PUBLISHING AND THE FUTURE OF MEDICAL JOURNALS

CANDICE SILVERSIDES
PROFESSOR OF MEDICINE, UNIVERSITY OF TORONTO
CANDICE SILVERSIDES
EDITOR-IN-CHIEF, JACC ADVANCES
MEDICINA CURIOSA:

A Variety of new Communications in Physick, Chirurgery, and Anatomy, from the Ingenious of many Parts of Europe, and some other Parts of the World.

October 23, 1684.

The Contents.

1. An Extract of the chief Cures contained in a Book called, A Rational Practice of Chirurgery: set forth this Year in the Latin Tongue, by John Miys, M.D. at Leyden, in 12°.


3. An Extract of the chief Matters relating to Poxvirus, contained in a Book called, Observations on Fevers and Poxviruses: set forth this Year the second time in the French Tongue, by Dr. Spon, with the Addition of more than a half, in 12°. Lyons.

4. The Use of Quinina for curing Fevers, published by the French King's Order; extracted from the first Journal des Scavans of the last Year.

5. The English Remedy, according as it is published by Monseur de Blegny, M.D.

The landscape of medical publishing is undergoing dynamic transformations, driven by technological advancements, evolving research practices, and changing reader preferences.

https://www.linkedin.com/pulse/future-medical-publishing-exploring
OBJECTIVES

Publishing in 2024
- Conducting studies
- Understand the editorial process

Publishing and medical journals of the future
“The primary objective of a medical journal is to publish important new information that influences clinical care or subsequent research.”

DeMaria JACC 2003
Getting published starts with a good study....
PUBLISHING RESEARCH IN 2024

CONCEIVING A RESEARCH STUDY

CONDUCTING A STUDY

GETTING PUBLISHED
PUBLISHING RESEARCH IN 2024

CONCEIVING A RESEARCH STUDY

CONDUCTING A STUDY

GETTING PUBLISHED
A good study starts with a good research question....
CRITERIA FOR DECIDING ON A STUDY TOPIC

<table>
<thead>
<tr>
<th>FINER CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasible</td>
</tr>
<tr>
<td>Interesting</td>
</tr>
<tr>
<td>Novel</td>
</tr>
<tr>
<td>Ethical</td>
</tr>
<tr>
<td>Relevant</td>
</tr>
</tbody>
</table>
**LOCAL EXPERTISE**

**CENTRAL ILLUSTRATION:** Cardiovascular and Noncardiovascular Prescribing and Mortality Outcomes After Takotsubo Syndrome

- **Study Design**
  - 2,480 general Scottish population controls
  - 620 myocardial infarction controls
  - Electronic data linkage for analysis of hospital admissions, mortality, and prescribing

- **Medication**
  - There were similar rates of prescribing of conventional cardiovascular medications in takotsubo syndrome and myocardial infarction.
  - Conventional cardiovascular medications were associated with increased survival in patients with myocardial infarction.
  - Conventional cardiovascular medications were NOT consistently associated with increased survival in patients with Takotsubo Syndrome.

- **Mortality**
  - Takotsubo syndrome was associated with an increased risk of mortality due to cardiovascular causes when compared to the general population (HR: 2.69).
  - Mortality from noncardiovascular causes was predominantly due to pulmonary conditions.

- **Study Population**
  - 91% women
  - Mean age 66 years
  - Median follow-up period of 5.5 years

TRENDS....

MACHINE LEARNING IN MEDICAL RESEARCH

Medical research papers increasingly mention machine learning algorithms or approaches

[Bar chart showing the number of papers by research field from 1990 to 2020.]

CHART: James Goldie, 360info

https://360info.org/special-report-ai-in-medical-research
THE BEST IDEAS EMERGE WHEN VERY DIFFERENT PERSPECTIVES MEET

FRANS JOHANSSON

PICTUREQUOTES.com
PUBLISHING RESEARCH IN 2024

CONCEIVING A RESEARCH STUDY

CONDUCTING A STUDY

GETTING PUBLISHED
Early experiments in transportation
- Guidelines to improve the transparence, clearness and completeness of scientific literature
- The **CONSORT** statement is made up of a 25-item checklist that provides the author with a solid backbone around which to construct and present a randomized trial

[Reporting guidelines for main study types](https://www.equator-network.org/reporting-guidelines/consort/)
REGISTRATION OF CLINICAL STUDIES

About ClinicalTrials.gov

What is ClinicalTrials.gov and who uses it?

ClinicalTrials.gov is a website and online database of clinical research studies and information about their results. The purpose of ClinicalTrials.gov is to provide information about clinical research studies to the public, researchers, and health care professionals. The U.S. government does not review or approve the safety and science of all studies listed on this website.

What is ClinicalTrials.gov and who uses it?

ClinicalTrials.gov is a website and online database of clinical research studies and information about their results. The purpose of ClinicalTrials.gov is to provide information about clinical research studies to the public, researchers, and health care professionals. The U.S. government does not review or approve the safety and science of all studies listed on this website.

Does the U.S. Government approve all studies listed in the ClinicalTrials.gov database?

The U.S. government does not review or approve the safety and science of all studies listed on this website.

What clinical studies can be listed in ClinicalTrials.gov?

Clinical studies can be listed in ClinicalTrials.gov if they meet certain criteria, such as being conducted in the U.S. and having a human subject participation component.
REPORTING BIAS

Kaplan and Irvin PLOS One 2015
STATISTICAL ANALYSIS

Regression analysis
Factor analysis
Neural networks
Decision trees
Survival analysis
Time series analysis
Cluster analysis

https://intellipaat.com/blog/what-is-statistical-modeling/
PUBLISHING RESEARCH IN 2024

CONCEIVING A RESEARCH STUDY

CONDUCTING A STUDY

GETTING PUBLISHED
GETTING YOUR MANUSCRIPT PUBLISHED

Pick the right journal

https://scientific-publishing.webshop.elsevier.com/research-process/how-to-choose-a-journal-to-submit-an-article/
• *JACC: Advances* is an open-access, peer-reviewed, cardiovascular journal that publishes Original Research papers and State-of-the-art reviews focused on cardiovascular medicine, including emerging areas.

• The Journal considers a broad range of original research studies including clinical, experimental investigations with clear clinical relevance, epidemiological, and healthcare policy studies that advance cardiovascular health.
THE DARK SIDE OF PUBLISHING

The explosion in open-access publishing has fuelled the rise of questionable operators.

“2012 WAS THE YEAR OF THE PREDATORY PUBLISHER; THAT WAS WHEN THEY REALLY EXPLODED.”
PEER REVIEW
Peer review to the public is portrayed as a quasi-sacred process that helps to make science our most objective truth teller, but we know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong.'

Richard Horton
Editor-in-Chief, The Lancet
New approaches to improve peer review are being considered and tested.

Double-anonymous peer review, where both reviewers’ and authors’ identities are concealed with the goal of reducing bias.
Preprints are preliminary reports of work that have not been certified by peer review. They should not be relied on to guide clinical practice or health-related behavior and should not be reported in news media as established information.
## DECISION LETTERS AND WHAT THEY MEAN

<table>
<thead>
<tr>
<th>DECISIONS</th>
<th>WHAT THEY MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reject without review</td>
<td>Not suitable for journal</td>
</tr>
<tr>
<td>Transfer to a sister journal</td>
<td>More suitable for another journal</td>
</tr>
</tbody>
</table>
HANDLING DISAPPOINTMENT

KEEP CALM AND DON'T TAKE IT PERSONALLY
## DECISION LETTERS AND WHAT THEY MEAN

<table>
<thead>
<tr>
<th>DECISIONS</th>
<th>WHAT THEY MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reject without review</td>
<td>Not suitable for journal</td>
</tr>
<tr>
<td>Transfer to a sister journal</td>
<td>More suitable for another journal</td>
</tr>
<tr>
<td>Reject after review</td>
<td>Not acceptable</td>
</tr>
<tr>
<td>Major or minor revisions</td>
<td>Editors are seriously considering the manuscript</td>
</tr>
<tr>
<td>DeNovo resubmission</td>
<td>Editors like the paper, but major issues need to be addressed</td>
</tr>
</tbody>
</table>
DISSEMINATE YOUR WORK
2022
>13,500,000
THE MEDICAL JOURNAL OF THE FUTURE
PAPER JOURNALS WILL BE LESS COMMON
JOURNAL FAMILIES
GLOBAL APPROACH TO RESEARCH

JACC Journals publish international research
Entity: All JACC Journals · Year range: 2018 to 2022 · Data source: Scopus, up to 10 Jan 2024

# Scholarly Output

Courtesy of Corina Negru (ELSEVIER)
"Pay-to-read" model

"Pay-to-publish" model
INTERACTIVE DATA VISUALIZATION AND MULTIMEDIA INTEGRATION
1. TOTAL CVD MORTALITY RATES BY REGION

(age-standardized mortality rates per 100,000 in 2021)

Rotate the globe to hover over one of the 21 regions to see the overall CVD mortality rate in that region.

High-income North America

CVD Mortality Rate: 145.39
(129.68 - 153.69)
Future Journals: Personalization and Reader Engagement

Platforms that use machine learning algorithms to provide personalized content recommendations based on a reader's interests, previous searches, and reading history.
Personalize recommendation engines
- Bespoke curation -

• Daily email telling you the most important papers for you to read

• When searching a topic you will be linked to related resources:
  • Related reviews
  • Detailed reports of the analytic methods of the studies
  • Other Internet resources
“Tools are emerging to facilitate this ‘share early, share often’ approach.”
“They challenge the traditional article format by including blog posts, interactive graphics and video.
Priem Nature 2023
FUTURE: ENHANCED NETWORKING FEATURES

Journals will incorporate enhanced networking features, allowing authors, reviewers, and readers to connect within the platform.
CAUTIONARY TALES
LARGE LANGUAGE MODELS
If nonhuman AI models are used to generate content in the manuscript, the authors must disclose this information in the cover letter to the editor and include the following statement “The authors take full responsibility for the data integrity and the authenticity of all the content that was generated by artificial intelligence and machine learning models.”

Authors must report the use of nonhuman AI models to create or assist in content in the Methods section and/or the Acknowledgment section of the submitted paper.
AI-ENABLED IMAGE FRAUD IN SCIENTIFIC PUBLICATIONS

Gu et al Cell Press 2022

Figure 1. Scientific image fraud by intelligent models
We show several fake images generated by generative models. The images with the red border are all computer generated, while the images with the green border are real ones.
JOURNALS OF THE FUTURE AND THE IMPACT FACTOR
IMPACT FACTOR

- Main metric use to assess the impact of a medical journal
- Invented by a librarian
- Originally invented as a tool to help university librarians decide which journals to purchase
- Number of cited articles over a 2-year period
- Criticisms of its statistical validity and its implications of how science is assessed
### IMPACT FACTOR 2022: ELSEVIER JOURNALS

<table>
<thead>
<tr>
<th>Source</th>
<th>Journal Impact Factor 2022</th>
<th>Journal IF rank 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY</td>
<td>24</td>
<td>4</td>
</tr>
<tr>
<td>JACC: Cardiovascular Imaging</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>JACC: Heart Failure</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>JACC: Cardiovascular Interventions</td>
<td>11.3</td>
<td>10</td>
</tr>
<tr>
<td>JACC: Clinical Electrophysiology</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>OTHERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest</td>
<td>9.6</td>
<td>5</td>
</tr>
<tr>
<td>The Journal of Heart and Lung Transplantation</td>
<td>8.9</td>
<td>19</td>
</tr>
<tr>
<td>Journal of the American Society of Echocardiography</td>
<td>6.5</td>
<td>27</td>
</tr>
<tr>
<td>Journal of Thoracic and Cardiovascular Surgery</td>
<td>6</td>
<td>33</td>
</tr>
<tr>
<td>Heart Rhythm</td>
<td>5.5</td>
<td>38</td>
</tr>
<tr>
<td>The Annals of Thoracic Surgery</td>
<td>4.6</td>
<td>47</td>
</tr>
</tbody>
</table>
“It is very possible that Altmetrics, or some similar metric, will displace the Impact Factor and become the “ejection fraction” of medical journals in the future.”
Publishing in 2024

Carefully design and conduct your studies
Understand the editorial process
Don’t be discouraged
Use social media to disseminate your work
CONCLUSIONS

Medical journals of the future

- More open access
- More predatory journals
- AI use will improve the researcher and reader experience
- Role of LLM is evolving
- Medical journals of the future remain to be defined
RESOURCES

• Learn about JACC: Advances and the JACC journals [JACC Journals | ScienceDirect.com by Elsevier](https://www.jacc.org)
• Learn more about publishing in the JACC Family of journal: https://www.jacc.org/author-center/how-to-publish

Request access to JACC Journals
**POPULAR RESEARCH TOPICS IN JACC JOURNALS: INDICATOR OF THE LATEST DEVELOPMENTS IN CARDIOLOGY**

![Table and Diagram](image-url)
It does not matter how many times you get knocked down, but how many times you get up.

— Vince Lombardi —
“Editors and reviewers...will be replaced by the aggregated, collective judgement of communities themselves.”

Beyond the paper

The journal and article are being superseded by algorithms that filter, rate and disseminate scholarship as it happens, argues Jason Priem.
OPEN ACCESS

Reach
- Find it
- No barriers = discoverability
- New audiences

Rigour
- Trust it
- Open = transparency
- Quality peer-review

Relevance
- Use it
- Higher usage = research impact
- Citations and collaboration
ARTIFICIAL INTELLIGENCE IN THE PEER REVIEW PROCESS

- **Easy access to information**
  - Identification of data fabrication & plagiarism
  - More complete literature reviews

- **Peer-reviewing process**
  - Automated selection of reviewers, avoidance of COI
  - More efficient reminder system
  - Evaluation of the review quality

- **Post publication marketing**
  - Identification of novel information
  - Creation of visual abstracts, press releases, social media communications, ...
# DECISION LETTERS AND WHAT THEY MEAN

<table>
<thead>
<tr>
<th>DECISIONS</th>
<th>WHAT THEY MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reject without review</td>
<td>Not suitable for journal</td>
</tr>
<tr>
<td>Transfer to a sister journal</td>
<td>More suitable for another journal</td>
</tr>
<tr>
<td>Reject after review</td>
<td>Not acceptable</td>
</tr>
</tbody>
</table>
INTERPRETING YOUR RESULTS

Provide standards on design, analysis, and interpretation of the results

<table>
<thead>
<tr>
<th>Reporting guidelines for main study types</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Randomised trials</strong></td>
</tr>
<tr>
<td><strong>Observational studies</strong></td>
</tr>
<tr>
<td><strong>Systematic reviews</strong></td>
</tr>
<tr>
<td><strong>Study protocols</strong></td>
</tr>
<tr>
<td><strong>Diagnostic/prognostic studies</strong></td>
</tr>
<tr>
<td><strong>Case reports</strong></td>
</tr>
<tr>
<td><strong>Clinical practice guidelines</strong></td>
</tr>
<tr>
<td><strong>Qualitative research</strong></td>
</tr>
<tr>
<td><strong>Animal pre-clinical studies</strong></td>
</tr>
<tr>
<td><strong>Quality improvement studies</strong></td>
</tr>
<tr>
<td><strong>Economic evaluations</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalisability</td>
<td>Generalizability (external validity, applicability) of the trial findings</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence</td>
</tr>
</tbody>
</table>
A Field Weighted Citation Impact (FWCI) of 1 means that the output performs as expected for the global average; an FWCI of 1.44 means 44% more cited than expected.
## DECISION LETTERS AND WHAT THEY MEAN

<table>
<thead>
<tr>
<th>DECISIONS</th>
<th>WHAT THEY MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reject without review</td>
<td>Not suitable for journal</td>
</tr>
<tr>
<td>Transfer to a sister journal</td>
<td>More suitable for another journal</td>
</tr>
<tr>
<td>Reject after review</td>
<td>Not acceptable</td>
</tr>
<tr>
<td>Major or minor revisions</td>
<td>Editors are seriously considering the manuscript</td>
</tr>
</tbody>
</table>
High impact journal families published by Elsevier
Reading high quality interdisciplinary research increases the quality of your publications and leads to innovation

Feedback from our readers:

- “Access to impactful peer reviewed publications, from a variety of specialities enhances my teaching, research and clinical activity.”

- “Fostering innovation requires knowledge from multiple related disciplines.”

- “Reading high quality interdisciplinary research allows me to stay abreast of my field and interrelated specialties.”
Elsevier high impact journal families

THE LANCET
- 24 premium journals in Clinical Medicine Research
- Most read and cited content on ScienceDirect
- 99M full text article downloads annually

CellPress
- 56 high impact journals in Life, Physical and Health Sciences
- 156 articles downloads every minute
- 32 citations per publication

SOCIETIES publishing
- 87 peer-reviewed journals in Clinical Medicine
- Multi-disciplinary content across 21 Health Science domains
- 82M full text article downloads annually
High impact journals spanning many specialties

Independent • International • Influential

The Lancet began as an independent, international weekly general medical journal founded in 1823 by Thomas Wakley. Since its first issue (October 5, 1823), the journal has strived to make science widely available so that medicine can serve, and transform society, and positively impact the lives of people.
World Health Organization uses research and innovation published in the *Lancet* journals for evidence-based policy

**Readers’ feedback:**

“*Lancet* helps me formulate policy positions, based on medical evidence and opinion pieces.”

“*Lancet* covers just about every facet in medicine with integrity, transparency and clarity.”

“The articles are of a high validity and reliability. All of them are peer reviewed.”
Nobel Prize in Physiology or Medicine 2023:
Katalin Karikó and Drew Weissman

Discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19.

Both Dr. Katalin Karikó and Dr. Drew Weissman have authored articles in Cell Press hybrid titles as well. Their 2005 *Immunity* article was cited in the award alongside a key article from *Molecular Therapy*. 
Recent Cell Press launches in medical sciences

Launched 2020

- *Med* publishes clinical trial results, observations from longitudinal cohorts, and pioneering discoveries about disease mechanisms in Cancer, Cardiovascular and metabolic diseases, Clinical practice guidelines and health policy, Digital health, and many others.
- Sister title to Cell
- Focus on therapy

Duke Lee, PhD
Editor-in-Chief
www.cell.com/med

Launched 2020

- Broad-scope, open access journal publishing cutting-edge research in translational and clinical research that ranges from exciting concepts in human biology, health, and disease to all phases of clinical work.
- Sister to Cell Reports, Cell Reports Methods and Cell Reports Physical Sciences
- Flexible formats
- Rapid publication

Sara Hamilton, PhD
Editor-in-Chief
www.cell.com/cell-reports-medicine
JACC Impact compared to the Cardiology subject area

<table>
<thead>
<tr>
<th>Journal of the American College of Cardiology</th>
<th>Cardiology and Cardiovascular Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarly Output: 4,446</td>
<td>Scholarly Output: 277,324</td>
</tr>
<tr>
<td>Field-Weighted Citation Impact: 3.44</td>
<td>Field-Weighted Citation Impact: 1.01</td>
</tr>
<tr>
<td>International Collaboration: 1,184</td>
<td>International Collaboration: 56,848</td>
</tr>
<tr>
<td>Citation Count: 164,118</td>
<td>Citation Count: 2,776,437</td>
</tr>
<tr>
<td>37 citations per publication</td>
<td>10 citations per publication</td>
</tr>
</tbody>
</table>
Resources

• Learn about JACC: Advances and the JACC journals JACC Journals | ScienceDirect.com by Elsevier

• Learn more about Journal of the American College of Cardiology Journal of the American College of Cardiology | ScienceDirect.com by Elsevier

• Learn about publishing in Elsevier’s premium journals JACC Webinars | Elsevier Researcher Academy

• Watch a short overview of the JACC portfolio Publishing in the JACC Family of Journals | Information for Authors

• Listen to the JACC Journals Podcasts JACC Journals Podcasts

• Learn more about the high impact journal families of Elsevier High impact journals | Elsevier

• Learn more about open access options at Elsevier Open access information for researchers | Elsevier