

## Editorial

## Abstracts, Articles, Citations



## Comunicaciones, artículos, referencias bibliográficas

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The preliminary results of scientific work are often presented at scientific meetings in abstract form. The final work is then published in scientific journals. Eventually, the work will then be referred to, or cited, by other manuscripts. In the article published in *Revista Española de Cardiología*, Alonso-Arroyo et al.<sup>1</sup> reported on the publication and citation rates of abstracts presented at the annual meeting of the Spanish Society of Cardiology.

The authors performed a thoughtful and careful analysis of 300 randomly selected abstracts, presented at the annual meetings of the Spanish Society of Cardiology in 2002, 2005, and 2008. At these 3 annual meetings, 2146 abstracts were presented, of which 909 abstracts were selected for oral presentation. Of these 909 abstracts, 300 (33%) were randomly selected for the analysis. Particular care was taken that the various major topics in clinical cardiology (ischemic heart disease, heart failure, intervention, arrhythmias and pacing, prevention and risk factors, imaging, and congenital heart disease) were equally distributed among the abstracts. Alonso-Arroyo et al.<sup>1</sup> demonstrated that, of the 300 selected abstracts, 147 scientific articles were published, relating to 115 abstracts (38.3%). This number represents a very good publication rate, but it would have been interesting to have information on the abstracts that were presented in poster form, or even rejected for publication.

These types of analyses have been performed in other specialties in medicine,<sup>2,3</sup> but in cardiology, this sort of information is scarce. Recently, Winnik et al.<sup>4</sup> performed a similar analysis relating the abstracts presented at the European Society of Cardiology (ESC) meeting with subsequent publication rates.<sup>4</sup> The authors evaluated the 10 020 abstracts submitted to the ESC in 2006. These abstracts came from 63 different countries; 90% of the abstracts concerned clinical studies and 10% were dedicated to basic science. Importantly, almost 20% of the abstracts were submitted from academic (university) institutions. Of the submitted abstracts, 38% were accepted for presentation at the ESC 2006 congress, with 18.4% being accepted for oral presentation. The authors demonstrated that 3 issues were related to acceptance for presentation: the study design (prospective, nonrandomized trial or randomized-controlled trial), the topic being related to basic science, and whether the study included 100 patients or more. However, these variables were not related to oral or poster

presentation. Winnik et al.<sup>4</sup> subsequently assessed how many abstracts were published over 4 years after the ESC 2006 congress. Interestingly, 38% of the abstracts accepted at the ESC 2006 congress (either for oral or poster presentation) were published,<sup>4</sup> a similar percentage to that observed in the Spanish Society of Cardiology congress, although this only concerned the oral abstract presentations.<sup>1</sup> In addition, the authors indicated that 24% of the studies rejected for presentation at the ESC congress were also published. Winnik et al.<sup>4</sup> also evaluated which factors were related to publication. Their univariable analysis demonstrated that different factors were related to publication: affiliation to a university, the topic being basic science, and the study design (prospective nonrandomized).

Alonso-Arroyo et al.<sup>1</sup> provided additional information on the abstracts that were published, namely that 74% were published with 2 years of presentation. Moreover, the articles were published in 57 different journals, including 48 different international journals. Among these international journals were journals with high impact factors, such as *The Lancet*, *FEBS letters*, *Circulation*, the *Journal of American College of Cardiology*, and the *European Heart Journal*, as well as subspecialty journals such as the *Journal of Cardiovascular Electrophysiology* and *Heart Rhythm*. Finally, a substantial number of articles were also published in the national Spanish cardiology journal, *Revista Española de Cardiología*.

Another important aspect of articles that are published concerns their citation rate, as an indicator of how important the research is for the specific field. Alonso-Arroyo et al.<sup>1</sup> demonstrated that the total number of citations was 1872, indicating a citation rate of 12.73 per article, which increased to 14.4 when only journals indexed in the Web of Science were included. In the evaluation by Winnik et al.,<sup>4</sup> the citation rate was addressed slightly differently. The authors reported that 21% of the studies that had been accepted for the 2006 ESC congress as presentations (oral or poster) and were published were cited 10 times or more in 2 years after the publication. Of note, there was no difference in citations between the abstracts presented as posters or orally. There was, however, a large difference with the abstracts that were rejected but published: only 7% were cited 10 times or more in the 2 years after publication. The most important predictor for high citation was the study design: randomized controlled trials and prospective nonrandomized studies. The relationship between the acceptance rate and the citation rate indicates the performance of the abstract evaluation process, but also underscores that abstracts on randomized

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controlled trials have a high chance of acceptance and have a high likelihood of citation.

The results of the articles by Alonso-Arroyo et al.<sup>1</sup> and Winnik et al.<sup>4</sup> demonstrate the high scientific level of the abstracts submitted to the annual meetings of the Spanish Society of Cardiology and ESC, with 38% of the accepted (oral and/or poster presentation) abstracts being subsequently published. These analyses concerned only 3 annual meetings of the Spanish Society of Cardiology and 1 annual ESC meeting, but most likely they are representative of other annual meetings of these 2 societies.

Importantly, several of these articles were published in high impact factor journals, as assessed in the analysis by Alonso-Arroyo et al.<sup>1</sup> Furthermore, both Alonso-Arroyo et al.<sup>1</sup> and Winnik et al.<sup>4</sup> showed the high citation rate of the published articles. These parameters (the impact factor of journals and the citation rate of articles) are well accepted measures of the scientific quality of articles and further underscore the value of the published articles coming from the Spanish Society of Cardiology and the ESC. Also, the topic of the works is important, as became clear from the rigorous analysis by Winnik et al.<sup>4</sup> indicating that both basic science and clinical science (randomized controlled trials or prospective nonrandomized trials) were important predictors of publication and citation. Lastly, both analyses indicate that the peer review of abstracts is of high value, since

this system resulted in the identification and presentation of abstracts that were thereafter published with high citation rates (according to both the Spanish Society of Cardiology and the ESC analyses); conversely, 24% of the articles that were not selected for presentation still resulted in publication, but did not have high citation rates (7%), according to the ESC analysis.

## CONFLICTS OF INTEREST

None declared.

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