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ORIGINAL ARTICLE

The profile of evaluators of a medical publication in relation to the response

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Abstract
Introduction: The expert is essential in the external evaluation process and for this reason it is necessary to know the profile and characteristics of the best evaluators.
Material and methods: We have retrospectively analysed the external review process of the journal from the 1st of January 2005 until the 30th of June 2009, with the aim of knowing the profile of the experts in relation to the response to the requests. The response rate, mean delay time and responder rate were evaluated, using, sex, age and forming part of the editorial committee as variables.
Results: The response rate fell as the number of evaluations increased. Women had a higher response rate, lower delay time and better performance than males. The response rate showed a tendency to decrease with age and the large majority of responders were between 29 and 39 years. Being a member of the journal committees was not associated with a better response rate, although there was less delay. The response rate and the delay time are similar, although it may increase with the number of requests to a reviewer.
Conclusions: Lower age and being female are associated with a better response. No fatigue effect was observed in good responders, but if there is a fall in the response rates the number of evaluators should be increased.

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PALABRAS CLAVE
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Sexo

El perfil de los evaluadores de una publicación médica en relación a la respuesta

Resumen
Introducción y objetivo: En el proceso de evaluación externa el experto es esencial y por ello es necesario conocer cuál es el perfil y las características de los mejores evaluadores.
Material y métodos: Hemos analizado de forma retrospectiva el proceso de revisión externa de la revista, desde el 1 de enero de 2005 hasta el 30 de junio de 2008 a fin de poder conocer el perfil de los expertos en relación a la respuesta a las solicitudes. Se ha valorado su tasa de respuesta, tiempo medio de demora y tasa de respondedores, considerando como variables el sexo, la edad y formar parte del comité editorial.
Resultados: Al aumentar el número de evaluaciones, se produce una caída en la tasa de respuesta. Las mujeres presentan mayor tasa de respuesta, menor demora y mejor cumplimiento que los varones. La tasa de respuesta se comporta con tendencia decreciente con la edad y el mayor porcentaje de respondedores se encuentra entre 29 y 39 años. La condición de miembro de los comités de la revista no supone una mejor tasa de respuesta, aunque sí menor demora. La tasa de respuesta y tiempo de demora son similares aunque aumente el número de solicitudes a un revisor.
Conclusiones: Menor edad y sexo femenino se asocian a una mejor respuesta. No se ha observado un efecto fatiga en los buenos respondedores, pero sí hay una caída en la tasa de respuesta al tener que ampliar el número de evaluadores.

Introduction

External review is the most commonly used formula to improve and decide on the articles to be published in scientific journals. It consists in sending these articles to experts who analyse their quality and remit constructive criticism for the authors to improve them, while advising the editor about whether to publish them or not.[1,2] The role of the expert is essential in this process.[3] Consequently, editors have tried to analyse the profile and skills of the best evaluators to identify them,[4] while highlighting the difficulty in finding them, especially for journals of reduced scope in technical or geographical terms.[5,6]

Most studies that have analysed the editorial process observe a great variation in the recommendations of reviewers,[7] more related to their personal profile than to the contents of the manuscripts.[8,9] Although it is not easy to define what the characteristics that define a good reviewer are[10,11] or how they should be identified,[12] some studies have analysed the differences between good reviewers and those who are less so.[13,14] The aim of this work is not to analyse the quality of the reviews, but to ascertain the profile of the evaluators in relation to the response to requests and to delay.

Material and methods

In the external review process of NEUROLOGIA, upon receipt of an article, the editors assign its evaluation to experts based on the contents. If unable to perform the review, these experts are requested to notify the journal, in order for the work to be referred to another evaluator. The deadline for these reviews is 30 days, after which a response is often requested. An article is sent to new experts only if some of the reviewers do not respond. We have analysed the external review process of NEUROLOGIA for the period from 1 January 2005 through 30 June 2008 to ascertain the profile of the experts in relation to their response to requests.

Databases

To perform the profile analysis, we used the registry of works by journal reviewers that is in the Ars XXI database and the personal data of the reviewers from the registry of the Spanish Society of Neurology (SEN) members. This information was treated according to the criteria of confidentiality and in compliance with data protection legislation.

Definitions

Expert: a professional the journal considers an appropriate evaluator for one of its articles, based on proven scientific competence.
Request: petition by the editorial team of the journal for an expert to perform the assessment of an item. This does not include situations in which the potential reviewer has refused the assessment of the request, but does include those where a refusal was not stated, as the journal does not explicitly require prior acceptance by the expert. Applications that were ongoing in July 2008 have not been included.
Year: refers to the corresponding year at the time the request was made, although the response may have taken place in the following year.

Table 1 Indicators on requests and responses

	2005	2006	2007	2008*	2005-2008
Eval./n	151	283	247	129	8100
Exp./n	100	193	156	85	276
T.resp (%)	69.53	49.8	71.2	86.82	65.80
Dem (days)	29.97	22.76	35.58	27.15	30.93
T.exp (%)	78.00	53.8	72.4	100	83.33
Resp 30(%)	71.2	68.2	61.9	61.1	63.4
Exp 30 (%)	54.16	25.17	44.86	61.1	52.89
T.respor (%)	39.58	20.92	37.8	51.76	21.73
Smax (days)	4	5	5	5	14
Emax (days)	3	3	5	4	12

*Refers to the period between 1 January 2008 and 30 June 2008.

Evaluation: report remitted by the expert to a review request from the journal.
Responding expert: an expert who has responded to 100% of the requests made by the journal with a mean response time of 30 days from submission of the request.
Editorial Committee Member: refers to the professionals who were part of the Editorial and Advisory Committees of the journal during the period 2004-2007.

Indicators analysed

Number of requests for evaluation (Eval): refers to all requests for review for journal articles.
Number of experts from whom an evaluation was requested (Exp): refers to the experts who were requested to review a journal article, not including those reviewers who refused the review after receiving a request, but including those who did not communicate their refusal.
Average time delay to respond (Dem): refers to the average time delay (in days) in the delivery of the review for the articles that generated a response.
Rate of response to the request for review of articles (T. resp): the ratio between the number of reviews received and the number of applications for review sent (Eval) $\times 100$.
Rate of experts who responded to at least one request (T.exp): the ratio between the number of experts who responded at least once to a request and the number of experts who were sent a review request (Exp) $\times 100$.
Percentage among the experts who responded to at least one request and did so within 30 days on average (%Resp 30): the ratio between the number of experts whose average time for conducting the requested reviews was less than 30 days and the total number of experts who responded to at least one request $\times 100$.
Percentage of experts who responded to at least one request with an average response of less than 30 days (%Exp 30): the ratio between the number of experts who responded to at least one request and whose average time of completion of reviews requested was less than 30 days and the total number of experts who were sent review requests (Exp) $\times 100$.
Rate of responders (T.respor): the ratio between the number of experts who responded and the total number of experts who were sent review requests (Exp) $\times 100$.
Maximum number of requests to an expert in one year (Smax): the largest number of requests received in one year by the expert who had the most requests.
Maximum number of evaluations carried out by an expert in one year (Emax): the highest number of reviews in one year performed by the expert who did the most evaluations.
The indicators were analysed by subgroups by gender, age, and Editorial Committee membership or not. The analysis by age subgroups was at intervals of 10 years from age 29.

Results

In the period under review, NEUROLOGIA requested reviews from 298 experts. Of these, 22 were excluded due to the absence of necessary information, so the study was conducted on 276 experts, representing 93% of the total. These 276 received 810 requests, distributed between 2005 and 2008, as shown in table 1. Of these, 115 received a single request, 41 received two requests, 38 received 3 requests, 28 received 4, 17 received 5, and 14 received 6, (the latter being the maximum number received by an evaluator of 14). The following results were found with the information obtained from these requests:

Increasing the number of evaluations leads to a drop in the response rate

Table 1 shows the requests from 2005 to the first half of 2008, which range from 151 in 2005 to 283 in 2006. Average delay times were 29.97 days (range 1-180) in 2005, 22.76 days (1-108) in 2006, 35.58 days (1-199) in 2007, and 27.15 days (2-112) in 2008. The response rate in 2005 was 69.53, in 2006 49.8, in 2007 71.2, and in 2008 86.82. This shows that the increase in the number of evaluations is associated with a decrease in response rate, as observed between 2005 and 2006, and increased in 2007 coinciding with a reduction in the number of evaluations. This drop in the response rate is parallel to the decrease in the rate of experts who responded to at least 1 request, which fell to 53.8 in 2006 from 78.0 in 2005, and recovered to 72.4 in 2007. Likewise, the percentage of respondent reviewers in 2006 was the lowest of the 4 years analysed, with 20.92%

Table 2 Indicators by gender

	Male	Female
Eval.	622	189
Exp.	204	72
T.resp (%)	64.46	69.84
Dem. (d)	30.31	32.42
T.exp (%)	79.41	94.44
Resp 30 (%)	65.4	58.82
Exp 30 (%)	51.9	55.55
T.respor (%)	20.09	26.38
Smax	14	9
Emax	12	8

Women have a higher response rate, less delay and better compliance than men

In the group of reviewers, 204 were male (73.9%) and 72 were female. Men had a mean age of 51.86 years and women of 45.7 years. Table 2 shows that females had a better response rate (69.84) than males (64.46), but that they delayed longer in sending their responses (32.42, range 1-199 days vs 30.31 days, 2-181). In relation to the rate of experts who responded to at least 1 request (T.exp) the best group is also that of females, with a T.resp of 94.44 vs 79.41 for males. The percentage among the experts who responded to at least 1 request and did so in less than 30 days on average (%Resp 30) ranged between a maximum of 71.2%and a minimum of 61.1%in 2008.

The response rate shows a decreasing tendency with age and the highest percentage of respondents is between ages 29 and 39

Of the 276 reviewers, there were 11 for whom no age data was available in the registry, mainly because they were not members of SEN. The remaining 265 had a mean age of 50.26 years and of these, 38 were between 29 and 39 years, 78 between 40 and 49 years, 103 between 50 and 59 years, 41 between 60 and 69 years, and 5 between 70 and 79 years. Consequently, the largest group of evaluators was between 50 and 59 years (38.8%), and this was also the group which received the highest number of requests (39.2%). The group between 40 and 49 years was second in number of evaluators (29.4%) and received 31.12%of requests.

Table 3 shows how the response rate behaved in relation to the items requested, showing a downward trend in relation to age. The group between 29 and 39 years had a T.resp of 72.16%; between 40 and 49 years, 70.28%; between 50 and 59 years, 64.6%; between 60 and 69 years, 58.8%; and between 70 and 79 years, 43.5% Regarding the delay in sending a response, the group with the longest delay was that with an age range between 60 and 69 years, with an mean of 37.87 days (the shortest delay was 2 days and the longest delay was 120 days). This group was followed by (in order) the group between 40 and 49 years with 32.12 days (range, 2-199 days), between 29 and 39 years with 29.18 days (5-68), between 50 and 59 years with 27.45 days (2-112), and between 70 and 79 years with 21.75 days (14-32). In relation to the rate of experts who responded to at least one request (T.exp), the best group was between 29 and 39 years with a T.resp of 100%, followed by the group between 40 and 49 years with 83.33%, between 50 and 59 years with 85.43%, between 60 and 69 years with 78.04%, and between 70 and 79 years with 80%. In relation to response indicators within 30 days, the percentages were similar, around 64% for the interval between 50 and 59 years and 63%between 40 and 49 years. In relation to the percentage among experts who responded to at least 1 application and did so in less than 30 days on average (%Resp 30), the interval between 29 and 39 years was 57.89%and between 50 and 59 years it was 55.33%. In relation to the rate of respondents, the largest proportion was in the range between 29 and 39 years and, to a lesser extent, in the rest of intervals, with the lowest frequency being between 60 and 69 years, with 7.3%

Being a journal committee member does not mean a better response rate, although it is associated with a shorter delay

The mean age of committee members was 53.63 years, compared to 48.95 years for those who were not. The

Table 3 Indicators according to age ranges

	29-39	40-49	50-59	60-69	70-79
Eval.	97	249	314	124	16
Exp.	38	78	103	41	5
T.resp. (%)	72.16	70.28	64.6	58.8	43.5
Dem. (d)	29.18	32.12	27.45	37.87	21.75
T.exp. (%)	100	83.33	85.43	78.04	80.00
Resp 30(%)	57.89	63.07	64.77	50.0	75.0
Exp 30 (%)	57.89	52.56	55.33	39.09	60.0
T.respor(%)	28.94	20.51	22.33	7.3	20.0
Smax	11	13	14	12	8
Emax	7	11	12	8	3

Table 4 Indicators by committee membership

	Members	Non-members
Eval.	349	462
Exp.	74	202
T.resp. (%)	66.47	65.15
Dem. (d)	26.33	32.87
T.exp. (%)	91.89	80.19
Resp 30 (%)	70.58	60.49
Exp 30 (%)	64.86	48.51
T.respor (%)	10.81	25.7
Smax	13	14
Emax	12	8

response rate was similar (66.47% vs 65.15%). The mean delay of committee members was 26.33 days (range, 2-127), compared to 32.87 days (1-199). There was a higher rate of responding evaluators among the group of evaluators who were not committee members (27.5% vs 10.8%), although the response rate at 30 days was better in those who were members.

The response rate and time delay are similar even if the reviewer receives more requests

Tables 2 through 4 show that Smax varies from 8 to 14 review requests, while Emax does so from 8 to 12. Table 5 shows the mean time delay (Dem) and response rate (T. resp) of reviewers by number of requests received. Neither indicator shows significant changes with increasing numbers of applications. Although Dem ranges between 19.11 and 41.88 days, most of the times it is around 30 days. In the case of T.resp, an increase in the number of requests does not alter the rate, which is between 62 and 67 in most of the intervals.

Table 5 Mean response time and response rate to requests according to the number of applications received by the reviewer

No. of requests	No. of evaluators	Delay	Response time
1	115	33.32	64.3
2	41	32.13	65.8
3	38	27.55	62.2
4	28	31.75	64.2
5	17	41.88	62.3
6	14	22.50	64.2
7	4	25.50	67.8
8	9	19.11	72.2
9	1	26.00	66.6
10	0	0	0
11	3	20.33	66.6
12	1	27.00	66.6
13	4	33.00	78.8
14	1	11.00	50.0

Discussion

The process of review and improvement is an essential element in the elaboration of a scientific publication and the role of experts is fundamental in it,[15] not only for its quality, but also in the evaluation of authors'[16] as well as in the detection of fraud and inappropriate behaviour.[17]

This article aims to determine the profile of evaluators in relation to their responsiveness, using the journal database, without including aspects related to the quality of the reviews or their impact on journal indicators. There are 3 methodological aspects to be discussed prior to discussing the results. First, our study excludes 7% of reviewers due to lack of information. Second, for 2008, only concluded processes were included while those in progress were excluded. This is consistent with the objective of the study, which is not to ascertain journal statistics, but the profile of the evaluators. Consequently, any bias that might influence the latter has been removed, despite some of the information that could lead to the former being lost. In this sense, the study is influenced by all the reviewers who completed the process, with or without response, with complete information. A third methodological consideration should be borne in mind: that lack of response did not depend on time but on the editor's judgment (when could a decision be reached with the remaining reports). Consequently, the responder status of a reviewer should be assessed globally not only with a lack thereof, but also with the mean time delay, as set out in the rate of responder indicator (T.respor), which considers both perspectives as a whole.

Although showing journal evolution was not an objective of this study, it is possible to observe that increasing the number of requests, and therefore the number of reviewers, led to a drop in the rate of response, as occurred between 2005 and 2006, recovering in 2007 when their number was reduced. This could probably be explained because, given that the journal covers a specific linguistic and technical field, there was an over-use of the experts who could be consulted.

The study shows that the profile of the experts with the best response rate was the youngest (between 29 and 49 years), while that corresponding to 29 to 39 years was the highest. In a radiology journal, Klieve et al[18] indicate that the best reviewers are those experts with the best curriculum, younger than 40, who belong to elite research units, and who are well known by the editor. Black et al[10] have also shown that younger reviewers have a better response rate. The level of review has been described as inversely proportional to the academic level.[13,19] In our study, it does not seem that members of the journal committees, when they acted as reviewers, had a worse response rate than those who were not members, although they contributed to an increase in citation of the journal, as described in other publications.[10,20,21]

Women showed a higher response rate and a shorter delay in response. Time delay is very important in evaluation,

not only for authors, but for the journal itself, as it influences its impact factor.[22] Although times are not equal for a larger magazine than for a smaller one,[23] the better response by females has previously been described in other studies,[23] as well as the fact that they refuse more reviews than males.[24,25]

The increase in the number of requests sent to a single evaluator does not represent a drop in response rate or delay, which rules out a fatigue effect of evaluators as the cause of decreased response. However, we have attempted to analyse the causes of refusal to review by experts and it has been pointed out that this could be due to lack of time, lack of financial compensation, or to not being part of the editorial committee.[26] Knowing the profile of the evaluators is probably the only approach that can increase the response rate, and, in that case, the responsibility of the editors in selecting them appropriately.[27,28] Although other ways to reduce delay times in the editorial process have been sought,[29] there seem to be no other, more appropriate, alternatives than the choice of reviewers who respond in a timely manner.

Conflict of interest

The authors declare no conflict of interest.

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