


BMJ Open Prospective analyses of sex/gender-related publication decisions in general medical journals: editorial rejection of population-based women's reproductive physiology

Dharani Kalidasan,¹ Azita Goshtasebi,^{1,2} Joan Chrisler,³ Helen L Brown,⁴ Jerilynn C Prior ^{1,2,5}

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For numbered affiliations see end of article.

Correspondence to

Dr Jerilynn C Prior;
jerilynn.prior@ubc.ca

ABSTRACT

Objective To assess whether editorial desk rejection at general medical journals (without peer review) of two clinical research manuscripts may relate to author gender or women's physiology topics. Given evidence for bias related to women in science and medicine, and editorial board attitudes, our hypothesis was that submissions by women authors, on women's reproductive, non-disease topics received differential editorial assessment.

Design A prospective investigation of publications, author gender and topics in general medical journals in two issues following the editorial rejections of two clinical research manuscripts by five major English-language general medical journals. The rejected manuscripts (subsequently published in lower impact journals) described research funded by national granting bodies, in population-based samples, authored by well-published women scientists at accredited institutions and describing innovative women's reproductive physiology results.

Setting Tertiary academic medical centre.

Main outcome measures All clinical research published in the two issues following rejection date by each of the five major general medical journals were examined for first/senior author gender. The publication topic was assessed for its gendered population relevance, whether disease or physiology focused, and its funding. Rejection letters assessed editor gender and status.

Results Women were underrepresented as original research authors; men were 84% of senior and 69% of first authors. There were no, non-disease focused publications relating to women's health, although most topics were relevant to both genders. The majority (80%) of rejection letters appeared to be written by junior-ranked women editors.

Conclusion Sex/gender accountability is necessary for clinical research-based editorial decisions by major general medical journals. Suggestions to improve gender equity in general medical journal publication: (1) an editorial board sex/gender champion with power to advocate for manuscripts that are well-performed research of relevance to women's health/physiology; (2) an editorial rejection adjudication committee to review

Strengths and limitations of this study

- Innovative results in two women's reproductive physiology-based manuscripts in population-based cohorts of public health importance were subjected to editorial-only rejection at five high-impact general medical journals.
- We prospectively analysed research publications in two postrejection issues of five general medical journals, documenting author gender (in first and last author positions) and published topics independent of gender.
- This analysis included only 74 original research publications from 10 issues of the five English-language, high-impact general medical journals.
- In order to understand the scope of editorial desk rejection we would also need to assess all *submissions* as well as publications for authorship gender and women's reproductive physiology topics.

author challenges; and (3) gender parity in *double-blind* peer review.

INTRODUCTION

Rejection by editorial boards or reviewers of publications by women scientist-authors may be due to conscious/unconscious biases related to sex/gender. These publication decisions impede women scientists' career advancements in academia and industry. Furthermore, biases may favour pharmacological and disease-related topics rather than those of physiological discoveries. When these combined biases are applied to women's reproductive physiology related topics, editorial and publication-related decisions increase current gender-related barriers and negatively impact healthcare delivery and women's health around the world.

Women now comprise half of all medical students (eg, USA: 47%, Canada: 56%, UK: 57%), but few women have become senior medical faculty members or medical leaders.^{1–7} In a 2014 USA study, women comprised 38% of medical school faculty making up 21% of professors and 16% of deans.¹ Research in medical and science fields has documented that women researchers were promoted more slowly, received fewer awards and recognitions, had lower salaries, lacked appropriate mentors and/or advocates, and faced biases favouring men students and applicants.^{5–13}

Although women-authored original research articles have increased, nonetheless ‘lack of continued momentum’ and a continued ‘gender gap in authorship ... particularly among senior authors and editorial commentators’ remain.⁹ This analysis determined that the ‘proportion of first authors who were women increased from 5.9% in 1970 to 29.3% in 2004 ($P<0.001$), and the proportion of senior authors who were women increased from 3.7% to 19.3% ($P<0.001$) during the same period’.⁹ Major English language general medical journals are the most widely read, highly impactful and media-focussed scientific publications. Publications in these journals, with some of the highest impact factors (IF) in the world, are of greatest benefit to authors’ academic advancement. For example, the *New England Journal of Medicine (NEJM)*, has an IF of 91.245; *Lancet*, 79.321; *Journal of the American Medical Association (JAMA)*, 56.272; *British Medical Journal (BMJ)*, 39.890 and *Canadian Medical Association Journal (CMAJ)*, 8.300.

The proportion of women first and senior authors for the *NEJM* and *JAMA* increased from 4.3% (first authors) and 3.9% (senior authors) (for *NEJM*) and 5.7% and 2.9% (*JAMA*) in 1970 to 14.1% and 11.3% (*NEJM*) and 26.5% and 13.6% (*JAMA*) in 2004. Women’s authorship of guest editorials increased from 1.5% in 1970 to 20.4% in 2000, but decreased to 11.4% in 2004.⁹ In a review of women’s first authorship from 1994 to 2014, in six high-impact medical journals (including *Annals of Internal Medicine*, IF 25.390) it increased from 27% to 37% but plateaued and declined between 2009 and 2014.¹⁴ In an invited commentary for *JAMA Internal Medicine*, Erren *et al* performed a follow-up analysis of women author representation at six general medical journals in 2010 and 2011 and found that, for original research, women as first authors ranged from 27.3% (*NEJM*) to 46.7% (*BMJ*) but for last/senior authors, women’s representation was 18.3% (*Lancet*) to 28.8% (*BMJ*).¹⁵ Although there continues to be an upward trend in the proportion of women in first and senior author roles in major general medical journals, lack of gender parity in authorship continues. A recent investigation of all *The Lancet* journals between 2014 and 2017 found that one-third of authorship was by women, but the majority of last/senior author positions were men for most of the journals.¹⁶

Nature (IF 42.779), has assessed issues related to women in science. In reviewing its 2012–2013 and 2014–2016 publishing, *Nature* found that few ‘News & Views’ articles

were women-authored; this improved from 12% (in 2011) to 25% (in 2016).¹⁷ It is possible that one reason for fewer women’s commentaries was that *fewer recommended reviewers* were women. From 2011 to 2014, the percentage of women recommended as *Nature* reviewers increased from 14% to 23%; it had decreased by 2016, however, to 12%.¹⁷ A *Nature* analysis of a geophysical journal in 2017 noted women reviewers were suggested fivefold less often than men by editors and by both men and women authors.¹⁸ Despite the journal’s concerted intent, women remain poorly represented in *Nature*, leading to less diversity of ideas and expertise.¹⁷ Women have become a higher proportion of first authors on cardiovascular and life science publications in the past decade (5%–20%).¹⁹ However, this increase occurred only in low impact general medical journals.¹⁹ On a global scale, women are coauthors on fewer than 30% of all scientific publications.²⁰ Women’s first-authored publications are less cited,²¹ despite being more likely to include the ideal, now recommended, sex/gender analysis.²² While gender-referenced research and gender-associated research by women are encouraged, implicit bias in addition to existing structural and societal biases do not favour women whose research topics are focused on women’s health, with women participants.²³ Authorship of publications allows women to share and promote their research. Most importantly, high-impact journal publication determines newsworthiness and, without this, translation is impeded from research into knowledge and hence into healthcare.

Although there have been many investigations regarding gender bias in women’s **authorship**, few have examined high-impact general medical journals for **publication topic bias**. We hypothesised that publications focused on diseases and their treatments would be preferred over new physiological observations. Gayet-Ageron *et al* recently showed that, not only were women authors less likely in general, they were particularly less likely to be authors on recent COVID19-related research.²⁴

Decisions made at the editorial board level have reportedly been linked to fewer publications and less knowledge concerning women’s health.²⁵ Thus, biases in medical research publication may negatively influence the clinical care women receive. For these reasons, we identified two focal women’s reproductive health physiology, both population-based studies with women first/senior authors, published in 2015 and 2018^{26 27} (in low impact journals after 1–2 years of delay) **that were systematically rejected without peer review by all five high-impact English-language general medicine journals: BMJ, CMAJ, JAMA, The Lancet and NEJM**. One submission received reviews within 7 days (more likely by editors than peer reviewers). The studies on which these manuscripts were based were both funded by highly competitive national research grants and both identified previously undocumented, innovative women’s reproductive and bone physiology—one showed for the first time in population-based data that adolescent use of combined hormonal contraceptives impairs peak

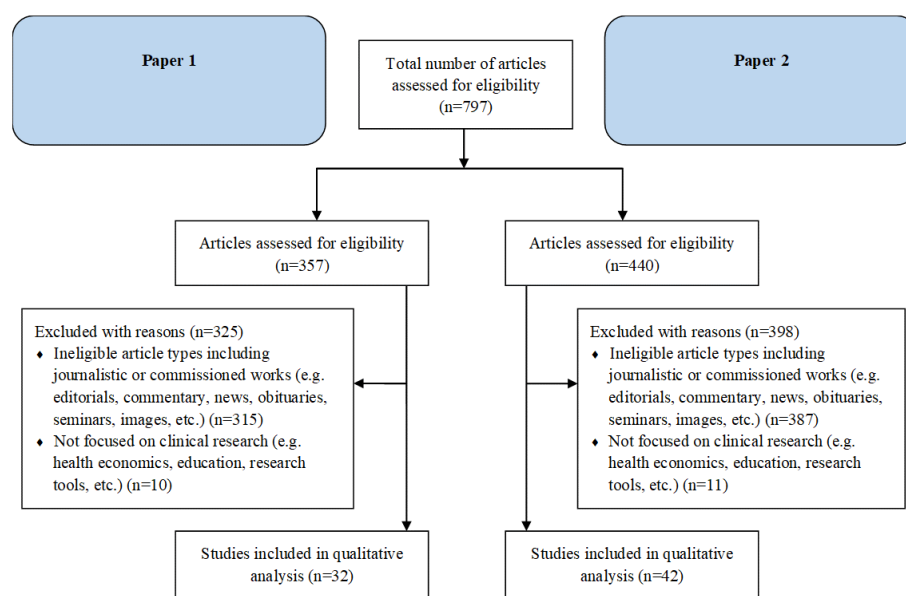


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses literature review of clinical research published in two issues of five major general medical journals immediately following editorial rejection date of two focal women's reproductive physiology, population-based studies (papers 1 and 2).

bone mass; the other documented that the point prevalence of ovulatory disturbances was 24%–37% in normal-length cycles in over 3000 women.^{26 27} Our purpose in undertaking the present research was to determine what *was* published by these general medical journals in two issues following each of the editorial desk rejections of the focal studies and to use data to assess gender bias²⁸ related to women authorship and women's reproductive physiology topics. (The details of editorial rejection are provided for each manuscript in online supplemental tables 1 and 2.)

METHODS

Study design and data

Using the journal-specific rejection dates of these two articles in online supplemental tables 1 and 2, we reviewed the next two issues to investigate the gender of first and senior (final) authors, the range of original research topics and the funding of each. We further examined the gender of the editorial desk member writing the rejecting letter and the gender of the current editor-in-chief at each time point.

Analytic approach

We reviewed all publications in two issues postfocal article rejection at each major medical journal. The search flow is shown in figure 1. Each article was checked to determine whether it was commissioned or science-based. Of 797 articles, 702 were excluded as in-house, commissioned or not original research (eg, obituaries, clinical images). Of the remaining 95 articles, a further 21 were excluded (independently by two clinicians) due to their focus on health economics or medical education.

For each included original research article, we gathered gender data on first (usually a junior scientist who wrote the manuscript) and senior/final authors and the topics and their relevance for men only, women only, or women and men in the population. We used content analysis to assess whether each topic related to a disease process, its treatment or normal physiology, and the sex/gender and age (eg, paediatrics) of its population relevance.

Assigning author gender

The gender of each article's first/last author was obtained by reviewing author-controlled websites (usually faculty profile pages) for statements of gender or pronoun use. When unavailable, gender was assessed by gender expression(s) in faculty profiles, photographs, and author-controlled social media/research websites (faculty pages, ResearchGate, LinkedIn, etc) and typical gender-associated first names. For 11 authors (15%) the recorded gender was only related to first names. Five of these authors were coded as women and six were coded as men; the probability of error was higher for these decisions.

Patient and public involvement statement

Patients or the public were not involved in the design, conduct, reporting or dissemination plans for this publication-related research.

RESULTS

The process of selecting clinical research articles from the two published issues following focal manuscript rejection is shown in figure 1. The ten issues from five major general medical journals produced 74 original research articles for review.

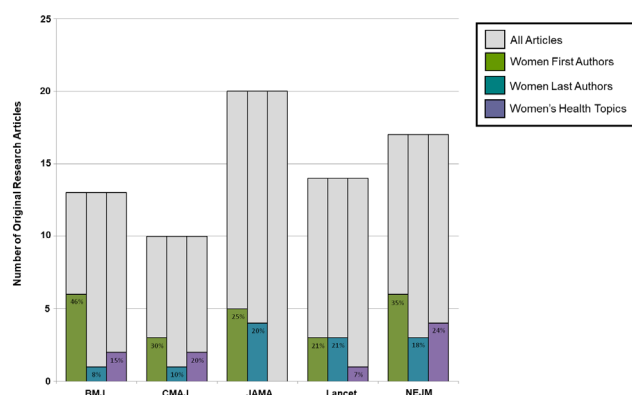


Figure 2 This bar graph depicts women as a percentage of first (green) and senior/final (blue) authors in clinical research publications and the topics (purple) in proportion of relevance to women's health in two issues each from five major general medical journals.

Figure 2 shows data on the percentage of the sex/gender of the first and senior authors and of women's health-relevant topics. Overall, women were more likely to be first (31% (range 21–46)) rather than senior authors (16% (range 8–21)). Three quarters (73%) of all published research related to health topics relevant to both women and men. No clinical research in these 10 issues covered topics/diseases solely related to men. More men than women were participants in the majority of studies that enrolled both men and women.

Using thematic analysis of all 74 research publications in these issues, we found that some aspect of women's health was the overall focus of 12% of all clinical research (figure 2). Pregnancy-related conditions (as in Zika virus, congenital defects), and breast cancer made up the majority of women's health-related topics. Paediatric health topics comprised 9.5% of studies. In broader content analysis without regard to sex/gender (figure 3),

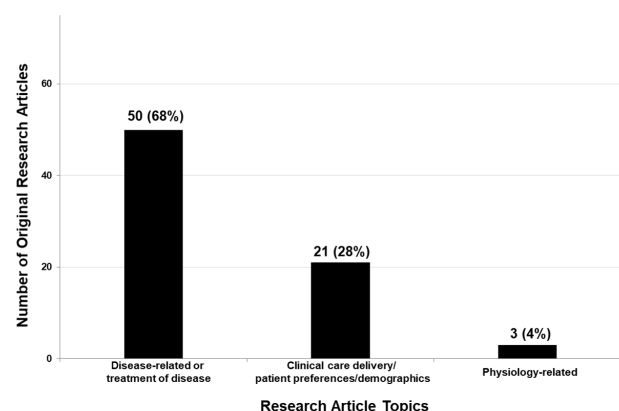


Figure 3 This bar graph illustrates the thematic analysis of research article topics (without regard to sex/gender) in the number of papers from a total of 74 tabulated in two issues each from five major general medical journals—the percentage of all papers on a given topic is shown in parentheses.

the majority of publications focused on diseases or their treatment (50 of 74, 68%) and very few were relevant to normal physiology. Of this research on normal physiology, none related specifically to women or women's reproduction.

Sources of funding for these clinical research publications included research grants (74%), support by not-for-profit entities (24%) and by for-profit entities (often pharmaceutical) (15%). The *NEJM* published half of all research publications funded by for-profit entities.

The editorial rejection emails for each of the two submissions were signed by individuals who included their editorial board positions (online supplemental tables 1 and 2). As shown in table 1, in the order in which they were received, are the journal, the journal's impact factor, the date of the decision, the gender of the current editor-in-chief at each decision, and the gender of the person writing the decision letter (F for woman and M for man) and their position. Eight of ten rejection emails were by women with various, usually lower ranked roles from 'Medical Editorial Fellow' to Deputy Editor, Associate Editor, Executive Editor or Senior Executive Editor. None were identified as rejected by the Editor-in-Chief. Seven of ten editorial rejections were during periods of time when men held appointed Editor-in-Chief positions at these high-impact medical journals. Only one of the ten rejection letters included any review; the *NEJM* letter for focal paper #2 included two short reviews, returned within a week of receipt and were thus likely not by peer reviewers.

DISCUSSION

This research suggests there is author gender and thematic focus bias in general medical journal editorial desk decisions without peer review of two focal papers on unique, women's health physiology revealing, population-based studies.^{26 27} Editorial desk rejection is a *previously undescribed barrier for women scientist-researchers*. Men were the majority of first (69%) and final (84%) authors in time-specific published clinical research. Disparity in women's authorship has documented negative implications for career advancement for women researchers,^{5–12} for scientific diversity, for the presence of sex/gender disaggregated analysis in published research²² and for research dissemination.^{19 20 28 29} Negative implications logically extend to deficits in the clinical care women patients receive.

Although reviewed articles included some women's health topics, the overwhelming majority of these publications related to diseases or to drugs used to treat them as is reflected in the overall women's health topic publication rates from Medline OVID. Ideally a more finely tuned analysis of publication topics (*not possible here*), would compare the prevalence of a *topic in scientific literature* with its *population-based disease prevalence*. For-profit/pharmaceutical industries support research that increases sales of new medications and thus result in financial gain;

Table 1 Chronological order of major medical journal rejections, journal impact factors, gender and position of editors for two clinical research focal papers

	Journal	Journal impact factor	Date of rejection/ acceptance	Gender of editor-in-chief	Gender of editorial member who wrote rejection letter	Editorial member job position
Focal paper #1	JAMA rejection	56.272	January 2014	M	F	Associate Editor
	NEJM rejection	91.245	March 2014	M	F	Deputy Editor
	Lancet rejection	79.321	May 2014	M	F	Senior Executive Editor
	BMJ rejection	39.890	June 2014	F	M	Not available*
	CMAJ rejection	8.300	December 2014	M	F	Medical Editorial Fellow
	PLoS One acceptance	3.240	August 2015			Peer reviewed
Focal paper #2	JAMA rejection	56.272	September 2016	M	F	Deputy Editor
	BMJ rejection	39.890	October 2016	F	M	Associate Editor
	Lancet rejection	79.321	November 2016	M	F	Executive Editor
	NEJM rejection†	91.245	December 2016	M	F	Deputy Editor
	CMAJ rejection	8.300	May 2017	F	F	Associate Editor
	JMNI (Journal of Musculoskeletal and Neuronal Interactions) acceptance	2.041	July 2017			Peer reviewed

*But not the Editor-in-Chief on that date.

†Included two short reviews within 7 days.

these may ‘crowd out’ manuscripts of relevance to public health and women’s physiology, as well as work on diseases with lower population frequency whose treatments would not lead to big sales.

The major limitation of this work is that we *do not know*, because we **cannot know** what percent of submitted manuscripts on men’s reproductive physiology topics, written by men first/ senior authors, were rejected by the editors without peer review. This analysis is also limited by its sample size (n=74 articles); its results, however, are consistent with other cited studies. Although it might be considered a limitation that the senior author of this paper is also the senior author on one and the first author on the other of the rejected focal papers, we believe it increases transparency. In addition, hers is a hard-to-avoid bias since she designed this analysis and engaged the librarian and editor as coauthors.

As table 1 shows (from online supplemental tables 1 and 2) the majority of rejecting editors were women; all of these appeared to be of junior or even trainee status. It is understood that, while these junior editors wrote the rejection letters, final decisions regarding peer review and publication are made by senior editors who are usually men. It is not uncommon for women, especially in subordinate positions, to adopt dominant cultural/ work-place biases. Table 1 shows that majority of the editor-in-chiefs during this analysis time-frame were men who held this position for extended periods of time. Ellinas *et al* compared author sex/gender to the gender representation on The Council of Faculty and Academic

Societies-associated journal editorial boards. Their findings showed that the number of women who were editors was significantly less than the proportion of women in US medical school faculties/scientific positions and that women were more likely to be associate editors and less likely to be section editors and editors-in-chief.³⁰

The sex/gender of editors is likely to influence women’s publication. In their 2007 report, ‘Beyond Bias and Barriers’, the Institute of Medicine *et al* called for ‘reasonable representation of women on editorial boards’ and taking ‘steps to minimize gender bias, such as blinded reviews’.⁵ Surprisingly, from 2009 to 2014, four high-ranked medical journals had women editors-in-chief and higher rates of women first authors (45% *Annals of Internal Medicine*, 44% *JAMA*, 42% *Archives of Internal Medicine* and 36% *BMJ*).¹⁴ In her editorial and analysis of Filardo’s original research, Rexrode suggested the genders of the editors-in-chief and other editorial board members may influence the topics which are given priority at a given time at a given journal.³¹ Promotion of women to editors-in-chief roles is reliant on their academic professional status, which, in turn, is determined by their academic success including publications, grants and the diffusion of their research result in the public/media. In 2019, 79% of the editorial board members at *The Lancet* group of journals were women, including 57% of the editors-in-chief.³² That women editors are open to women authors or women’s health or reproductive physiology topics, however, is neither guaranteed nor predictable, although

the previously mentioned *Nature* analysis found that more women editors resulted in more women being chosen as reviewers.¹⁸

Gender biases may relate to women's difficulties in publication since Moss-Racusin *et al* showed that both women and men have consistent, *often unconscious*, gender biases.¹³ Raymond, used Harvard's Implicit Association Test website (<https://implicit.harvard.edu/implicit/>) results to support her premise that even experienced *women* researchers harbour gender biases.³³ Similar assessments of bias in publication have focused on editorial board *composition* or on the gender of *reviewers*. Kaatz *et al* discuss the unconscious gender bias unrelated to scientific merit that could create unintentional inequalities and alter scientific peer review.³⁴

It is a limitation that we do not know the reasons for editorial rejection. Editors are not required to, nor do they routinely, provide rejection rationales nor reasons. Common focal paper rejection responses, however, did sometimes include that they were more relevant for a *specialist* journal, were not novel, or were not relevant for general practitioners (online supplemental tables 1 and 2). Such comments suggest lingering beliefs in a generic, masculine patient and that women patients' physiology and health concerns are only of relevance to women's health journals or OB/GYN practitioners.

These editorial rejections lead to increased scientific work for authors. However, there is no current tabulation of the time required to revise, resubmit and await responses from major medical journals. One author of one of the focal articles reported nearly being rejected for tenure because a unique manuscript, reporting randomised controlled trial results that were both novel and of practical impact, was rejected six times over 3 years.³⁵ Kim *et al* discuss how women who research women's health topics are doubly disadvantaged by their own gender and by their machine-learning documented gender-associated research.²³ Thus, threats to career progress/promotion from publishing delays, and low women's health research representation in publication, have fundamental implications for equity in medicine and science. Women's health-focussed researchers commonly report repeated manuscript rejections. For example, in a career progression study of menstrual cycle-focussed researchers, participants reported frequent 'menstrual taboo'-related negative reviews/rejections with 31% of survey respondents reporting some or great difficulty publishing menstrual cycle-related research.³⁶

There may also be the important combination of gender bias and publication biases related to research topics. A recent *BMJ* article by Gayet-Ageron *et al* analysed women's authorship position during the COVID-19 pandemic in relation to COVID-19-specific research.²⁴ While another group had also documented disparities in women authorship for COVID-19 research,³⁷ the analysis of Gayet-Ageron *et al* specifically found that research about or related to COVID-19 topics resulted in women not holding prominent first and last/senior author positions more often

at the beginning of the pandemic compared with during the pre-pandemic.²⁴ While it is known that women took on more responsibilities in the early stages of the pandemic (ie, childcare/caretaking, homeschooling, household demands) these reported discrepancies further exacerbate the gender biases and inequalities women face in publication of original research.

Despite significant differences in how women and men experience diseases and drug effects, most research and funding has focused on topics and medications that are more relevant to men.^{38 39} These issue-related gender disparities are further amplified when analysing funded diseases relative to population disease-specific burden. Findings suggest that man-focused research/diseases funded by the National Institutes of Health (NIH) between 2015 and 2019 were highly favoured and disproportionately funded in comparison to woman-focused health research/diseases.⁴⁰ The COVID-19 pandemic documentation that men's mortality rates exceed women's shows the importance of sex/gender in clinical research.⁴¹ Scientific societies support inclusion of all genders in research, the need to study pregnant women, and the necessity for sex/gender disaggregated analyses.²⁵ New USA-NIH policies even encourage equal sex distribution in *preclinical* studies and in all designs.⁴² Despite these repeated admonitions, 'trials related to HIV, hypertension, and acute coronary syndrome had lower female enrollment in comparison with the prevalence of those disease states in women'.⁴³ Werbinski recently declared that disaggregating results by sex were as important as including women participants.⁴⁴

Authors of rejected manuscripts on women's physiology and reproductive research topics ended up publishing in lower impact or women's health-focused journals with lower readerships, IF and disseminations. These findings would then suggest that citations in these lower impact journals would be fewer; by contrast, publications in high-impact journals would generate more citations. However, this was not observed, especially for women authors. A 2021 study by Chatterjee *et al* reported that women who had prominent authorship positions were cited less often than men authors in high-impact journals.⁴⁵ Additionally, in health topic focused research, articles by research groups with a higher proportion of women coauthors are cited less regardless of the impact factor of the journal and in comparison to discipline-normalised citation rates.⁴⁶ Number of citations, overall publications and period of time since publication contribute to a researcher's H-Index. Not surprisingly, women were found to have lower H-Indexes compared with men across most medical specialties and academic ranks, thereby further delaying their career advancement and academic achievement.⁴⁷

Literature suggests that women could improve publication success by including positive words such as 'novel', 'unique' and 'promising' in their manuscripts; although even when using these words, women authors still had less high-impact publication success than men first/last authors.²⁹ Also, although an increase of positive word

choice to describe the focal papers may have made it more likely to achieve peer review, that would have been unlikely to change: (1) the biases on author-gender and women-health focused topics and/or (2) the prevalence of editorial bias/censorship. A recent online randomised controlled experiment found peer reviewers were more likely to recommend publication of research conducted with men as their subjects vs the same in women, despite the research results having a higher impact for women.⁴⁸ An analysis by Macaluso *et al* of higher-impact PLOS journals revealed that there are gender gaps in the roles of scientific authors. Women coauthors were more likely to perform the experiments while men were more likely to contribute to the conceptualisation and writing of manuscripts, especially on publications with men as the first/last authors.⁴⁹ Women researchers are more likely to do research with women,^{22 50} and there was a higher chance of having a woman first author if the final author was also a woman,²⁴ despite the likelihood their research would be cited less if there was a higher proportion of women authors.⁴⁶ These findings further explain the gender differences in publication rates, especially in high-impact journals and emphasise negative implications for women in career advancement.

There is increasing evidence that diversity improves both productivity and impactful research.⁵¹ For these reasons we suggest that each general medical journal editorial board hire a **'sex/gender champion' editor** with sensitivity to bias issues who is integrated into the journal's leadership structure and reviews all scientific articles for relevance to women's health. The champions would be qualified editors but with expertise and informed sensitivity to issues of bias. Their positions and perspectives on editorial boards would positively influence the diversity of what and who is published and evaluate the implicit biases that exist against particular research. In this recommendation, we draw on the Canadian Institutes of Health Research's Sex and Gender Champions as a model.⁵² Ideally editorial boards should also gather and collate data on the gender of authors and relevant topics to ensure gender-related accountability and equity. The gathering of this particular data is also echoed by the Pinho-Gomes team.³⁷ Although editors recently interviewed felt 'gender-blindness' ensured **lack of bias**, the opposite is likely true.^{28 53} Editors have the power to choose diversity or exclusivity in publication, yet in 2012, the European Association of Science Editors' survey of 100 journal editors found 75% were not willing to include sex and gender analysis as a requirement in their journals.²⁵

Although research design and manuscript writing now have Sex and Gender Equity in Research (SAGER) guidelines,²⁵ similar educational strategies and training are needed for editorial sex and gender equity and diversity in peer review and publication. We agree with Rouan *et al* that diversity, equity and inclusion training should be a mandatory requirement for all journal editorial members and peer reviewers and that such training be renewed regularly.⁵¹ Editorial decisions are influenced by an

editor's academic training, professional knowledge and personal experience.²⁸ For researchers who routinely, and without compensation, peer review many submissions annually, *editorial* rejection without review adds to the feeling that bias is likely involved.

To further decrease probable medical publication sex/gender biases, we also recommend a special **adjudication committee** to review editorial desk rejections on the basis of gender, race or other social disadvantages. A special adjudication committee would help to ensure that there is an open and transparent process for challenging editorial decisions. In addition, this committee would be responsible for implementing regulations and outcomes from equity, diversity and implicit bias training.

Our third recommendation is to assess and achieve gender parity in **peer review**. That means that over 1 year, 50% of reviewed articles would be reviewed by women. Steinberg exemplified the current imbalance by using an algorithm to visualise the need for gender parity in peer review.⁵⁴ We support the Lundine *et al* suggestion that journals set diversity goals when selecting editorial board members and peer reviewers and be held accountable for meeting those goals.⁵³ The *Lancet* group of journals promised plans to achieve gender parity on their editorial advisory boards by the end of 2019.³² The move towards more women on journal editorial boards, may translate into more requests for women peer reviewers as previously discussed. With gender equity being a current hot topic at all stages of the publication process, gender parity in peer review should now be more attainable. Double-blind review, although not included in the above recommendations since it has been advocated elsewhere,⁵⁵ reduces bias due to gender, race, native language and assumptions related to affiliated institutions or countries; it is more likely to focus decisions on research merit and the potential impact on healthcare.

In summary, following the editorial board rejection of two population-based studies of physiological relevance to women, this research has found evidence of gender bias related to authorship, publication topic and that the editor writing the rejection notification tended to be a junior woman. The medical science publication process must be streamlined and effective, but it must also address bias and invest in constructive change. Without implementing change, there will be loss of women's expertise, creativity, perspective and innovation in research to the detriment of healthcare delivery and health outcomes.

Author affiliations

¹Centre for Menstrual Cycle and Ovulation Research, Endocrinology and Metabolism, University of British Columbia, Vancouver, British Columbia, Canada

²BC Women's Health Research Institute, Vancouver, British Columbia, Canada

³Department of Psychology, Connecticut College, New London, New London, Connecticut, USA

⁴Woodward (Medical) Library, University of British Columbia, Vancouver, British Columbia, Canada

⁵School of Population and Public Health, University of British Columbia, Vancouver, British Columbia, Canada

Contributors DK, HLB, JCP contributed to study conceptualisation and design, methodology, formal analysis, investigation, data curation and writing. In addition, JCP also contributed to validation and supervision. DK and HLB made figures and DK made tables. AZ contributed to methodology, formal analysis, reviewing and editing. JCC contributed to writing, reviewing and editing. JCP is the designated guarantor for this document. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting these criteria have been omitted. All authors approved submission after review and revision of this document.

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Data availability statement Data are available upon reasonable request. The datasets generated and analysed during this study are available from the corresponding author on reasonable request.

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ORCID iD

Jeryllyn C Prior <http://orcid.org/0000-0003-3232-0597>

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Compiled from emails and journal records 2018/01/09 by DK

Ovulation Prevalence in Women with Spontaneous Normal-Length Menstrual Cycles—a population-based cohort from HUNT3, Norway

JAMA

Submitted: 30-Dec-2013

Decisioned: 09-Jan-2014

Reject without Review (09-Jan-2014)

Sent: January 9, 2014 7:14 AM

To:

Cc: ;

Subject: JAMA13-11511 Decision Letter

January 9, 2014

RE: Ovulation Point Prevalence in a Population-based Cohort- Premenopausal women with a spontaneous normal-length cycle from HUNT3 in mid-Norway

Dear Dr. :

Thank you for submitting your manuscript to JAMA. Each manuscript is thoroughly evaluated by the JAMA editorial staff, who assess the manuscript's quality and its priority for publication. Those manuscripts judged unlikely to succeed through stringent external review or whose subject matter does not meet our current editorial priorities are rejected at that point.

About half of the approximately 6600 manuscripts submitted to us annually are rejected after such in-house review; less than 9% of manuscripts are eventually accepted for publication in JAMA. Based on our evaluation, I regret to inform you that we will not pursue the manuscript you have submitted for publication, and we will not be referring it to JAMA Internal Medicine.

Table 3 shows that the cohort analyzed is not representative of women of reproductive age, with very few women included who were aged 30 years or younger and a median age of 41.6 years. This is likely due to the large number of younger women using oral contraception. This changes the conclusions that can be made about the broader group of women of reproductive age.

Compiled from emails and journal records 2018/01/09 by DK

While we realize that you may be disappointed with our decision, we hope that providing you with this information promptly will allow you to submit your manuscript to another journal without the delay entailed by the external review process.

Thank you for the privilege of reviewing your work.

Sincerely yours,

Associate Editor, JAMA

Compiled from emails and journal records 2018/01/09 by DK

NEJM

Submitted: 20-Mar-2014

Decisioned: 26-Mar-2014

Reject without Review (26-Mar-2014)

Decision Letter (14-03447)

From:

To:

CC:

Subject: New England Journal of Medicine 14-03447

Body: Dear Dr. ,

I am sorry to inform you that your submission, "Ovulation Prevalence in Women with Spontaneous Normal-Length Menstrual Cycles: A Population-based Cohort from HUNT3, Norway," has not been accepted for publication in the Journal. It was evaluated by members of our editorial staff. After considering its focus and content, we made the editorial decision not to consider your submission further. We are informing you of this promptly so that you can submit it elsewhere.

Thank you for the opportunity to consider your submission.

Sincerely yours,

Deputy Editor

New England Journal of Medicine
10 Shattuck Street
Boston, MA 02115
(617) 734-9800
Fax: (617) 739-9864
<http://www.nejm.org>

Date Sent: 26-Mar-2014

Compiled from emails and journal records 2018/01/09 by DK

The Lancet

Submitted: 29-Apr-2014

Decisioned: 06-May-2014

Reject without Review (06-May-2014)

Date: 06/05/2014

To:

From: "The Lancet Peer Review Team"

Subject: Your Submission to The Lancet

Manuscript reference number: THELANCET-D-14-02988

Title: Ovulation Prevalence in Women with Spontaneous Normal-Length Menstrual Cycles — a population-based cohort from HUNT3, Norway

Dear Dr. ,

Many thanks for submitting your manuscript to The Lancet. We have considered your manuscript, but our decision is that it would be better placed elsewhere.

Unfortunately, we can accept only a very small proportion of the many papers we receive each week. We are sorry to be unhelpful on this occasion, though we would like you to think of us again in the future.

Yours sincerely,

Senior Executive Editor, The Lancet

Compiled from emails and journal records 2018/01/09 by DK

BMJ

Submitted: 03-Jun-2014

Decisioned: 10-Jun-2014

Reject without Review (10-Jun-2014)

Decision Letter (BMJ.2014.020530)

From:

To:

CC:

Subject: BMJ.2014.020530 Manuscript Decision Research

Body: Dear Dr.

BMJ.2014.020530 entitled "Ovulation Prevalence in Women with Spontaneous Normal-Length Menstrual Cycles—a population-based cohort from HUNT3, Norway"

Thank you for sending us your paper. We read it with interest but I regret to say that we have decided not to publish it in the BMJ as we felt it lacks direct relevance to patient care or practice.

We receive over 8000 submissions a year and accept less than 10%. We do therefore have to make hard decisions on just how interesting an article will be to our general clinical readers, how much it adds, and how much practical value it will be.

We decided your paper was probably better placed in a more specialist journal. We are sorry to disappoint you and I hope it will not deter you from submitting articles to us in future.

Best wishes

Yours sincerely

If you elected during submission to send your article on to another journal the article will be transferred in 5 working days. If you intend to appeal against this decision please notify us before then.

The journal(s) (if any) you have selected at submission are:

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If you want to speed up or stop this onward transmission please email the editorial office: papersadmin@bmj.com

Date Sent: 10-Jun-2014

Compiled from emails and journal records 2018/01/09 by DK

CMAJ

Submitted: 24-Oct-2014

Decisioned: 04-Dec-2014

Immediate Reject without Review (04-Dec-2014)

Decision Letter (CMAJ-14-1374)

From:

To:

CC:

Subject: CMAJ - Decision on Manuscript ID CMAJ-14-1374

Body: 04-Dec-2014

Dear Dr. :

Thank you for giving the CMAJ editors the opportunity to review your manuscript entitled "Ovulation Prevalence in a Population-based Cohort of 3,709 Women, the HUNT Study, Norway" (reference no. CMAJ-14-1374), which you submitted recently to the Journal.

Your manuscript outlines the prevalence of anovulation in a cohort of women in Norway. Knowing the prevalence of anovulation among women of reproductive age could have important consequences for family planning and could help guide clinical practice. Unfortunately, though your finding that over a third of the women in your study were anovulatory at a given point is interesting, the CMAJ editors who carefully read your manuscript felt that your study did not add enough to what is already known to be given priority for publication in the CMAJ at this time.

Each year we receive over a thousand research manuscripts and we have room to publish only about 8% of those submitted. This means we have to reject some good quality manuscripts that are not as suitable for the CMAJ as others that we accept. When deciding upon the acceptability of a manuscript for publication in the CMAJ, the editors consider factors such as its application to medical practice and other manuscripts recently published.

If you think that we have made a mistake in rejecting your manuscript, we are prepared to reconsider the decision through our Appeal process. You can access this process by following the link in the Author Centre in ScholarOne.

Thank you again for giving CMAJ the opportunity to consider your manuscript. I hope that we will be able to give you a more favourable response on a future submission.

Compiled from emails and journal records 2018/01/09 by DK

Sincerely,

Medical Editorial Fellow
CMAJ

CMAJ – medical knowledge that matters
CMAJ showcases innovative research and ideas aimed at improving health for people in Canada and globally. It publishes original clinical research, analyses and reviews, news, practice updates and thought-provoking editorials.

Date Sent: 04-Dec-2014

Compiled from emails and journal records 2018/01/09 by DK

Combined Hormonal Contraceptives Use and Bone Mineral Density Changes in Adolescent and Young Women in a Prospective Population-Based Canada-wide Observational Study

JAMA

Submitted: 30-Aug-2016

Decisioned: 08-Sept-2016

Reject without Review (08-Sept-2016)

Date: 09-09-2016 06:08

Last Sent: 09-09-2016 06:08

Triggered By:

CC:

BCC:

Subject: JAMA16-7786 Decision Letter

Message: September 8, 2016

RE: Combined Hormonal Contraceptive Use and Bone Mineral Density Change in Adolescent and Young Adult Women in a Population-Based Cohort: 2-year data from the Canadian Multicentre Osteoporosis Study (CaMos)

Dear Prof :

Thank you for submitting your manuscript to JAMA. Based on our editorial evaluation, I regret to inform you that we will not accept your manuscript for publication. However, as you are aware, the JAMA Network allows submitted manuscripts to have more than one opportunity for evaluation for publication. This network includes JAMA Pediatrics, for which you previously gave us permission to forward your manuscript, and we have transferred your manuscript as requested.

Further evaluation of your paper will be expedited by the editor of JAMA Pediatrics. Your manuscript is now under the consideration of JAMA Pediatrics,

Compiled from emails and journal records 2018/01/09 by DK

and you should refrain from submitting it elsewhere until you receive an editorial decision.

You will receive an acknowledgment from JAMA Pediatrics, to which you should direct all future communications about your manuscript.

Thank you for the opportunity to review your manuscript.

Sincerely yours,

Deputy Editor, JAMA
Email:

Compiled from emails and journal records 2018/01/09 by DK

BMJ

Submitted: 13-Oct-2016

Decisioned: 15-Oct-2016

Reject without Review (15-Oct-2016)

Decision Letter (BMJ.2016.035986)

From:

To:

CC:

Subject: BMJ.2016.035986 Manuscript Decision Research

Body: Dear Dr.

BMJ.2016.035986 entitled "Combined Hormonal Contraceptive Use and Bone Mineral Density Change in Adolescent and Young Adult Women in a Population-Based Cohort: 2-year data from the Canadian Multicentre Osteoporosis Study (CaMos)"

Thank you for sending us your paper. We read it with some interest, but I am sorry to say that we are simply not the target journal for your paper. We do not prioritize studies on surrogate outcomes and receive many large studies on clinical outcomes that change practice. In comparison with these and many other papers we have to consider, this one is clearly a lower priority for us.

We receive over 3600 research papers each year and accept less than 5%. We do not send out for external peer review manuscripts whose subject matter, design or topic do not meet our current priorities and are unlikely to make it through our process. We have to make hard decisions on just how interesting an article will be to our general clinical readers and how much it adds to what is already known. We hope that this will allow you to promptly submit this manuscript elsewhere.

You may want to consider sending this paper to BMJ Open. BMJ Open (<http://bmjopen.bmj.com>) is an open access, open peer-reviewed, online journal from BMJ dedicated to publishing high quality, methodologically sound medical research from all disciplines, therapeutic areas, and regions of the world. All types of research article are welcome, from pilot studies to meta-analyses.

If you would like your article to be considered by BMJ Open please submit it via <http://mc.manuscriptcentral.com/bmjopen>, or contact the editorial office editorial.bmjopen@bmjgroup.com with your BMJ manuscript number for more information. Papers accepted for publication will be subject to an article processing

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charge, as they are at The BMJ (for details please see <http://journals.bmj.com/site/authors/openaccess.xhtml>).

Thank you for considering The BMJ for the publication of your research. I hope the outcome of this specific submission will not discourage you from the submission of future manuscripts.

Yours sincerely

BMJ Associate Editor

If you elected during submission to send your article on to another journal the article will be transferred in 5 working days. If you intend to rebut this decision please notify us before then.

The journal(s) (if any) you have selected at submission are:

If you want to speed up or stop this onward transmission please email the editorial office: papersadmin@bmj.com

#

Date Sent: 15-Oct-2016

Compiled from emails and journal records 2018/01/09 by DK

The Lancet

Submitted: 27-Oct-2016

Decisioned: 07-Nov-2016

Reject without Review (07-Nov-2016)

Date: 07/11/2016

To:

From: "The Lancet Peer Review Team"

Subject: Your submission to The Lancet

Manuscript reference number: THELANCET-D-16-07679

Title: Combined Hormonal Contraceptive Use and Bone Mineral Density Change in Adolescent and Young Adult Women in a Population-Based Cohort: 2-year data from the Canadian Multicentre Osteoporosis Study (CaMos)

Dear Dr. ,

Many thanks for submitting your manuscript to The Lancet for review. Editors from both The Lancet and The Lancet specialty journals, have read it, but their decision was that it would be better placed elsewhere.

Unfortunately, The Lancet can accept only a very small proportion of the many papers we receive each week; the total papers received per week is now about 180. We are sorry to be unhelpful on this occasion, though we would like you to think of us again in the future.

Yours sincerely,

Executive Editor

Compiled from emails and journal records 2018/01/09 by DK

NEJM

Submitted: 29-Nov-2016

Decisioned: 06-Dec-2016

Reject (06-Dec-2016)

Decision Letter (16-15306)

From:

To:

CC:

Subject: New England Journal of Medicine 16-15306

Body: Dear Dr. ,

Your manuscript, "Adolescent Combined Hormonal Contraceptive Use and Lower Peak Bone Mass," was evaluated by external reviewers and was discussed among the editors. Although it is interesting, I am sorry to say it was not accepted for publication. This was an editorial decision and reflects an assessment of the merits of your manuscript as compared with the many others we receive. Unfortunately, many manuscripts must be declined for lack of space.

Thank you very much for the opportunity to review this manuscript.

Sincerely,

Deputy Editor, The New England Journal of Medicine

New England Journal of Medicine
10 Shattuck Street
Boston, MA 02115
(617) 734-9800
Fax: (617) 739-9864
<http://www.nejm.org>

Reviewer: 1

Comments for the Author

Brajic et al have examined bone accrual rates in 16-24 year old women using hormonal contraception (E-CHC) vs. non-users (N-CHC), and report lower bone accrual rates at the femoral neck in the E-CHC group over a 2-year period. The paper is well written and the data are overall very important. My comments are described below.

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1. My biggest concern is whether or not the study is adequately powered. The authors do not provide the power calculations for this study, and one has to wonder if the differences between groups for bone accrual at sites other than the femoral neck would have been significant with more non-users of hormonal contraception included in the study. Please provide the power calculations and also indicate whether this was done a priori or after the fact.
2. Another concern is the lack of information regarding the duration of use of CHC- it is hard to believe that women using varying doses of CHC for variable amounts of time can all be grouped together for bone outcomes.
3. Instead of dichotomizing the ethinyl estradiol dose (< or > 30 mcg per day), did the authors try to use the dose as a continuous variable in regression models?
4. Page 9, line 45: do the authors mean 'less negative'?
5. Do the authors have any fracture data for study participants? If so, the authors should consider presenting these data (although it is clear that the study was not powered for this outcome, a trend would be interesting).
6. There are many reasons why oral estrogen containing contraception would impact bone mass accrual- reduced bone turnover is just one of these reasons. Other reasons should be discussed.
7. A serious study limitation is the lack of bone turnover and hormonal data.
8. It does not appear that the authors have race/ethnicity data. This is another important study limitation.

Reviewer: 2

Comments for the Author

In this study, the authors propose to conduct a population-level evaluation of changes in BMD over time in adolescents and young adult users and non-users of hormonal contraceptives. While this topic is very important, the study has many methodological limitations that detract from its findings.

Abstract:

Methods: The authors should note the low participation rate and follow-up rate for study participants.

Results: The authors should clearly state their null results for the young adult participants in the study.

Conclusion: The conclusion is vastly overstated. These study participants were not followed until an age at which they would have been expected to achieve peak BMD.

As such, the authors cannot state that CHC use "is associated with interference in achievement of peak BMD".

Introduction:

Compiled from emails and journal records 2018/01/09 by DK

The manuscript style is lacking the appropriate grammar, sentence structure, and polish of typical NEJM studies. Study objectives are clearly stated, but the Results section does not mirror the authors' objective statements.

Methods:

The participant response rate, and the longitudinal follow-up rate, were both quite low. These facts should be cited as a limitation.

No exclusion criteria were listed. Were participants enrolled if they had other diseases that could influence bone health (such as diabetes, IBD, celiac disease) or if they were taking other medications known to impact bone health (such as anti-convulsants)? Were non-CHC users normally menstruating? Were participants excluded if they were significantly underweight? No mention of these important other factors is made.

One of the most significant limitations of this study is the classification of CHC exposure. Given the significant differences in systemic exposure to estrogens between oral contraceptives, the vaginal ring, and the transdermal patch, it is inappropriate to lump users of these contraceptives together based upon estradiol content of the medication itself. It is well known, for example, that systemic estradiol exposure from the ring is far less than that of a typical 30 mcg EE pill. This misclassification needs to be remedied before the study results can be believed.

Date Sent: 06-Dec-2016

Compiled from emails and journal records 2018/01/09 by DK

CMAJ

Submitted: 19-Apr-2017

Decided: 09-May-2017

Immediate Reject without Review (09-May-2017)

Decision Letter (CMAJ-17-0463)

From:

To:

CC:

Subject: CMAJ - Decision on Manuscript ID CMAJ-17-0463

Body: 09-May-2017

Dear Dr. :

Thank you for giving the CMAJ editors an opportunity to review your manuscript, "Combined Hormonal Contraceptives Use and Bone Mineral Density Changes in Adolescent and Young Women in a Prospective Population-Based Canada-wide Observational Study" (our reference CMAJ-17-0463).

Although your topic is an interesting one, I am sorry to tell you that we have decided to decline your manuscript for publication in CMAJ. The editors who carefully read your paper concluded that because of the small sample size and low response rate, particularly in the youth category, the findings are likely not generalizable. Given the number of studies published in the area the findings are likely not novel enough for publication in CMAJ at this time.

Each year we receive over a thousand research manuscripts, and we have room to publish only about 8% of them. This means we have to reject some good quality manuscripts that are not as suitable for CMAJ as those we accept. When deciding on acceptability of a manuscript for publication in CMAJ, we consider factors such as its application to medical practice and other manuscripts recently published.

Thank you again for giving us a chance to consider your manuscript for CMAJ. I hope that we will be able to give you a more favourable response on a future submission.

Sincerely,

Associate Editor

Compiled from emails and journal records 2018/01/09 by DK

Canadian Medical Association Journal (CMAJ)

CMAJ – medical knowledge that matters

CMAJ showcases innovative research and ideas aimed at improving health for people in Canada and globally. We publish original clinical research, analyses and reviews, news, practice updates and topical editorials that are read in Canada and around the world. CMAJ has an impact factor of 6.7 and is ranked as one of the top 10 general medical journals worldwide.

Last month, our time to a first action (declining the manuscript or sending it to peer review) for research submissions was an average of 4.42 days.

Date Sent: 09-May-2017