

## SHORT REPORT

## What happens to the manuscripts that have not been accepted for publication in *Occupational and Environmental Medicine*?

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### Abstract

**Objectives**—To evaluate the fate of manuscripts rejected by *Occupational and Environmental Medicine (OEM)*.

**Methods**—A Medline search was conducted, up to March 2001, to find out whether and where articles submitted to *OEM* in 1995, 1996, and 1997, but not accepted for publication, were published. The articles were matched by authors and title, sometimes using the abstract to help decide whether the published article was the one that had been previously submitted to *OEM*.

**Results**—Out of 405 manuscripts rejected (44% of those submitted), 218 articles (54%) were traced in 72 different journals, with more than half being published in seven other major journals dealing with occupational and environmental health (rather than in specialty journals). Most papers were published within 2 years of their initial submission to *OEM*. Only a small proportion (10%) were published in a journal with a higher impact factor than *OEM* (1.96 in 1999).

**Conclusion**—More than half the articles rejected by *OEM* found their way into the scientific literature covered by Medline. This figure is comparable with the few available data from other journals. It would be interesting to know the fate of articles published by *OEM* before they were submitted to our journal.

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Keywords: journalology; bibliometry; impact factor

It is commonly considered that when a paper has been rejected by a scientific journal it will ultimately be published in another journal. Ideally, an improved version of the article is published thanks to the comments made by the reviewers, but it is a common experience of authors, reviewers, and editors that this is not always the case. The issue of the effectiveness, and fairness, of the editorial peer review process has been much debated. We do not consider this subject here, but a related issue that should be of interest to those publishing in the area of occupational and environmental health,

namely the fate of papers that have been rejected by *Occupational and Environmental Medicine (OEM)*. This analysis was done by performing a Medline search to find out whether and where these manuscripts were eventually published.

### Methods

A list of the manuscripts rejected in 1995, 1996, and 1997 was provided to me by the editorial office of *OEM*. This list contained the manuscript number, the title and the authors (name and initials), but not their affiliation or country of origin. Each article was searched using Medline (PubMed at <http://www.ncbi.nlm.nih.gov>). The search was complete up to the end of March of 2001. Obviously, the search was limited to papers published from the year of submission onwards. In general, articles were readily found by searching by the first author and papers with titles that were identical or reasonably similar to the title of the manuscript submitted to *OEM* were retained. When no corresponding article was found or—for example, if the first author had a very common name (Smith or Chang)—alternative strategies were used, such as searching by the last author or another author, or by author and one of the keyterms in the title. The abstracts of all possibly matching articles were printed and checked for consistency with the original title and authors. In a few cases, where the title and the authors had changed considerably, some judgment had to be used to conclude that the published article was presumably the one that had originally been submitted to *OEM*, but this was not thoroughly checked.

### Results

Table 1 shows that half of the articles that had been rejected in 1995, 1996, or 1997, could be traced in the Medline database. There was no major difference among the 3 years in the proportion of papers that were eventually published.

Half of the articles (114 or 52%) had a title that was identical or almost identical to that of the version submitted to *OEM*. There were substantial or major modifications of the title in

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Table 1 Yearly distribution of articles submitted to and rejected by OEM, and articles eventually published elsewhere, as found in Medline

Year submitted to OEM	Total submitted n	Rejected n (% of submitted)	Published elsewhere n (% of rejected)
1995	315	133 (42)	76 (57)
1996	310	141 (46)	73 (52)
1997	302	131 (43)	65 (53)
1995-7	927	405 (44)	218 (54)

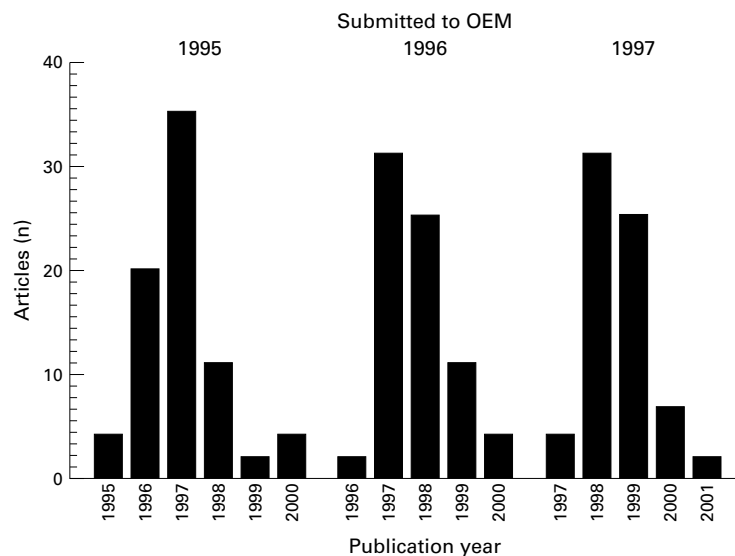


Figure 1 Yearly distribution of publication of articles rejected by OEM.

74 (34%) and 30 (14%) instances, respectively. The number or order of the authors had been changed for 51 (23%) of the articles.

Most articles were published within 2 years of their submission to and rejection by OEM (fig 1). Very few papers seem to be published later than 3 years after their rejection. Ten articles (<5%) were published in the same year as that of their submission to OEM; in between three and five instances this could represent attempts of duplicate publication, generally in another language; in two instances it is conceivable that the published papers were conference proceedings in *Industrial Health*.

Table 2 lists the journals in which the rejected papers were eventually published. The journals are ranked in descending order of number of papers published, then in descending order of impact factor (*Journal Citation Reports*: science edition 1999, as found in <http://jcrweb.com>), and then in alphabetical order. The impact factor is one of several variables that characterise the way a journal receives citations to its articles over time. It is defined by the Institute for Scientific Information as the number of times a journal was cited within 2 years divided by the total number of articles published by the journal during these same years. The 218 articles were published in 75 different journals. More than half the articles (115 or 53%) were published in the seven journals that published 10 or more papers. As expected, all these journals are devoted to general occupational and environmental health. The most popular journal is the *American Journal of Industrial Medicine*, with 30 papers (14%).

Six articles which had been initially rejected by OEM, were eventually published in OEM after resubmission as new manuscripts. Seventeen journals published between two and five papers, totalling 44 articles (20%). In this category, 10 journals are devoted to occupational or environmental health, including epidemiology and public health, and seven are specialist journals (three in respiratory medicine, three in toxicology, and *Bioelectromagnetics*).

The remainder of the rejected papers were published in 50 different journals. These include 12 journals within the broad category of occupation, environment, epidemiology, or public health, 33 specialist journals (including nine in toxicology and laboratory sciences, five in respiratory medicine or allergy, four in cancer, three in surgery, two in dermatology), and five general medical journals, mostly of a local distribution.

The vast majority (90%) of articles were eventually published in journals with an impact factor smaller than that of OEM. It should be noted that the impact factors used here are the figures for 1999 and not those of the year when the articles had been rejected, but these impact factors and their relative positions within a same category do not change very much over the years. Only 16 (7%) of the articles rejected by OEM were eventually published in a journal with a higher impact factor than OEM; most (11) of these were published in specialist journals (eight in respiratory medicine or allergy) and five were published in *Environmental Health Perspectives* or the *Journal of Toxicology and Environmental Health*. One of the articles published in a more highly rated journal may have been an attempt at duplicate publication, as the published paper was published in the same year as its submission to OEM. In at least one other instance, the published paper was possibly very different from the rejected paper, as its title and the coauthors differed substantially.

Twenty two (10%) articles were eventually published in a journal that is not listed in the *Journal Citation Reports*, including five in the *International Journal of Occupational and Environmental Health*. Only four of the retrieved articles were published in a language other than English, and on the basis of the publication dates it is likely that two of those had in fact already been submitted to these national journals before being sent to OEM.

Table 3 shows the geographical distribution of authors (as indicated in Medline abstract) for the seven journals with at least 10 articles.

### Comments

This quantitative evaluation of the editorial fate of the articles that were rejected by OEM over a period of 3 years has by and large confirmed by objective means what could be suspected on the basis of experience with publishing and reviewing articles in the field of occupational and environmental health. Half of the articles (52%) rejected from OEM ultimately found their way into the scientific literature that is covered by Medline. This proportion is lower than the 69% reported recently

Table 2 Journals in which articles rejected by OEM were eventually published

Journal	Impact factor (Journal Citation Reports 1999)	Published papers (% of total traced)
<i>Am J Ind Med</i>	1.368	30 (14)
<i>Int Arch Occup Environ Health</i>	1.167	20 (9)
<i>Occup Med</i>	0.462	15 (7)
<i>Scand J Work Environ Health</i>	1.756	14 (7)
<i>J Occup Environ Med</i>	1.477	14 (7)
<i>Arch Environ Health</i>	1.308	12 (6)
<i>Ind Health</i>	0.651	10 (5)
<b>Occup Environ Med</b>	<b>1.958</b>	<b>6</b>
<i>Ann Occup Hyg</i>	1.577	5
<i>Int J Occup Environ Health</i>	—	5
<i>Sci Total Environ</i>	1.126	4
<i>Hum Exp Toxicol</i>	1.063	4
<i>Environ Health Perspect</i>	2.469	3
<i>Chest</i>	2.410	3
<i>Am J Respir Crit Care Med</i>	5.491	2
<i>J Toxicol Environ Health</i>	2.349	2
<i>Eur Respir J</i>	2.334	2
<i>Bioelectromagnetics</i>	1.919	2
<i>J Toxicol Clin Toxicol</i>	1.732	2
<i>Environ Res</i>	1.617	2
<i>Neurotoxicology</i>	1.282	2
<i>J Expo Anal Environ Epidemiol</i>	0.853	2
<i>Eur J Epidemiol</i>	0.762	2
<i>Public Health</i>	0.509	2
<i>Med Lav</i>	—	2
<i>Pain</i>	4.020	1
<i>Clin Exp Allergy</i>	2.702	1
<i>Free Rad Res</i>	2.27	1
<i>Jpn J Cancer Res</i>	2.117	1
<i>Lung</i>	1.925	1
<i>Ann Epidemiol</i>	1.862	1
<i>Toxicol Sci</i>	1.778	1
<i>Arch Toxicol</i>	1.683	1
<i>Int J Tuberc Lung Dis</i>	1.628	1
<i>Regul Toxicol Pharmacol</i>	1.530	1
<i>Arch Pathol Lab Med</i>	1.417	1
<i>Eur Neurol</i>	1.379	1
<i>Xenobiotica</i>	1.335	1
<i>Br J Urol</i>	1.282	1
<i>Chemosphere</i>	1.255	1
<i>Health Phys</i>	1.246	1
<i>Arch Environ Contam Toxicol</i>	1.173	1
<i>Leuk Res</i>	1.142	1
<i>Teratog Carcinog Mutagen</i>	1.018	1
<i>Dermatology</i>	0.959	1
<i>Cancer Detect Prev</i>	0.927	1
<i>Hematol Cell Ther</i>	0.907	1
<i>Br J Med Psychol</i>	0.881	1
<i>Am Ind Hyg Assoc J</i>	0.862	1
<i>Contact Dermatitis</i>	0.741	1
<i>South Med J</i>	0.737	1
<i>Eur J Surg Suppl</i>	0.687	1
<i>Respiration</i>	0.587	1
<i>Aviat Space Environ Med</i>	0.536	1
<i>Physiol Res</i>	0.521	1
<i>Rev Epidemiol Santé Publique</i>	0.458	1
<i>Scand Audiol</i>	0.434	1
<i>Bull NY Acad Med</i>	0.370	1
<i>Appl Ergon</i>	0.356	1
<i>J Hand Surg</i>	0.258	1
<i>Aust J Rural Health</i>	—	1
<i>Br J Urol</i>	—	1
<i>Can J Public Health</i>	—	1
<i>Int J Occup Med Environ Health</i>	—	1
<i>Int J Paediatr Dent</i>	—	1
<i>J Dent Hyg</i>	—	1
<i>J Formos Med Ass</i>	—	1
<i>J Korean Med Sci</i>	—	1
<i>J Pak Med Assoc</i>	—	1
<i>Kao Hsiung I Hsueh Ko Hsueh Tsa Chich</i>	—	1
<i>Med Confl Surviv</i>	—	1
<i>Med Tr Prom Ekol</i>	—	1
<i>Monaldi Arch Chest Dis</i>	—	1
<i>Ory Hetil</i>	—	1
<i>SAR QSAR Environ Res</i>	—	1
<i>Southeast Asian J Trop Med Public Health</i>	—	1

for a 10% random sample (350 articles) of manuscripts rejected in 1993–4 from the *Annals of Internal Medicine*,<sup>1</sup> but it is similar to that recently obtained for *Cardiovascular Research*, where 47% of all the 644 manuscripts rejected in 1995–6 could be traced.<sup>2</sup> In older studies, subsequent publication rates have

ranged between 38% and 85%, as summarised by Ray *et al.*<sup>1</sup> It is likely that more articles were published than reported here, in journals with a more local distribution and in other languages, which are not covered by Medline. Thus, in a study of 108 articles rejected in 1992 from the *Nederlands Tijdschrift voor Geneeskunde* (Dutch Medical Journal), only 14 were traced through Medline within 2 years, but a questionnaire showed that a substantial proportion (49%) of the articles had been published in journals not covered by Medline (of which 40% were in English).<sup>3</sup>

Most articles rejected by OEM were published elsewhere within 2 to 3 years of being rejected and this is similar to figures obtained elsewhere. Thus, after rejection by the *Annals of Internal Medicine* most articles appeared within 2.5 years and the mean latency was 552 days (range 121 to 1792 days).<sup>1</sup>

In general, articles rejected by OEM were published in journals with a similar scope—that is, journals covering the broad field of occupational and environmental health—rather than in specialist journals dealing with—for example, pneumology or neurology. This seems to be opposite to the experience of general medical journals, such as the *Annals of Internal Medicine*,<sup>1</sup> where most manuscripts are subsequently published in specialty journals (it is probable that occupational medicine is itself considered as a specialty).

Most (90%) of the rejected articles were eventually published in journals with an impact factor below that of OEM, and this too is comparable with the findings of other studies.<sup>1,2</sup> The papers rejected by the *Annals of Internal Medicine* (average impact factor of 9.60 in 1993–4) were eventually published in journals with a mean impact factor of 3.09,<sup>1</sup> and those rejected by *Cardiovascular Research* (impact factor of 2.88 to 3.26 in 1996–8) were eventually published in journals with an average impact factor of 1.64.<sup>2</sup> The impact factor is a bibliometric indicator that reflects the average number of citations received by the average article of a journal per year. It is the most commonly used, but also the most misused measure derived from the citation curve of a journal.<sup>4</sup> Impact factors depend on subject area and on the size and type of the journal, they fluctuate from year to year, and they are not necessarily good reflections of quality. Thus the impact factor of OEM is quite low (1.96) when compared with many biomedical journals, but it has the highest impact factor of the journals publishing original research in occupational health.

It is difficult with the present material to draw very strong conclusions about the preferences of authors to publish in a particular journal according to their origin. Nevertheless the data from table 3 do give some clues. As in OEM, the *American Journal of Industrial Medicine* seems to draw from an international audience with only four papers from the USA and four from Canada. The other journals seem to attract authors from more specific geographical areas. Thus, the *International Archives of Occupational and Environmental Health*, originally a

Table 3 Geographical origin of papers published in major journals after rejection by OEM

	AJIM	LAOEH	OccMed	SJWEH	JOEM	AEH	IndHealth
USA + Canada	8	1	1	0	8	7	0
Europe (+ Israel)	18	14	10	11	5	4	0
Nordic	7	4	1	7	1	3	0
United Kingdom	0	1	5	0	0	0	0
Other	11	8	4	4	4	1	0
Asia + Australia	3	5	3	3	1	1	10
Other	1	0	1	0	0	0	0
Total	30	20	15	14	14	12	10

AJIM=Am J Ind Med; LAOEH=Int Arch Occup Environ Health; OccMed=Occup Med; SJWEH=Scand J Work Environ Health; JOEM=J Occup Environ Med; AEH=Arch Environ Health; IndHealth=Ind Health.

German publication, draws most of its papers from Europe; *Occupational Medicine*, the journal of the United Kingdom Society of Occupational Medicine, seems to be the preferred second choice for authors from the United Kingdom (and the Commonwealth); the *Scandinavian Journal of Work and Environmental Health* publishes more articles from the Nordic countries; the *Journal of Occupational and Environmental Health* and the *Archives of Environmental Health*, both published in the United States, have the highest relative proportions of authors from the United States; all papers in *Industrial Health*, published by Japan's Institute of Industrial Health, come from Japan, Taiwan, or South Korea.

Because the affiliation of the authors was not mentioned on the list of rejected papers, it was not possible to analyse whether the geographical origin of a rejected paper influenced the likelihood of it still being published in the end, but one has the impression that articles that presumably originate from third world countries are more easily lost.

It would be interesting to evaluate now the trajectory of the papers that did get published in *OEM*. How many of them were first submissions? How many were second choices after rejection by specialist journals, which generally have higher impact factors? How many had been first rejected by direct competitors of *OEM*? Such a study would be fairly easy to perform by asking the authors of already published papers to respond, either anonymously or not, to a brief questionnaire about the history of their article. Such information would allow us to assess more objectively than with bibliometric indices, the relative quality and prestige of *OEM* in the area of occupational and environmental health research and this would probably be useful not only for the editors and publisher of *OEM*, but also for the *Journal's* readership and potential authors.

I thank Ms H Vanhooren for her help in retrieving articles. BN is a member of the editorial board of *OEM*, but this article was reviewed by an anonymous reviewer, who provided useful suggestions to improve it.

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