

SPECIAL COMMUNICATION

Current and Future Challenges to Publishing Family Medicine Research

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The specialty of family medicine is currently pushing for a future with more and better family medicine research. If successful, there will be much more family medicine literature to be published. Family medicine as a specialty has multiple high-quality journals covering research, clinical care, evidence-based medicine, health policy, and educational scholarship. As family medicine is a broad, generalist discipline, published scholarship within family medicine is also quite broad. But all work published in family medicine journals has 1, unifying focus. Ultimately, the goal is to improve the medical care of people. Research in family medicine is predicated on the fact that most health care happens in the outpatient practice; therefore that is where most research happens as well.^{1,2} Family medicine researchers tend to work collaboratively with community patient populations. For instance, they may participate in practice based research networks (PBRNs) to conduct pragmatic trials in real world primary care practices. This focus on the patient, in the patient's

usual environment, is the strength of the discipline and its unique contribution to the research canon.

The editors of family medicine journals as a group represent academic family medicine as well as clinical practice and provide a scaffold for the intellectual framework of the discipline. They are thought leaders for family physicians, educators, and researchers.

The role of an editor is to assess all articles submitted to their journal, assure that the articles published are of the highest quality, and ultimately help shape the scientific arc of the discipline. The editor also serves as a steward of the intellectual concepts of the discipline. They curate published work related to the practice and teaching of family medicine and guide the research priorities of the discipline. Through editorials and commentaries, editors can challenge funders, health care organizations, and government agencies to improve the care of communities throughout the world. Editors of family medicine journals in North America have worked together to improve diversity and equity in publishing^{3,4}, instructed the community about grading evidence⁵, and warned of the risk of predatory journals⁶. This collaborative spirit of working toward a common goal of high quality, equitable family medicine scholarship is important and signals that the editors of family medicine journals in North America are a cohesive group.

Publishing an article in a peer reviewed journal is generally considered to be the highest form of scholarship. Junior faculty need mentoring and coaching to successfully complete research and write an article for publication.^{7,8} But, what is the editor's role in this process? Journals aim to publish

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the highest quality articles possible. The process of choosing articles, sending back to authors for revisions, and editing the final result is an arduous one, and can be thought of as a mentoring journey of sorts. Peer reviewers work with editorial teams to help authors improve their articles toward a goal of excellent scholarship. Several of the journals also offer medical editing fellowships which aim to grow future editors through mentored editing experiences.

Current Trends and Challenges for Family Medicine Journals

Online Publishing

The widespread availability of the internet in the 1990s made many parts of the publishing process faster: manuscript submission, peer review, formatting, and production of the final product, allowing for faster dissemination of scientific information.⁹ It is now possible to complete the publication process and make a final manuscript available online long before it becomes available in its final version, either online or in print. This can be a win for family medicine authors, editors, readers, and – ultimately – patients. All major family medicine journals are online, and most are open access, either immediately or after a brief embargo period.

The advent of online publishing also brought about the advent of new payment models¹⁰ as well as new opportunities for profiteering.⁶ Predatory journals charging large fees for publishing manuscripts represent a serious threat for family medicine authors, especially those who are inexperienced. As we encourage more scholarship within family medicine, we also need to educate medical students, residents, and other novice authors to identify and avoid predatory journals.¹¹

Another online trend, one accelerated by the COVID-19 pandemic, is preprinting online of scientific manuscripts before being peer reviewed.¹² Preprint servers are often associated with specific journals or specific academic institutions. Others are independent online locations where researchers can rapidly make findings available to the public before and during the peer review process.¹¹ This clear preprint strength is also the greatest preprint weakness. Because these manuscripts have not been fully vetted through the peer-review process, readers must determine the validity of the findings. Many of these articles will subsequently be published, often with significant revisions. Others will not survive peer

review and will never be published in the peer-reviewed, indexed medical literature.¹³ The editors of family medicine journals are gaining familiarity with preprints and are generally open to publishing manuscripts that have been posted on preprint servers after appropriate peer-reviewing.¹⁴ Family medicine editors will need to develop specific protocols for these articles. Such as how to deal with the preprint once the final version is available. It could be linked to the final version or taken down completely.

Peer Review Challenges

Peer review of the scientific literature dates back to the 18th century and remains an essential process in family medicine journals and is great professional development for authors.¹⁵⁻¹⁸ Despite its key role in helping editors critically assess articles with the goal of providing the best evidence for education, research and patient care in family medicine, peer review also has challenges. First, research surrounding the effectiveness and optimal methods for peer review is limited.^{19,20} Second, finding reviewers with expertise on a particular topic who can dedicate the time to provide a quality review is an ongoing conundrum for many reasons. These include concern for tasking the same pool of reviewers who often have competing professional demands, reviewer bias, lack of diversity among peer reviewers, and inadequate recognition of the work required to perform a good review.²¹ To address these challenges, editors of family medicine journals continue to provide workshops on peer review at various conferences and can collaborate to study peer review and elevate its recognition in family medicine scholarship.

Diversity, Equity, and Inclusion in Family Medicine Scholarship

Black, Latinx, American Indian/Alaska Native, Pacific Islander, and Southeast and refugee Asian populations remain underrepresented in medicine (URiM) despite the increasing diversity in the general US population and the need for a diverse workforce to tackle health inequities.²² This translates to a dearth of diversity among authors, editorial boards, and peer reviewers for family medicine journals. One barrier to increasing equitable scholarly opportunities for URiM individuals is the lack of a standard way to collect demographic information and fears, given historic systemic racism in the US health system, that providing this information might negatively affect

one's chance for contribution. Family medicine editors and many other scientific scholarly communities remain committed to addressing inequities in publication and have created a call to action and a framework for next steps.^{3,4,23,24}

Challenges to Scientific Rigor in the Digital Age

The digital age has introduced several new methodologies for conducting research. For example, researchers can study the content of online discussions or disease-specific web sites.²⁵ This type of research can provide insights on topics that would previously been very challenging to investigate. Another digital methodology that represents a significant challenge for journal editors is the online survey without a specifically predefined sampling frame. These surveys are often spread via social media platforms or introduced on large listserves.²⁶ Recipients may be encouraged to forward survey links widely to increase the number of responses. These surveys can generate a very large number of responses, can reach hard to identify populations, and have the advantage of speed compared with many other survey methods.²⁷

Unfortunately, it is often difficult to assess the validity of the results of these types of surveys. Survey responses may be very low, or it may be impossible to determine the response rate. If the survey link could be freely forwarded, it will likely be unclear if all respondents even belong to the population the survey was originally designed to target. Given these limitations, researchers should carefully consider if electronic surveys without a carefully defined sampling frame are appropriate and necessary for their particular area of interest. Editors, with the help of qualified peer reviewers, need to determine if the information generated contributes enough to the medical literature to justify the methodologic weaknesses.

The continued rise of “big data” is a huge opportunity that also represents a continued challenge facing medical researchers and editors. For instance, the number of data points available in electronic medical records (EMR) grows daily.²⁸ In the largest health care systems, these data sets have gotten truly enormous. This allows researchers to search for smaller and smaller associations and identify rarer and rarer outcomes. Many large survey data sets are also available online. Many are freely accessible to download for secondary analysis.²⁹

Significant limitations come along with the increased analytic power of big data. The phrase

“garbage in, garbage out” (GIGO) applies to any computer database. Any analysis of EMR data can only be as reliable as the data put into the EMR by individual health care providers and staff who do not have future research data integrity in mind as they interface with the system. Another risk of big data is that finding a statistically significant association becomes inevitable if the ‘n’ is large enough.³⁰

Researchers and editors must be cognizant of these limitations when publishing findings from big data sources. The potential lack of data reliability should always be addressed as a limitation. In addition, only clinical questions created a priori and with a legitimate potential causal mechanism should be pursued in big data sets. These potential causal mechanisms should be explained in detail within the manuscript. When associations are found, both statistical and clinical significance of findings should be discussed in research reports.³¹

Artificial Intelligence in Scholarly Publications

Another increasingly prominent challenge in the digital age is the role of artificial intelligence (AI) in scholarly publications. Tools including OpenAI's ChatGPT and other large language models have been used in many contexts, but in the educational realm these tools are known to generate scholarly text to complete writing assignments and articles for submission. Ethical concerns raised in the scientific publishing domain include accountability, authorship, plagiarism, and scientific accuracy,^{32,33} leading many journals and publishing organizations to create statements that chatbots may not be listed as authors and the use of these tools must be acknowledged.^{34,35} Proponents of AI in scholarly works state that attempting to over police is futile and would likely lead to undisclosed use. They would argue that developing policies to improve transparency and accountability is a better approach. In addition, use of these tools could improve writing overall and support diversity by assisting authors producing content in a language other than their first language.³⁶ AI certainly represents an opportunity as well as a challenge going forward.

The Future of FM Publishing

Ideally, publishing family medicine scholarship will continue to prioritize research done on actual primary care populations. The current state of

research funding in the United States leads to a situation in which many, maybe even most, medical decisions family physicians make in clinic on a daily basis are made based on evidence produced by specialists studying their patient populations. Research currently done by family physicians, on family medicine populations, is often smaller in scope due to a relative lack of funding. This typically means studies are done at a single institution, with a smaller 'n', and are shorter in duration.

This forces family physicians to take a leap of faith that specialty literature translates faithfully to a primary care population. More ideal would be studies designed for, and conducted on, the general population. This is the population family physicians care for on a daily basis. More importantly, this is the vast majority of the American population.³⁷ Improved funding mechanisms could lead to more large scale research done by family physicians, with family medicine patients, studying topics important to family physicians and their patients.

A critical step in producing more primary care research to generate evidence for family physicians to care for patients and communities is prioritizing diversity, inclusion, and the appropriate conceptualization of race to strive toward health equity. The current scientific literature is saturated with studies demonstrating disparate health outcomes across racial and ethnic groups without investigating the actual source of these disparities and instead falsely implicating biological differences.³⁸ These studies have influenced practice guidelines and calculators assessing disease risk that incorrectly use race as a proxy for genetic difference.^{39,40} Studies that examine race as a proxy for racism and the contributing mitigatable factors are crucial to addressing disparities. Prioritizing this type of research also means engaging members of marginalized communities which can be accomplished by encouraging diversity in our specialty to increase trust and reduce bias.^{22,41} This circles back to the challenges that remain in the academic family medicine community where the diversity of authors, reviewers, and editorial boards is lacking.

A key question for publishing in family medicine, and all specialties, is what the preferred format of medical manuscripts will be in the future. A growing number of practicing family physicians have been trained in an era during which the written word was not a dominant mechanism by which information was disseminated and in which

learning from fast, easily digestible content became the norm. What does this mean for traditional medical publishing? Will reading full-length research manuscript be acceptable to the practicing family physician of tomorrow? If new formats are needed, what will those be?

Editors of family medicine journals will continue to have an advocacy role well into the future. Editors will advocate for the study of family medicine appropriate topics using family medicine appropriate methodologies. This may mean advocating for expanded funding mechanisms going forward. In addition, editors will need to advocate for family medicine researchers to publish in family medicine journals. This will mean having enough room to publish in the specialty's journals and for those journals to be considered prestigious publishing venues.

Family medicine journals continue to make progress in these efforts by advocating for health equity, collaborating, holding each other accountable, mentoring, and most importantly, learning from our contributors, readers, patients, and the communities we serve.

To see this article online, please go to: <http://jabfm.org/content/00/00/000.full>.

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