relevant, clear, and logically organized, the results section should provide summarized data that answer the research questions and address the objectives of the study. Justification should be provided for all the analytical methods used. Tables and figures should be used, when appropriate, to provide concise visual representations of data. The results of the study are as critical as the methods—flawed results will render the manuscript unpublishable. Data should be presented as evidence of what the research sought to accomplish and set the stage for drawing relevant conclusions.

Discussion

Without a discussion, results cannot be tied back to the research questions, objectives of the study, and the methods. Authors should avoid interpreting the results beyond what the data reveal. Personal opinions and

Reference and Citation Managers

RefWorks (<http://www.refworks.com/>)

Endnote (<http://endnote.com/>)

Zotero (<https://www.zotero.org/>)

Write-N-Cite (<http://www.refworks.com/refworks/wncdownload.asp>)

Originality and Plagiarism Detection Tools

iThenticate (<http://www.ithenticate.com/>)

SafeAssign (<http://wiki.safeassign.com/display/SAFE/About+SafeAssign>)

Figure 2.

Software tools available to facilitate preparation of a research manuscript.

convictions should not be superimposed on the results. The discussion should link the results of the study back to the literature through comparisons, contrasts, and synthesis. Limitations of the study should be pointed out.

Conclusion

The conclusion section brings closure to the study and should recapitulate the key findings of the study briefly. As with the discussion, far-fetched conclusions should be avoided. Directions for future research are often delineated.

References

The text must be supported by original and current references as applicable. All references must be cited in the text and listed at the end of the manuscript. If the journal’s guidelines specify a certain reference formatting style, it is important to follow that style and to be consistent. Common styles include those created by the American Medical Association (AMA style), American Psychological Association (APA style), the Modern Language Association (MLA style), and the University of Chicago (Chicago Manual of Style; CMOS).

Table.
Selected Characteristics to Consider When Choosing a Target Journal

Characteristic	JAOA ³¹	<i>International Journal of Osteopathic Medicine</i> ³²	<i>Annals of Family Medicine</i> ³³	JAMA ³⁴
Aim and scope	Research findings; clinical practice observations; philosophic concepts; biomedical advances of osteopathic medical research	Basic science, clinical epidemiology, and health social science on osteopathic and neuromusculoskeletal topics; osteopathic education	Clinical, biomedical, social, and health services research to advance knowledge in health and primary care	General medical topics to promote science and medicine and to improve public health
Impact factor ³⁵	NA	0.727	4.57	30.387
Manuscript type	Original research; evidence-based clinical reviews; medical education; health policy; special communication; letters to the editor; case reports	Research and original articles; short reviews; clinical practice; research notes; preliminary findings; commentaries; protocols; letters to the editor	Original research methodology; theory; systematic reviews; briefs; special reports; reflections	Original investigations; clinical trials; meta-analyses brief reports; letters to the editor; research letters; special communications; poetry
Word count	Original research (3000 words); reviews (3500 words)	Review and original articles (2000-5000 words)	All categories (1200-2500 words)	Original investigation, clinical trial (3000 words); meta-analysis (3500 words and 75 references); brief report (1500 words)

Abbreviations: JAMA, *JAMA: The Journal of the American Medical Association*; JAOA, *The Journal of the American Osteopathic Association*; NA, not applicable.

Manuscript Submission

The processes involved in manuscript submission vary. The journal's website will have instructions or tutorials to guide authors through the process. Most journals require online registration, electronic manuscript submission, and uploading of supporting documents to a Web portal. Conflict of interest statements or author permission forms may be required at the time of submission. Furthermore, the site may contain additional required forms, such as copyright release forms. The submission process is not complete until a confirmation is received. If after peer review the manuscript is rejected, the author can submit it to another journal for consideration. The ethical author should submit his or her manuscript to 1 journal at a time.

Submission Outcomes

A preliminary decision may not be made for a few weeks to several months after submission. Three possible outcomes follow—acceptance, revision required, or rejection.

Acceptance

For most established journals, acceptance rates are generally low. Some journals, such as *JAMA: The Journal of the American Medical Association*³⁶ and *Annals of Internal Medicine*,³⁷ post their acceptance rates on their websites. If a manuscript is accepted for publication, further information and instruction will follow, such as requests for any outstanding paperwork, permission to reproduce content from an outside source, if applicable,

and approval of edited files. A set number of complimentary copies of the published article are usually allotted with limited “sharing” rights. For instance, the author can use the article for personal or institutional documentation and sharing with colleagues, but not for commercial purposes.

Revision Request

The journal may request that reviewers’ comments be addressed through a revision process that includes making changes the reviewers proposed or indicating why the suggestions may not be relevant. Additional information, data, or word count adjustment may be required. The revised manuscript should include a point-by-point response to the reviewers’ comments. Resubmission should be completed by the deadline requested. A manuscript that is revised and resubmitted is not guaranteed acceptance.

Rejection

Journals have limited space and a continuous supply of submissions, so the chance of being rejected is high. A rejection notice does not necessarily mean that the research is not worth publishing. Perhaps the manuscript did not align with the aim and scope of that journal, or the journal published a similar article in recent years. It is important for authors to learn from the reviewers’ feedback and move forward. The first step might entail revision of the manuscript, taking the reviewers’ feedback into account. Options thereafter include collecting more data and substantially rewriting the manuscript for resubmission to the same journal or submitting it to another journal. Some restructuring may be necessary to fit the new journal’s guidelines.

Conclusion

The research process is not complete without dissemination of the results to an audience of peers. Switching gears from researcher to writer may seem like an im-

passable hurdle. The path to research publication need not be daunting, however. With determined effort, attention to some basic guidelines, and, ideally, working with a good mentor, the novice researcher can work through the dissemination process with confidence.

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