Knowledge about the Editorial Process of Scientific Journals: Cross-sectional Study among Orthopedic Surgeons

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ABSTRACT

Introduction: Our aim was to assess the level of knowledge of the editorial process of scientific journals among orthopedic surgeons. Materials and Methods: This is a cross-sectional study that evaluates participants' understanding of the editorial process of scientific journals. Between June and August 2022, a questionnaire was distributed to orthopedic surgeons who were members of the Argentinian Association of Orthopedics and Traumatology. Demographic data and variables on research experience and knowledge about the editorial process were recorded. Results: The survey had 130 respondents, 118 men (90.8%) and 12 women (9.2%), with a mean age of 48 years old (SD = 12). More than half of surveyed surgeons (n = 72; 55%) were from the Buenos Aires Metropolitan Area. In our study, 60% of orthopedic surgeons had a low or moderate understanding of the editorial process. A high level of knowledge of the editorial process was associated with having published more than 5 articles in indexed journals (p<0.001), in our association's journal (p<0.001), and in scientific congresses/seminars (p= 0.008). Conclusions: The majority of the orthopedic surgeons surveyed in our cross-sectional study had a low or moderate level of knowledge about the scientific manuscript editing process. On the other hand, having a high level of knowledge in this area was associated with more experience in the publication of scientific manuscripts in indexed journals.

Keywords: Scientific journal; peer review; knowledge; orthopedic surgeon.

Level of Evidence: IV

Conocimiento del proceso editorial de las revistas científicas: encuesta a médicos traumatólogos

RESUMEN

Introducción: El objetivo de nuestro estudio fue estimar el nivel de conocimiento de los médicos especialistas en Ortopedia y Traumatología sobre el proceso editorial de las revistas científicas. Materiales y Métodos: Estudio descriptivo, transversal sobre el nivel de conocimiento de los médicos traumatólogos respecto del proceso editorial de las revistas científicas, mediante un cuestionario entregado entre junio y agosto de 2022. Se registraron datos sociodemográficos y variables sobre la experiencia en investigación y el conocimiento del proceso editorial. Resultados: Se recibieron 130 encuestas completadas que correspondían a 118 hombres (90,8%) y 12 mujeres (9,2%) (media de la edad 48 años; DE = 12). Poco más de la mitad de la muestra (n = 72; 55%) eran traumatólogos que trabajaban en instituciones del Área Metropolitana de Buenos Aires. El 60% de los médicos encuestados poseía un conocimiento bajo o moderado del proceso editorial. Se halló una asociación estadísticamente significativa entre un nivel alto de conocimiento del proceso editorial y la publicación de más de 5 artículos en revistas indexadas (p <0,001), en la revista de nuestra Asociación (p <0,001) y en congresos o jornadas científicos (p = 0,008). Conclusiones: La mayoría de los traumatólogos encuestados tenía un conocimiento bajo o moderado del proceso editorial de manuscritos científicos. Por otra



parte, un alto nivel de conocimiento al respecto tuvo una asociación estadísticamente significativa con una mayor experiencia en la publicación de manuscritos científicos en revistas indexadas.

Palabras clave: Revistas científicas; revisión por pares; conocimiento; traumatólogos.

Nivel de Evidencia: IV

INTRODUCTION

Scientific journals are the primary means of disseminating the results and advances in medicine. Their main functions include permanent archiving, registration, dissemination, and certification of research.² They also provide prestige to authors and editors.³ The scientific nature of a journal is founded on two key pillars: manuscript evaluation through the peer review process and the originality of the published research.3 Peer review is the system used to evaluate the quality of scientific research before it is published. Researchers in the same field review the validity, relevance, and originality of articles to assist editors in deciding whether to publish research papers in their journal.4 It not only involves detecting errors, but it also provides feedback to the author throughout the final manuscript production process and aids in the selection of which study should receive more attention.^{3,4} This process allows for different types of review depending on the blinding of the authors and reviewers. We can distinguish three main types: blinded (anonymous author), double-blinded (anonymous author and reviewer) and open. 5 Most Orthopedic and Traumatology journals adopt the double-blind mode. 6

Authors are usually familiar with the complex and laborious task of preparing a scientific manuscript. However, what occurs after the work is submitted to the scientific journal raises a number of questions. ⁶⁻⁸ The authors' knowledge of the peer review process and the functioning of the editorial flow will allow them to know how to deal with the process, interpret and adequately respond to reviewers' feedback, assimilate the results, and improve the quality of the final manuscript in pursuit of their main objective: to publish their research. Furthermore, it improves the process's transparency, optimizes its evolution, and encourages the researcher to adopt a critical attitude regarding the flaws and biases of peer review.^{5,6}

The purpose of this study was to determine the level of knowledge among physicians specializing in Orthopedics and Traumatology regarding the editorial process of scientific journals.

MATERIALS AND METHODS

A descriptive and cross-sectional study of the level of knowledge of physicians specializing in Orthopedics and Traumatology about the editorial process of scientific journals was carried out by means of a questionnaire for traumatologists who are members of the Argentine Association of Orthopedics and Traumatology (AAOT [in Spanish: Asociación Argentina de Ortopedia y Traumatología]), during the period from June to August 2022.

A sample was obtained according to the following eligibility criteria. Inclusion criteria: physicians certified in Orthopedics and Traumatology or in training (residents and fellows) who are members of the AAOT. Exclusion criteria: incomplete or duplicate questionnaires, members of the editorial board of scientific journals.

Variables from the study were recorded in the following categories: A) sociodemographic; B) research experience; and C) knowledge of the editorial process. To assess the understanding of the editorial process, the researchers selected a group of key concepts that are central to the operation of a scientific journal.³ The following were evaluated: perceived knowledge on the subject; the roles of authors, reviewers, and editors; the types of scientific papers and ethical conflicts of publication; and knowledge of the concepts of "peer review," "double-blind," and "indexing."

For the collection of data on the proposed variables, a questionnaire was designed and developed by researchers with experience in the editorial process of scientific manuscripts. The questions included were closed or semi-closed. The questions that estimated frequency were constructed with Likert-type scales to calculate the respondents' level of agreement or disagreement. The questionnaire was created in digital format using Google Forms and was distributed to the participants by telephone or e-mail. A pilot survey was conducted with the first 20 responses, not included in the final results, to evaluate the instrument and the response rate to the questions.

Respondents were grouped into two groups according to their level of knowledge about the editorial process ("low/moderate" vs. "high") for comparison. Respondents who correctly answered 5 or more of 6 conceptual questions about indexing, peer review, double-blinding, and ethical conflicts of publication were classified as having "high" knowledge. The rest of the respondents were grouped in the "low/moderate knowledge" category.

Categorical variables are expressed in frequency and percentage; and numerical variables, in mean or median according to their distribution with their respective dispersion measure, standard deviation, or range. Categorical variables were compared with χ^2 or Fisher's tests. For the comparison of continuous variables, the Student t test or the Mann-Whitney U test were used, according to the distribution expressed. A p-value <0.05 was considered statistically significant. SPSS Statistics 25 was used for the analysis.

The study was conducted in accordance with the ethical standards of the Declaration of Helsinki, preserving the anonymity of the professionals surveyed and their respective affiliations, as well as the confidentiality of the data. Consent to participate was requested.

RESULTS

A total of 130 completed surveys were received from 118 men (90.8%) and 12 women (9.2%), with a mean age of 48 years (standard deviation = 12; range 22-88). Just over half of the sample (n = 72; 55%) comprised orthopedic surgeons working in institutions in the Metropolitan Area of Buenos Aires (a region that includes the Autonomous City of Buenos Aires and 40 municipalities in the province of Buenos Aires) and 24% came from provinces in the central region of our country (24%). Figures 1 and 2 show the distribution of respondents by province and region.

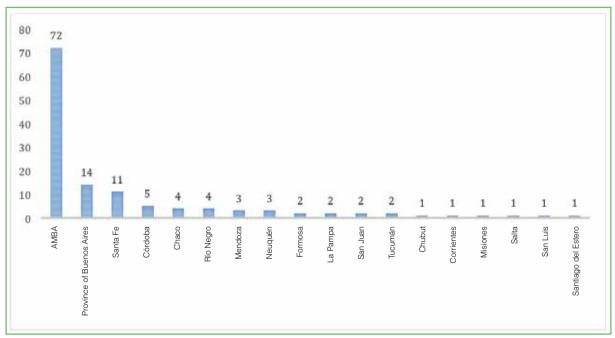


Figure 1. Bar chart: distribution of surveyed Argentinian orthopedic surgeons by province.

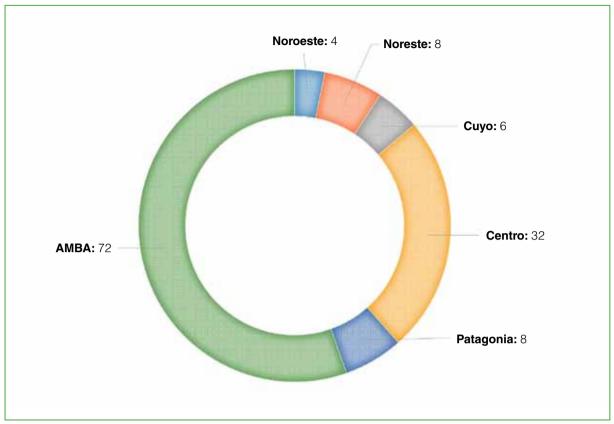


Figure 2. Pie chart: distribution of surveyed professionals by region of the country. The hospitals of the Autonomous City of Buenos Aires and the 40 neighboring municipalities of the province of Buenos Aires were grouped under the name AMBA and considered as a specific region.

Regarding the type of institution where they worked, 94% (n = 122) responded that they worked in the private sector only (n = 59; 45%) or in both private and public institutions (n = 63; 49%). Only 6% worked exclusively at a public institution. Specialist physicians (n = 124; 95%) with positions as Head of Team/Department/Unit, staff physicians, subspecialty fellows, and others predominated. Resident/trainee representation was low (n = 6; 5%). The characteristics of the sample are described in Table 1.

Research experience and prior knowledge of the editorial process

Most of the trauma specialists surveyed reported having participated in research work (n = 112; 86%) and more than half of the sample (n = 79; 61%) reported having frequently (n = 62; 48%) or very frequently (n = 17; 13%) carried out activities related to the development of scientific work during their training as specialists. Only 19% (n = 24) said they have never published an article in an indexed journal; the most common response was "1-5 articles" (n = 53; 41%). The number of articles presented at congresses or conferences was higher (n = 124; 94%), with the most common response being ">10 scientific papers" (n = 62; 48%). More than half of the respondents answered that they had submitted at least one article to the AAOT journal (n = 74; 57%) (Table 2).

Regarding the editorial process, 41% (n = 54) of the trauma specialists responded that they rated their knowledge as "moderate," followed by "extensive" (23%; n = 30). Fewer than 30% (n = 36) claimed to have little or no knowledge in this regard (Table 3).

Table 1. Sample characteristics

Variable		Results	
Age, mean (SD; range)		48	(12; 29-88)
Sex, n (%)	Female	12	(9.2%)
	Male	118	(90.8%)
Region, n (%)	Northwest	4	(3.1%)
	Northeast	8	(6.2%)
	Cuyo	6	(4.6%)
	Central	32	(24.6%)
	Patagonia	8	(6.2%)
	AMBA	72	(55.4%)
Institution, n (%)	Public	8	(6.2%)
	Private	59	(45.4%)
	Both	63	(48.5%)
Position, n (%)	Resident/Scholar/Trainee	6	(4.6%)
	Fellow	5	(3.8%)
	Staff Physician	66	(50.8%)
	Head of Team/Unit/Department	42	(32.3%)
	Other	11	(8.5%)

SD = standard deviation; AMBA = Metropolitan Area of Buenos Aires (Autonomous City of Buenos Aires and 40 municipalities of the province of Buenos Aires).

Table 2. Research experience

Variable		Results n (%)
Participation in research work		112 (86.2)
Activities related to the development of scientific work during residency/training.	Very often	17 (13.1)
	Frequently	62 (47.7)
	Occasionally	34 (26.2)
	Rarely	16 (12.3)
	Never	1 (0.8)
Scientific papers published in indexed journals	0	25 (19.2)
	1-5	53 (40.8)
	6-10	18 (13.8)
	>10	34 (26.2)
Scientific papers presented at congresses or conferences	0	8 (6.2)
	1-5	38 (29.2)
	6-10	22 (16.9)
	>10	62 (47.7)
Submissions to the AAOT Journal		74 (56.9)

AAOT = Argentine Association of Orthopedics and Traumatology.

Table 3. Assessment of respondents' baseline knowledge of the editorial process

Variable		Results n (%)
How would you rate your level of knowledge about the editorial process of a scientific manuscript?	Very wide	9 (7.0)
	Wide	30 (23.3)
	Moderate	54 (41.9)
	Little	22 (17.1)
	Very little	14 (10.9)

Evaluation of the knowledge of the editorial process

In descending order, the percentage of correct answers for questions about editorial process knowledge were: "duplicate publication" (n = 102; 80%), "indexing of the scientific journal" (n = 81; 64%), "simultaneous submission" (n = 79; 61%), "peer review" (n = 78; 60%), "double blind" (n = 65; 50%).

The author's, reviewer's, and editor's roles in the editorial process were assessed. The most frequent errors were in the following functions: correction of the original manuscript, i.e., who can make modifications to the original text and images (n correct answers = 13; 10%); ethical assessment of the publication (n correct answers = 14; 10.8%); verifying that the manuscript complies with the regulations (n correct answers = 29; 22%); and assessment of plagiarism and duplication (n correct answers = 28; 21%). The results are summarized in Table 4.

Table 4. Evaluation of the knowledge of the editorial process

Variable	Results n (%)	
Indexing	81 (64.3)	
Simultaneous submission	79 (61.2)	
Duplicate publication	102 (79.7)	
Peer review	78 (60.5)	
Double-blind peer review	65 (50.4)	
Delegation of functions during the editorial process:		
Uploading submission documents	99 (76.2)	
Uploading metadata	89 (68.5)	
Verifying that the manuscript complies with the regulations	29 (22.3)	
Proofreading the manuscript	13 (10)	
Guiding the interaction	61 (46.9)	
Providing a formal opinion on the manuscript	55 (42.3)	
Adapting the format of images, tables and graphs	55 (42.3)	
Assessing the ethics of the manuscript	14 (10.8)	
Checking plagiarism and duplication	28 (21.5)	

[&]quot;Simultaneous submission" = submitting an article to two or more journals at the same time; "Duplicate publication" = when an author submits an article or some part of his or her own already published article to another journal, without disclosing previous submissions.

Comparison according to the level of knowledge of the publishing process

According to the proposed "level of knowledge" variable, two groups were formed: "high" (n = 51; 39.2%) and "Low/moderate" (n = 79; 60.8%). There were no statistically significant differences in age, sex, and position. From the bivariate analysis, a statistically significant association emerged between the "high" level of knowledge about the editorial process and the previous publication of more than 5 articles in indexed journals (p < 0.001), in congresses or conferences (p = 0.008) and the submission of manuscripts to the AAOT journal (p < 0.001). Participation in activities related to the development of scientific papers during the specialists' training was higher for the categories grouped "very frequently/frequently" in those with "high" knowledge about the editorial process; however, this difference was not statistically significant (p = 0.065) (Table 5).

Table 5. Comparison according to the level of knowledge of the editorial process

	Level			
Variable	Low/moderate n = 79	High n = 51	р	
Age, mean (SD; range)	47 (11; 29-80)	50 (14; 32-88)	0.141	
Sex, n (%) Male Female	72 (91) 7 (9)	46 (90) 5 (10)	0.856	
Province, n (%) AMBA Other	40 (51) 39 (49)	32 (63) 19 (37)	0.175	
Position, n (%) Head Other	24 (30) 55 (70)	18 (35) 33 (65)	0.559	
Participation in research work, n (%) Yes No	66 (84) 13 (16)	46 (90) 5 (10)	0.284	
Activities related to the development of scientific work during training, n (%) Very frequently/frequently Occasionally/rarely/never	43 (54) 36 (46)	36 (71) 15 (29)	0.065	
Scientific papers published in indexed journals, n (%) <5 >5	57 (72) 22 (28)	21 (41) 30 (59)	<0.001	
Scientific papers presented at congresses or conferences, n (%) <5 >5	35 (44) 44 (56)	11(22) 40 (78)	0.008	
Submissions to AAOT journal, n (%) Yes No	34 (43) 45 (57)	40 (78) 11 (22)	<0.001	

SD = standard deviation; AAOT = Argentine Association of Orthopedics and Traumatology; AMBA = Metropolitan Area of Buenos Aires (Autonomous City of Buenos Aires and 40 municipalities of the province of Buenos Aires).

DISCUSSION

Peer review has existed for over a century as a mechanism of arbitration and the central axis of the editorial process of scientific articles. Its origin has been attributed to the publication of *Medical Essays and Observations* by the *Royal Society of Edinburgh* in 1731. It should be noted that the original process has undergone multiple modifications and is significantly different from its current version. On the other hand, the publication of scientific

articles in peer-reviewed journals is a fundamental milestone in the career of a physician, conferring prestige and academic legitimacy. Despite all this, there is great uncertainty in the medical community concerning the functioning and usefulness of the editorial process.^{10,11}

Accordingly, we discovered that 60% of the physicians evaluated in our survey in the field of Orthopedics and Traumatology in Argentina had a low or moderate level of knowledge about the editorial process. Correct answers predominated when initially analyzing fundamental principles of the editorial process (>50% for each concept). However, half of the respondents did not know the correct definition of the term "double-blind". On the other hand, for the specific roles of editors, reviewers and authors, we found less encouraging results. Correct answers were less than 50% in 7 of 9 functions evaluated. The gap in knowledge about these functions appears to be greatest for: ethical assessment of the manuscript, correction of submission files (manuscript/tables/graphs), assessment of compliance with regulations, and estimation of plagiarism.

The literature reflects numerous concerns about the editorial process, including the ethical integrity of the review process and of the manuscript specifically, the timing of review and eventual publication of a manuscript, the critical lack of reviewers, the quality of reviews, publication bias, and the development of alternative options such as open review. All, in some way, reflect the imperative need for health professionals to delve into the core concepts of the editorial process and, more specifically, peer review. In the authors' opinion, this would allow them to more efficiently satisfy each of the stages, from manuscript submission to publishing. Reviewers' tasks, on the other hand, should be hierarchized, and they should participate in the quest for new approaches for critical evaluation of scientific texts that are fairer, more ethical, scientific, and less biased.

We were interested in developing a profile of a trauma specialist with understanding of the editorial process in the field of Orthopedics and Traumatology. In our sample, having published articles was related with a deeper understanding of the editorial process. A statistically significant association was found between respondents with greater knowledge in this regard and having published more than 5 articles in indexed journals or in scientific congresses and conferences, as well as having submitted articles to the AAOT journal. This result leads us to think, on the one hand, that one way to learn about a process is to participate in it. On the other hand, there is a need to incorporate these concepts during the training of specialists in Orthopedics and Traumatology so that their access is not limited to the fact of "actively" publishing scientific manuscripts. We believe that the latter is related to the environment in which we were trained as specialists and its academic tradition, which may disadvantage those who lack colleagues with experience in the subject or institutions that prioritize research as part of trauma physicians' professional development.

Finally, it is worth mentioning the advent of predatory publishers, fictitious publishers that swindle researchers through spurious mechanisms. They are pseudo-publishers that offer the "successful publication" of scientific manuscripts exclusively for profit and limiting the possibility of a true dissemination of original research. Understanding the editorial process is an important tool for avoiding academic scams. ^{17,18}

The weaknesses of this study are the low number of respondents, the low representation of female professionals and residents, its cross-sectional design, and the subject selection bias involved in non-probability sampling. Nevertheless, we believe that it provides new knowledge on a subject that has been little studied and published, especially in our field.

CONCLUSIONS

Most of the trauma specialists evaluated in our survey had a low or moderate level of knowledge about the editorial process of scientific manuscripts. On the other hand, a statistically significant association was found between a high level of knowledge in this regard and greater experience in the publication of manuscripts in indexed journals. The editorial process and especially peer review is the central axis of the evaluation of our academic-scientific production. The authors suggest the need to include aspects on the knowledge of the editorial process of scientific journals in the initial stages of the training of orthopedic and traumatology specialists.

Conflict of interest: The authors belong to the editorial team of the Journal of the Asociación Argentina de Ortopedia y Traumatología.

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