Exploring the impact of scientific research through citation analysis tools in policies and guidelines

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Abstract

Research impact has traditionally been measured through academic citations. In recent years, however, the focus has shifted towards assessing the broader effects of research on society, including its influence on policy-making and clinical guidelines. This brief article explores the role of citation analysis, extending impact measurement beyond academia. Using data from Scival Impact Module, we demonstrate how scientific publications from our institution have influenced policy documents and guidelines. We argue that these tools are essential in recognizing the real-world value of research, providing meaningful indicators for evaluation and accountability.

Key words: *research impact; citation analysis; policy documents; guidelines; altmetrics; bibliometrics.*

Introduction

Traditionally, the assessment of research impact has focused on citations in academic literature (Impact Factor and H-index). In recent years, however, a significant evolution has taken place: measuring the research impact now includes also considering its real-world effects, particularly on health policies and the development of clinical guidelines It is no longer just about citations in academic journals – now, we're asking: Is this research actually making a difference in the real world? Are policies changing? Are clinical guidelines being updated? That's where some tools help us trace the path from research to real-world outcomes.

Tools for measuring impact

Several tools have been developed to go "beyond" classical bibliometric analysis. Among them:

- BMJ Impact Analytics;
- Scival Impact Module;
- Overton.io;
- Altmetric.com.

These tools make it possible to track the presence and relevance of scientific publications not only in academic articles but also in policy documents, government reports, international guidelines and grey literature database.

Methods

At Fondazione IRCCS Policlinico San Matteo, we analyzed data provided by the Scival Impact Module with the aim of understanding what type of impact the publications produced by our researchers generate outside the strictly academic sphere. The Impact module provides data, indicators, and analyses to deepen local understanding and to build clear, effective narratives about the broader impact of research activities. The module sources its policy data from Overton – a searchable index encompassing policy documents from more than 150 countries. Among the included institutions are the FAO, the EU Publications Office, the WHO and NICE. The Impact module reports how often publications are cited within these policy docu-

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ments. We've been using this tool to get a clearer picture of how our studies influence policy and practice. This tool connects scientific papers with policy documents, guidelines, and reports. Therefore, instead of just counting citations in journals, we're tracking how research is being used to shape real-world decisions. Please note that these citations are not tracked by citation databases like Scopus or Web of Science, and they are not included in the h-index of the researchers. The results have been incredibly encouraging.

Results

The analysis showed that several publications were cited not only in scientific literature, but also in policy documents and guidelines, confirming the real-world relevance of the research produced. So far, more than 600 of our articles have been cited in policy documents and guidelines across 44 different countries and by over 100 organizations. In *Figure 1*, we can see the types of policy bodies and how many of our articles each has cited. Percentage of academic output cited in policy documents, offering a size-neutral indicator of impact. They can be considered "time-independent metrics, which provide useful, reliable information immediately upon publication and do not rely on the passing of time for useful data to accumulate.

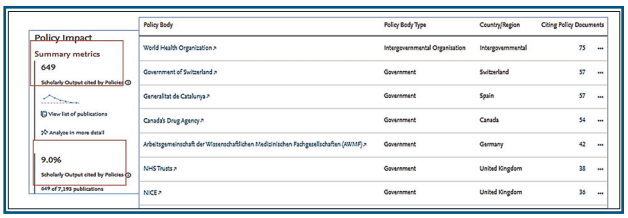

Fig. 1. *Total amount of scholarly output cited by body*

Articles cited in policy documents show a much higher Field-Weighted Citation Impact (FWCI) than our overall scholarly output. FWCI shows how often a publication is cited compared to the world average for similar publications. In fact, the FWCI for all our scholarly output is 2.08 while is 7.23 for our scholarly output cited by policies. More than 1 means that the output is more cited than expected according to the global average.

The main areas of impact? SciVal's subject areas are organized using the All Science Journal Classification (ASJC) system, which provides a hierarchical classification of 27 broad subject areas and over 300 categories used within Scopus. As San Matteo we covered many areas: from general Medicine to surgery.

This kind of impact – societal impact that's this close to the patient – has never been tracked so clearly before. It represents a real breakthrough in how we understand the value of our research. And it is not just about recognition. Having this kind of data helps us support our researchers, guide our institutional strategy, and demonstrate our value to funders and stakeholders. It gives us a much more complete – and meaningful – picture of what scientific impact looks like today (*Figure 2*).

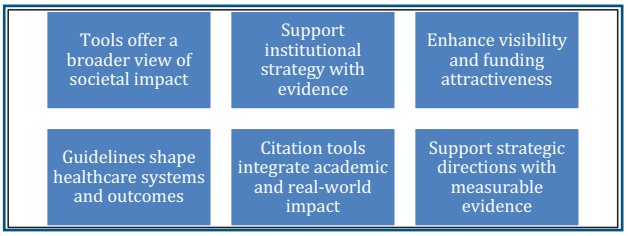

Fig. 2. *Societal and academic impact.*

Discussion

These findings highlight the importance of adopting a multidimensional approach to research evaluation. Beyond academic citations, policy and guideline mentions reflect the practical contribution of research to healthcare systems and society at large. Institutions can use this information to enhance research visibility, demonstrate accountability to funders, and strengthen applications for competitive grants.

Conclusions

The use of citation analysis tools in policies and guidelines represents a revolution in the way of evaluating the impact of scientific research, integrating traditional metrics and proposing a more holistic view of the influence of scientific discoveries on society. Such tools offer research institutions the opportunity to obtain a more accurate and transparent view of their contribution to society. The application of these tools can be essential for research institutions to demonstrate the value of their scientific output to various stakeholders, improving their positioning in quality assessments and their attractiveness for both public and private funding.

The adoption of citation analysis tools in policies and guidelines represents a crucial step in recognizing the "real" value of scientific research. It is no longer just a matter of measuring academic influence, but of highlighting how research results help shape political, healthcare, and clinical decisions, with direct effects on society.

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