Bibliometric Report

THE WEIGHT OF THE SCIENTIFIC ACTIVITY OF RESEARCHERS IN DENTISTRY: A BIBLIOMETRIC IMPACT UPDATE OF THE ITALIAN ACADEMY

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ABSTRACT

The aim of the present investigation was to conduct a transversal scientometric analysis of Italian academics in the field of dentistry. The Scopus database was searched with no limitations regarding the timespan and classified according to the current list of Italian researchers, associates, and full professors. The bibliometric indicators and documents count has been used for the comparative evaluation The cumulative articles count was 88.88±43.79 while the citations were 1912.66±1471.42. The cumulative h index was 20.88±9.54. A difference was present considering separately the study groups. The present bibliometric analysis reported a considerable impact on the scientific activity of the different academic classes. Novel dynamic indicators and correction indexes are necessary to equalize the bibliometric approach in dental research.

KEYWORDS: *bibliometric analysis, dentistry, oral health, teeth, bone Italian academics*

INTRODUCTION

Dentistry is a medical field characterized by a growing impact in research medicine and science (1). In fact, oral health is strictly correlated to function and aesthetics with strong relationships with the support of the human quality of life (2, 3). These needs generated a continuous activity to identify and investigate novel therapies, biomaterials and clinical protocols to maintain the health of the mouth's hard and soft components, including the teeth and the supporting bone basis (4-6).

It is evident that the knowledge in this field, due to a multidisciplinary activity in translational research needs a constant activity of updating and validation. In this way, the universities and the public/private academies play a key role for the knowledge promotion and research in medicine, defining the technological advance in clinical protocols and in pharmacological and medical device advances (7-9). The medicine is commonly considered a bibliometric field where the scientific knowledge is generally divulgated in different peer-reviewed forms including original articles, clinical studies including trials, reports/series, editorials, literature reviews, editorials (10). Other non-peer reviewed publications include books/ book chapters, letters and short communications (10, 11). Bibliometrics is a scientometric field that consider indicators to evaluate the impact of the scientific activity in several field of science and medicine (12).

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The scientometry consider quantity indicators to investigate the productivity, quality indicators to measure the performance and structural indicator to identify the connections involving different publications, researchers, academies and research fields (13, 14).

The number of scientific publications and citations/h index count represent respectively the most common quantity and quality indicators used for bibliometric measurement purposes (15). In addition, also different parameters have been introduced to classify the journal impact factor and the reference field quartiles (15). In this way, the scientific production characterization is useful to define the recent trends and orientation in medicine research. The aim of the present investigation was to study the updated scientific production of the Italian researchers in dentistry and oral medicine.

MATERIAL AND METHODS

Population sample

The bibliometric assessment has been conducted considering the list of Italian researchers, full and associate professors at the Italian Universities taken from the freely available national database CINECA (https://www.cineca.it). The data have been assessed by a special designed electronic form with the Excel software package (Microsoft Corporation, Redmond, Washington, USA). The data have been classified considering the different researchers, associate professors, and full professors of the odontostomatology diseases (MED/28) institutional category.

Data analysis

The data were updated to 29 October 2023, using the Scopus Elsevier (https://www.scopus.com). The data collection was performed by two expert examiners and classified considering number of documents, citations count and h-index.

Statistical assessment

The descriptive statistics considered the means and standard deviation of the total document citations and h-index for all researcher categories considered. The study data were elaborated through GraphPad 8.0 software package (Prism, San Diego CA. USA).

RESULTS

Population sample

The study data showed a total of 441 academics classified as 145 researchers, 200 associate professors, 94 full professors. A total of 39278 publications were considered for further statistical analysis (Table I). The cumulative documents and citations means were respectively 88.88±43.79 and 1912.66±1471.42. The academics h index mean was 20.88 ±9.54.

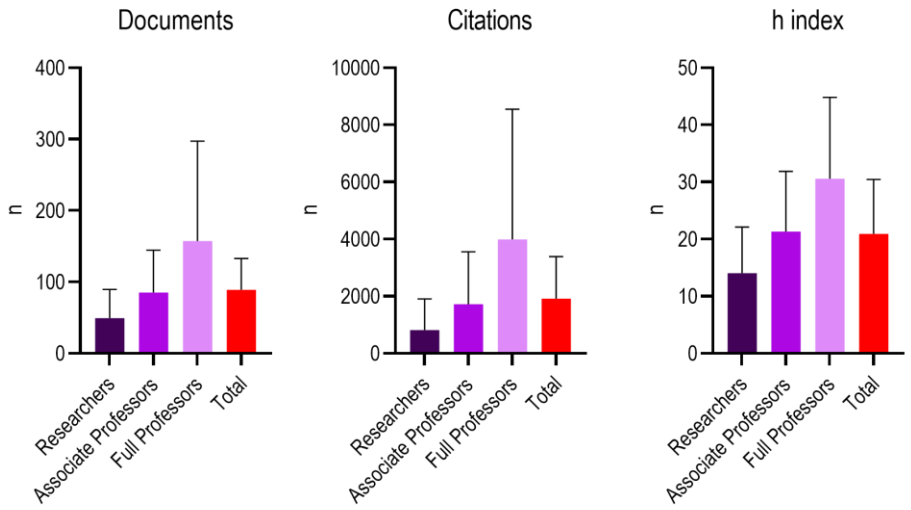

Fig. 1. *Charts of the documents, citations and h index means of the three groups of Italian academics.*

Researchers

Researchers group showed a total of 7153 articles. The cumulative documents and citations mean were respectively 49.33±40.04 and 814.68±1093.33. The researchers h index mean was 14.02 ±8.09 (Fig.1, Table I).

Table I. *Summary of the documents, citations and h index means of the three groups of Italian academics.*

Associate professors

	Researchers		**Associate Professors**		**Full Professors**		**Total**	
	Mean	dv	Mean	dv	Mean	dv	Mean	dv
Documents	49.33	40.04	85.28	59.21	157.08	140.25	88.88	43.79
Citations	814.68	1093.33	1719.96	1832.81	3989.72	4552.11	1912.66	1471.42
h index	14.02	8.09	21.33	10.54	30.55	14.28	20.88	9.54

Associate professors group showed a total of 17359 articles. The cumulative documents and citations means were respectively 85.28±59.21 and 1719.96±1832.81. The associate professors h index means was 21.33 ±10.54 (Fig.1, Table I).

Full professors

Full professors group reported a total of 14766 articles. The cumulative documents and citations mean were respectively 157.08±140.25 and 3989.72±4552.11. Full professors h index mean was 30.55 ±14.28 (Fig.1, Table I).

DISCUSSION

The main findings of the present investigation were a wide intra-classes heterogeneity regarding the bibliometric indexes considered in the present investigation. The total documents spread was limited comparing the researchers and the associate professors.

The full professors class reported the higher quantity of documents despite the reduced population sample size compared to the researchers and associate professors' categories. These evidence were likewise remarkable considering citations and h index parameters. Considering a previous study, an increase of 5.66% the academics has been reported (7).

The comparative evaluation of the h index parameters reported a consistent increase of the total documents, citations and h index that seems to reflect an intense transversal activity of the scientific production of the categories included in the present investigation. On the other hand, the present investigation did not distinguish the contributions of the researchers affiliated in public and private universities, that could be an interesting point of view for further investigation.

The h-index and citation amounts are common indicators of quality that could be sensibly affected by a systematic bias (7, 16, 17). In fact, no correction indicators regarding the academic age has been applicated, while younger researchers could be significantly disadvantaged by this approach (7, 16, 17). In addition, the MED/28 academic scientific category groups a wide range of dental specializations including oral surgery, orthodontics, prosthodontics, restorative dentistry, paedodontics.

Theoretically, the presence of different sub-categories could potentially affect the quality and quantity of bibiometric indicators that could be separately approached (18). In this way, the introduction of more dynamic approaches and indicators is necessary to investigate equally the different classes. Another limit of the investigation was the continuity of publication, which was not an object of the present study.

The recent increase in open-access indexed journals represents a notable turning point for the research activity and the continuous education of clinicians (19, 20). The free access to a wider range of scientific products is able to elevate exponentially the knowledge in all medical fields. Still, the current bibliometric system is not able to detect the impact of the science system and its clinical relevance in the medicine and dentistry community. At the same time, the common indicators, including citations and h index, remain the reference for all basic science fields (19).

CONCLUSIONS

Within the limits of the present exploratory investigation, the present bibliometric report revealed the transversal trends and the scientific impact of the activity of Italian researchers in dentistry. A consistent increase of the quality and quantity indicators has been detected for all academic groups considered.

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