

# Research, publication, and desirable impact. How not to die trying?

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The main objective of health research is considered to be to contribute to improving people's well-being and living conditions, but what we see in reality is that the performance of researchers is usually measured by the scientific quality of their research, rather than by its impact on health. This is markedly insufficient; so, for some time now, we have been trying to conceive a way to measure the social impact of applied health research<sup>(1)</sup>.

Ideally, all research conducted should be of high quality and have a considerable social impact on improving health; however, it is a fact that scientific quality and social impact do not always go hand in hand. Scientific publication is going through this process that shall go from research to the usefulness of evidence.

Since its launching in 1918, *Anales de la Facultad de Medicina*, as well as other medical journals in other latitudes, have prioritized the dissemination of research, reviews, and comments on the state of the art, related to medicine and health. In our case, on issues inherent to the country's health problems. It is likely that, in those auroral times, medical journals were read almost in their entirety and that knowledge probably had some practical application. At present, even access to all publications and even more their full reading would be impossible, considering that in recent decades there has been an explosion of scientific publications. According to the Scimago Journal Ranking—which evaluates research institutions through indicators such as publications (Scopus), innovation (PATSTAT), and visibility on the web (Google)—for the period 1996-2017, 48,969,648 scientific publications have been produced in the world in the area of medicine, of which 3,704,587 (5.6%) were created in the US, the country with the largest con-

tribution in publications worldwide; while Brazil contributed 260,680 (0.53%) publications, being the first in South America. In the case of Peru, its contribution was 8,449 (0.01%) publications, ranking 64th in the world and 13th in Latin America<sup>(2)</sup>.

Throughout history, there have been three processes that granted an international character to the scientific activity. The first was the circulation of people, texts and objects; the second, the mode of production of knowledge and, finally, the funding of research. But the publishing system was the most efficient means of universalizing a legitimate style of production, as journals became the rotation axis of the global academic system, so bibliometric indicators served as the main source for international comparisons<sup>(3)</sup>. These measurements also support the rankings of a reduced group of entities that develop research of their main journals and often oligopolistic editorials, turning scientific work developed in spaces far from the dominant circuit increasingly peripheral. For this reason, Beigel points out the need to create new tools for measuring the scientific production of the periphery, which contemplate the interactions of their universities and research centers in their different directions, contexts, and realities<sup>(4)</sup>.

Although there is criticism to its validity and the biases it presents, the impact factor (IF) is a broad-coverage measurement based on public information, which allows for comparisons that are useful for decision-making in the field of scientific activity. Publication and desirable impacts are also in force, as suggested by Birnbaum "If we cannot measure what is valuable, then we will end up valuing nothing more than what is measurable"<sup>(5)</sup>. On the other hand, measurement alternatives such as Altmetrics and the measurement of the impact on social

networks have emerged to identify the qualitative evidence of the real or potential social impact of research shared on social media, specifically on Twitter and Facebook<sup>(6)</sup>; however, these data are very transitory, do not have clear interpretations, and a generally-accepted theoretical framework is required.

The emergence of the internet and digital technologies in general, as well as their widespread use, allows greater access to scientific publications; but other concerns are also generated, such as real access to indexed journals, the reproducibility of published research, the identification of current trends and whether there really is an impact on technological innovation that contributes to solving social issues. In this context, we can mention that open science and reproducibility of research have started to emerge as objectives of the research communities, in political circles, and also in funding entities. With respect to the latter, we must highlight a publication of *Nature* presenting a survey that included 1,576 researchers which states that more than 70% of researchers have tried and failed to reproduce the experiments of another scientist, and more than half have not been able to reproduce their own experiments<sup>(7)</sup>. Regarding open science, it is pertinent to comment on the Open Data agreement, which establishes the principles for maximizing the benefit of a large amount of digital data in shaping the future of science<sup>(8)</sup>.

Finally, we must mention that the growth of scientific research over the last few decades has far exceeded the availability of public resources to fund

it, generating a problem for government agencies that promote research and for politicians, who have to figure out how limited resources can be distributed more efficiently and effectively among researchers and research projects. This challenge leads to the need to assess the quality of scientific research itself and how to determine its social impact. However, it has been much more difficult to develop reliable and meaningful measures to assess the social impact of research (9). It is evident that there is no direct link between the scientific quality of a research project and its social value and as Nightingale points out “research that is highly cited or published in major journals may be good for academic discipline but not for society”<sup>(10)</sup>.

There is still no definition of the social impact of research. There are different concepts of how to measure the social, cultural, environmental, and economic benefits of publicly-funded research, be it products or ideas. Therefore, it is recommended that social impact should be measured in a quantifiable manner, and expert panels should review narrative evidence in case studies supported by appropriate indicators. While this method is an almost artisanal rather than quantitative activity, it seems to be the best way to measure the complex phenomenon of social impact<sup>(9)</sup>.

As we noted, social impact is much more difficult to measure than scientific impact, and there are probably no indicators that can be used in all disciplines and institutions for their collection into databases. It may also take many years

for that impact to become evident. The construction and validation of these indicators must result from an interaction between researchers, evaluators, decision-makers, and potential beneficiaries. As stated at the beginning of this editorial, if the main objective of health research is to contribute to the improvement of the people’s well-being and living conditions, the quality of scientific research and its social impact, besides being a challenge, must be a moral duty for all of us whose desire is to achieve said objectives and not die trying.

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