Editorial Decision-Making and Peer Review at Major Biomedical Journals

Kirby Lee, PharmD, MA
Assistant Professor of Clinical Pharmacy, UCSF
Elizabeth Boyd, PhD
Assistant Vice President of Research Compliance & Policy, University of Arizona
Lisa Bero, PhD
Professor of Clinical Pharmacy, UCSF

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Background

- Key functions of the editorial process
  - Select high quality reports for publication
  - Enhance readability, accuracy and usefulness of selected submissions

But…

- How do editors decide what to publish?
  - Are they fair? Efficient?
- What changes do editors, reviewers and authors make to a manuscript before publication?

Objective

- To understand the editorial decision making and peer review process at major biomedical journals
- Qualitative and quantitative methods to identify any systematic biases that influence editors' decisions to accept or reject articles for publication
- *What is it that editors do and how do they do it?*

Specific Aims

Describe the editorial process for considering and reviewing articles for publication;

- *What are the criteria used to evaluate manuscripts?*

Identify characteristics of accepted manuscripts;

- *Do editors prefer to publish positive findings?*
- *What are predictors of publication?*

Design

- Prospective cohort of manuscripts submitted for publication (n=1,107)
  Jan 2003 – Apr 2003
  Nov 2003 – Feb 2004

  - *Annals of Internal Medicine*
  - *BMJ*
  - *The Lancet*

Sample

- Included manuscripts of original research
  - Experimental Studies
  - Observational Studies
  - Systematic Reviews
  - Qualitative Studies
- Excluded single case-reports
- Accepted for publication (n=68; 6.1%)

Data Set

- 1,107 submitted manuscripts
- All correspondence and comments from editors, peer reviewers, and authors
- Audio taped recordings of interviews and editorial meetings

Analysis

- Qualitative:
  - Interviews with editors
  - Audio taped recordings of editorial meetings
  - Editorial changes to manuscripts for publication
- Quantitative:
  - Associations of manuscript characteristics as predictors of publication
  - Methodological quality of manuscripts (accepted vs. rejected)

Editorial Process

	Journal 1	Journal 2	Journal 3
Journal Sponsor	Professional Society	Private Company	Professional Society
Frequency of Publication	Weekly	Weekly	Bi-weekly
Acceptance Rate	6.6%	6.0%	5.8%
Outright Rejects	77% (292/381)	78% (297/381)	55% (188/345)
% Sent for Peer Review	23% (89/381)	22% (84/381)	45% (157/345)

Editorial Process Cont.

	Journal 1	Journal 2	Journal 3
Selection of Peer Reviewers	Expertise; Previous experience	Expertise; Previous experience	Expertise; Previous experience
# of Peer Reviewers per paper	1-4	1-4	1-4
Open Peer Review	Yes	No	No
Appeals Process	Yes	Yes	Yes

Characteristics of Editorial Meetings

- Frequency of Meetings
  - Range: 2X/week to 2X/month
- Number of Editors
  - 4-15
- Composition of Meetings
  - Varies: all editors; senior editors; ombudsperson; visitors
- Types of Editorial meetings
  - General review
  - Statistical review
  - Appeals
  - Problematic cases

Specific Aim 1

What are the criteria used by editors to evaluate manuscripts?

- *Criteria for publication:*
  - Novel, hot topic
  - Ability to change or significantly impact clinical practice
  - Methodologically sound
  - Appeals to journal readership (general internal medicine)
  - *Caveat: What editors say they do*

Specific Aim 2

Is there evidence of publication bias by editors?

- Manuscript characteristics: Accepted vs. Rejected
  - Study Results (statistically significant or not)
  - Study Design (RCT, Systematic Reviews, All Other)
  - Analytical Methods (statistical or descriptive)
  - Sample Size
  - Disclosed Funding Source
  - Gender, Degree of First and Last Authors
  - Country of Corresponding Author (same as publishing journal or not; high/low income)
  - Methodological quality

Analysis

- Univariate and multivariate logistic regression models to identify predictors of publication
- Methodological quality
  - Matched conditional logistic regression was used to model the influence of methodological quality scores on odds of acceptance stratified by journal and design
- $P<0.05$ considered statistically significant

Predictors of Publication: Multivariate Analysis

Characteristic	Category	Odds Ratio (95%CI)	*P* Value
Study Results	Significant vs Not	0.83 (0.34-1.96)	0.66
Study Design	RCT vs All Other	2.4 (1.21-4.8)	.013
Analysis	Descriptive vs Stats	2.85 (1.51-5.37)	.001
Funding Source	Any Disclosure vs No Disclosure	1.90 (1.01-3.60)	.047
Country of Corresponding Author	Same Country vs Other Country	1.99 (1.14-3.46)	.015

Lee et al. MJA 2006;184:621-26.

Methodological Quality and Odds of Publication*

Category	n	Odds Ratio (95%CI)	*P* Value
All matched study designs	123	1.39 (1.16-1.67)	<.001
RCT	26	1.46 (1.00-2.13)	.048
Systematic Review	12	1.62 (0.88-2.99)	.12
All Other	85	1.25 (1.01-1.53)	.037

* Based on conditional logistic regression models of acceptance stratified by journal and study design.

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Conclusions

- Editors do not appear to preferentially publish studies with statistically significant results
- Manuscript characteristics associated with publication include:
  - RCT, systematic reviews
  - Disclosure of any funding source
  - Corresponding author same country of journal
  - High methodological quality
  - Majority of studies submitted report statistically significant results (718/827; 87%). Submission bias?

Summary

- Published manuscripts
  - Novel, hot topic
  - Change clinical practice
  - Appeals to readership of the journal
  - Methodological quality (e.g., RCTs)
  - Country of corresponding author same as journal

Limitations and Future Studies

- Generalizability
  - What goes on at specialty journals or smaller general medical journals, or basic science journals?
- How do editors *actually* decide whether to publish a particular manuscript?
  - Multi-factorial: Qualitative analysis of editorial meetings
- What influence do peer reviewers have on editorial decisions? Selection bias of reviewers?
  - Quantitative: agreement between peer reviewers and editors
  - Qualitative: discussions in editorial meetings

Additional Comments

- How best to study editorial decision making?
  - Insufficient to examine what editors have published to evaluate potential bias
- Assessing conflicts of interest in editorial decision making
  - Case reports (COPE, ICMJE, CSE)
  - Empirical research?
- Gaps in knowledge that need to be addressed:
  - Specialty journals
  - Smaller biomedical journals
  - Basic science journals
  - Other journals?