

Authorship of Scientific Articles

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Biomedical research provides undoubted benefits for society, for the researchers themselves, and for the institutions where they are working. Research is both gratifying and stimulating, but it is certainly not free from difficulty. Medical investigators have to understand their field in depth and be completely up-to-date on the latest advances. In addition, they must also be able to design the studies efficiently and obtain the necessary finance to carry them out. Finally, they have to describe their results clearly and attractively so as to convince editors and reviewers that they deserve to be published. Then it only remains for them to wait while their efforts are appreciated by readers and cited in subsequent publications.

One of the many stages in this process is deciding who should appear in the list of contributors to the article and in what order. This might seem a minor task in comparison with others in the whole research-publication process, but it is often the cause of debates and a constant source of problems. As a comment in the journal *Nature* put it, "there is at least 1 thing scientists envy in artists: the latter have the rare privilege of being the sole parties responsible for their creations. As a result, they avoid the bitterness that may arise in scientific collaborations. And nothing causes more divisions than the authorship list."¹

Since the authorship of a scientific article may have repercussions on the professional prestige and promotion prospects of the researchers, there can be no surprise that it might be a source of conflicts. But, precisely because of these repercussions, the list of authors must be drafted in order to reflect truly the effective contribution by each to the study being published. As John Casler, the Director of the Ethics Committee of the American Academy of Otolaryngology, Head and Neck Surgery, wrote, presentations at congresses and scientific publications have a notable influence on our perception of professional qualities (they help to identify "who is a good physician"). As a result, the process of publication, including the list of authors, must take place in accordance with ethically acceptable criteria.²

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WHO IS THE AUTHOR?

A quick answer might be that the author is the person who has produced the work. Given the complexity of modern medicine, however, there is rarely a single author; more often than not there are several individuals involved, frequently from different departments or even from different institutions. And the kinds of contribution may also vary greatly. Let us take, by way of example, a study comparing the outcomes with 2 chemotherapy and surgery strategies for the treatment of laryngeal carcinoma. It might have involved clinicians who have diagnosed and treated the patients; perhaps others who supervised the administration of their chemotherapy; radiologists and pathologists who will have contributed to the diagnosis and staging of the tumour; other professionals may have conducted the statistical analysis; someone will have drafted the first version of the paper and several others will have revised and amended it afterwards. In addition, others may have made an indirect contribution. For example, the success of the management activities by the respective heads of the otorhinolaryngology, radiodiagnostics, oncology, and pathology departments will have contributed to the high level of technical quality and flexible operation absolutely essential for the success of the trial. In this way, many questions are raised when it comes to who should appear in the list of authors.

In practice, answering this question is no easy task. Yet some recommendations by international groups may help in the process. Thus, the International Committee of Medical Journal Editors (ICMJE) has pointed out that the list of authors must include those individuals who meet the following 3 requirements: *a*) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of results; *b*) drafting the article or revising it critically for important intellectual content; and *c*) final approval of the version to be published. Authors must meet conditions *a*, *b*, and *c*. Therefore, authorship will not be granted to those, for instance, who contributed to patient care but have not participated in the collection of data and the subsequent preparation of the article. Nor can it be given to those who have merely contributed to manage the general operation of the departments and units or have provided assistance with the statistical analysis. Those individuals who have made significant contributions but do not comply with the authorship criteria indicated above may (and should) be mentioned in an acknowledgements section.

These criteria have also been accepted recently by the Group of Publishers of Surgical Journals.³ Furthermore, *Acta Otorrinolaringológica Española* has subscribed them, as explicitly stated on the information page for intending authors. The latest recommendations of the ICMJE can be consulted freely at the following internet site: www.icmje.org.

ORDER OF THE AUTHORS

The ICMJE does not make any specific recommendations in this regard and points out that the order will be determined by agreement among the authors. Nonetheless, there is a tendency to refer in first place to the author who has made the greatest direct contribution to the study and has prepared the initial draft of the manuscript; next come the other co-authors, depending on the importance of their participation. The last place on the list is usually reserved for the most senior principal investigator in the trial. This is often the person with the greatest responsibility, the one who has frequently ensured the provision of financial assistance for the trial and the one who has made the greatest intellectual contribution. This criterion may, however, change on occasion. For example, there will be cases, especially in small research groups, where a single individual is both the senior investigator and, at the same time, the person who did the lion's share of the work. Another instrument for indicating the importance of someone's contribution is the designation of the author to whom correspondence should be addressed. This is usually the senior author or another person whose contribution has been particularly significant and he or she assumes full responsibility for the contents of the study.

FALSE AUTHORS AND GHOST AUTHORS

Many articles and comments have been published on the flaws seen in the recognition of authorship.^{4,5} Some of the most common types are as follows:

- Honorary or courtesy authorship. This occurs in various forms. Sometimes a renowned figure who has made no relevant contribution is included on the list of authors with a view to facilitating the acceptance of the paper by the journal. At other times, he or she is simply included as an expression of acknowledgement or admiration for their career, especially if it so happens that, in a previous period, this person has provided assistance to the true author of the current study
- Forced authorship. In this case, the true author is forced to include other professionals on the list. This may sometimes be a requirement imposed by section leaders with a mistaken interpretation of their rights, or by professionals would otherwise prevent access to part of the material included in the study (images, etc)
- Reciprocal authorship. Some groups apply a principle of "you scratch my back, I'll scratch yours," in such a way that all of them are listed on all the publications,

regardless of who is the real author, thus facilitating the artificial inflation of each one's curriculum

- Ghost authorship. Unlike the previous cases, the list of authors occasionally excludes, with his or her acquiescence, someone who has made an important contribution to the study. It has been noted that this practice is particularly frequent in trials sponsored by industry, where the participation of people linked to the company is omitted from the list of authors with a view to giving the study more credibility⁶
- Unrecognized authorship. This is another defect by omission, consisting in the exclusion of a professional who had made a considerable contribution to the trial, but without his or her consent. By way of example, reference should be made to the papers based on the data collected and analyzed by physicians in residence who then leave the department and are not acknowledged in subsequent publications; or the publication of cases including noteworthy clinical or pathological peculiarities without acknowledging the contributions of either or both types of specialists

IS THERE A SOLUTION?

Journal editors have tried to help alleviate the problems connected with lists of authors. Hence, as indicated above, the rules of the ICMJE on authorship criteria and the recommendation for other collaborations that do not meet these criteria to be included by means of acknowledgements. On the other hand, some journals have begun to include with each article a brief summary of the type of contribution each author has made, specifying whether they have taken part in the design, data analysis, etc.

Suggestions have also been mooted regarding procedures intended to limit courtesy authorships. The general idea is to deter the undue inclusion of persons on the list of authors by diminishing the merits of each individual. In this sense, Kapoor has hinted at the possibility of calculating an "author contribution factor" by dividing the merits (measured in terms of the impact factor or any other parameter) by the number of authors. Others have also proposed taking into account the position of each author on the list.⁴ However, these indices have not been generally accepted.

There is certainly no easy solution to these dilemmas,⁷ particularly in hospital settings where medical research and the preparation of scientific publications are intertwined, in practice, with other teaching and patient care activities that all mutually influence each other in such a way that the conflicts originating in one area may have negative repercussions in another. When judiciously drawing up the list of authors, all clinical trial investigators must try to resolve any problems that may arise, respecting ethical criteria, avoiding any false authorships such as those mentioned above and at the same time striving not to compromise other activities, and collaborations in future research. One way to avoid these problems would be to discuss the various aspects, including those regarding

authorship, openly with all parties involved, at the start of the study. Once the data collection phase is completed, it may again be useful to reflect on the importance of the contributions in order to answer the question of whether it would have been possible to carry out the study without the participation of a certain individual. If the answer is no, then that person should be offered the opportunity to participate in the preparation and revision of the manuscript and, if they accept, appear on the list of authors. It goes without saying that the contribution referred to in this section must have its own intellectual content and not be limited to merely technical aspects. To paraphrase G. Smith, we can all agree that, although many people will have contributed to the study indirectly, it is not logical for the list of authors to include the person who held the door open

so that the patient could be wheeled into the operating room.

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