

Case Series

Variability of Reviewers' Comments in the Peer Review Process for Orthopaedic Research

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Abstract**Study Design:** Retrospective analysis of peer review comments.**Objectives:** To assess the likelihood that comments provided by peer reviewers of one orthopaedic journal would be similar to comments of reviewers from the same journal and a second journal.**Summary of Background Data:** The consistency of the peer review process in orthopedic research has not been objectively examined.**Methods:** Nine separate clinical papers related to spinal deformity were submitted for publication in major peer-reviewed journals and initially rejected. The exact same manuscripts were then submitted to different journals. All papers were returned with comments from two to three reviewers from each journal. Reviews were divided into distinct conceptual criticisms that were regarded as separate comments. Comments were compared between reviewers of the same journal and to comments from reviewers of the second journal.**Results:** When comparing comments from reviewers of the same journal, an average of 11% of comments were repeated (range 0% [0/12] to 23% [3/13]). On average, 20% of comments from the first journal were repeated by a reviewer at the second journal (range 10% [1/10] to 33% [6/18]). If a comment was made by two or more reviewers from the first journal, it had a higher likelihood (43% [6/14]) of being repeated by a reviewer from the second journal.**Conclusion:** When an identical manuscript is submitted to a second journal after being rejected, 80% of peer review comments from the first journal are not repeated by reviewers from the second journal. One may question if addressing every peer review comment in a rejected manuscript prior to resubmission is an efficient use of resources. Comments that appear twice or more in the first journal review are more likely to reappear and may warrant special attention from the researcher.**Level of Evidence:** Level IV.

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Introduction

When a manuscript is submitted to a peer-reviewed medical journal, one of three responses is expected: accepted, accepted with revisions, or rejected. If the paper is rejected with reviewers' comments, the researcher is

faced with a decision. He or she must choose whether to try and revise the manuscript to satisfy the reviewers' comments prior to submission to another journal or alternatively to submit the manuscript to another journal in its current form. For most major journals, comments come from one to four reviewers who are experts in the field.

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Some reviewers' comments may overlap, but many do not. In fact, the scope and diversity of reviewers' opinions can be substantial. In 2000, Rothwell and Martyn studied the reproducibility of assessments made by independent reviewers of clinical neuroscience papers and abstracts. They analyzed the agreement between reviewers of two neuroscience journals with regard to whether manuscripts should be "Accepted," "Accepted if revised," or "Rejected," and found agreement was little greater than what would be expected by chance alone [1]. A similar study in 1994 looked at 1,000 submissions to the *Journal of Clinical Investigation* and found reviewer agreement to be slightly better than chance alone. Overall, they report 36.2% of reviewers were in complete agreement for recommendations regarding publication versus 30.1% calculated by chance alone based on the observed distribution of scores [2]. Another influential study focused on the psychology literature; researchers selected 12 manuscripts already published within major journals by authors from prestigious institutions, and changing only the titles and author affiliations, resubmitted the exact same manuscripts to the same journals. Only 8% of reviewers noticed they were resubmissions, allowing 9 of 12 manuscripts to receive full reviewer evaluation [3]. Interestingly, 8 of these 9 were rejected, in many cases because of what reviewers cited as "serious methodological flaws" [3].

Growing interest in and concern about the modern peer review and publication process exists in orthopedics as well [4-11]. Sprowson et al. suggest that improving the transparency and standardization of the review process and educating orthopedic surgeons on how to improve their manuscripts can contribute to an increased quality of publications [4]. It has also been suggested that better training and incentivization of reviewers may improve the quality of the reviews themselves and consequently improve the final manuscripts [5,12,13].

With these ideas in mind, some journals in a variety of disciplines have made efforts to improve their peer review processes with more structured submission and review guidelines, formal courses and mentorship for reviewers, and employment of biostatisticians to ensure appropriate study design and analyses [12,13]. Still, these processes are largely determined by the leadership of each individual journal, creating variability both within and across specialties. In their survey of orthopedic journal editors, Hing et al. found that the process of peer review differed significantly between journals, with 59% using a review proforma, 52% reviewing an anonymous manuscript, 76% using a routine statistical review, and 59% of journals using 2 reviewers routinely [6]. These differences likely contribute to quality and content variability in reviewers' comments.

A number of researchers have been interested in the fate of abstracts presented at orthopedic meetings [7-10]. For example, Donegan et al. tracked the publication status for abstracts presented at the 2001 American Academy of Orthopaedic Surgery (AAOS) annual meeting and found

that less than 50% had been published in the peer-reviewed literature after 5 years [7]. These findings warrant future investigations to better explain what gets published, what gets rejected, and why.

Of course, many orthopedic researchers receive and respond to peer review comments frequently and with success. A study by Okike et al. showed that most manuscripts (75.8%) not accepted by *Journal of Bone and Joint Surgery*—A go on to be published elsewhere within 5 years of rejection [11]. Still, questions remain about the overall transparency, standardization, and competence of the peer review process and the consequent revision of manuscripts.

In this study, we aimed to evaluate the peer review process in spinal deformity research submitted to major journals. There has been very little direct research on the actual content of reviews in any field. Our goal was to assess the likelihood that distinct comments provided by a reviewer of one journal would be similar to the comments of other reviewers from the same journal or from another journal. To our knowledge, this is the first study to examine peer review process comments provided by reviewers of spinal deformity manuscripts.

Materials and Methods

We performed a retrospective study of reviewers' comments for clinical manuscripts on spinal deformity submitted for publication in major peer-reviewed journals. All studies were related to spinal deformity, but their content was independent and did not overlap. Nine separate manuscripts were submitted to various journals (Journal 1) within the same calendar year. All nine were rejected and returned with comments from two or three reviewers. Each paper was then resubmitted to a different orthopedic journal (Journal 2) in the exact same form, with no changes made. All were submitted to a second journal in less than 6 months from the time of their original submission. The nine papers were returned from Journal 2 with comments from two or three reviewers.

All reviews were examined and divided into distinct conceptual criticisms that were regarded as separate comments. Comments were compared both between reviewers of the same journal (intra-journal) and between reviewers of separate journals (inter-journal). In total, reviews from seven different journals were included. Journals' decisions regarding acceptance versus rejection as well as impact factors from all journals were considered in our analysis.

Results

The average number of discrete comments overall for each reviewer was 4.7, ranging from 1 to 12 comments. For Journal 1 the average number of discrete comments per reviewer was 5.0 (range 1–12); for Journal 2 the average number of comments was 4.4 per reviewer (range 1–12). These comments were first compared to other reviewers

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