Evaluation of Founding Members of the International Academy of Health Sciences Informatics (IAHSI) Based on Google Scholar and Scopus Parameters

Izet Masic

Academy of Medical Sciences of Bosnia and Herzegovina. Sarajevo, Sarajevo, Bosnia and Herzegovina

Corresponding author: prof Izet Masic, MD, PhD, FACMI, FEFMI, MIAHSI. Sarajevo, Asima Ferhatovica 17. Bosnia and Herzegovina. ORCID ID: <http://www.orcid.org/0000-00002-9080-5456>. Email: izetmasic@gmail.com

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ABSTRACT

Introduction: The International Academy of Health Sciences Informatics (IAHSI) is established by International Medical Informatics Association (IMIA) which is the world body for health and biomedical informatics. The Academy will serve as an honor society that recognizes expertise in biomedical and health informatics internationally. Academy membership will be one of the highest honors in the international field of biomedical and health informatics. **Aim:** To present scientometric analysis of founding members of the International Academy of Health Sciences Informatics, to evaluate members and their scientific rating. **Material and methods:** The work has an analytical character and presents analysis of the data obtained from the Google Scholar and Scopus database. Results are shown through number of cases, percentage and graphically. **Results:** The analysis showed a significant correlation between the Academy and the country (continent) of origin of the academician. In IAHSI are mainly represented academics originating from Europe - 40 members (33,3%), North America - 39 members (32,5%), Asia - 20 members (16,6%), South America - 9 members (7,5%), Australia - 7 members (5,8%), while only 5 members or 4,16% come from Africa. **Conclusion:** Criteria for number of representatives of each continent to main academic communities are relatively questionable, as this analysis showed. Development of Health Sciences Informatics should be the main purpose, and it should be evenly distributed with slight deviations in number of representatives of each continent.

Keywords: scientometric analysis, evaluation, Scopus, Google Scholar, IAHSI.

1. INTRODUCTION

International Medical Informatics Association (IMIA) is most influential Medical informatics scientific and professional association in the world established in 1967 (1). In the year of its 50 anniversary IMIA established International Academy of Health Sciences Informatics (IAHSI). IMIA believes that the creation IAHSI is possibility of establish a highly selected group of international peers in this field will stimulate and direct research, educate the broader community, promote the field, mobilize governmental and non-profit support, and train the next generation of experts. The IAHSI is intended to recognize excellent individual leaders, promote the exchange of methodologies, develop and foster new ideas, and encourage cross-border collaboration and sharing of resources.

In order to form the new organization, Election Committee were asked all nominees - approximately 200 sci-

entists, experts of Medical informatics from the world (representing all the IMIA regions) to vote for as many as 120 founding members (1). The new Academy will function as an elected body of members incorporated within IMIA. It will have its own rules and regulations that guide the organization, its activities, and its relationship with the parent organization. The founding members will create the rules and regulations and will establish both the processes for electing new members in future years and the activities that will define the Academy and its role in the informatics community.

Founding members of IAHSI were nominated for membership through a process that was directed by the IMIA Board and a special Task Force that was created in order to found the IAHSI. Voting for members had instructions to consider the following eligibility criteria to be eligible for election, a nominee: a) should have a rec-

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ognized high level of research, education, and/or leadership in biomedical and health informatics over more than ten years; b) should usually be a member of an Academy of sciences or of a similar organization; c) should be engaged internationally.

International involvement can be demonstrated through international activities, in particular in research, education and/or through international leadership roles in IMIA or in one of the regional international medical informatics organizations of IMIA.

The first 120 IAHSI members were elected mandatory and need to be allocated in accordance with a distribution that reflects the size of the member organizations within IMIA. The ballot for voting did not contain biographical information about the candidates and voting was based on the knowledge of the field and of the individuals who have been strong and influential leaders over the years. It was reason that I wanted to help in the future in process of elections of new members of IAHSI with use of one another criteria - indexes for measuring and assessment of scientific and academic validity and integrity of potential academicians of IAHSI (1).

2. AIM

Aim of the study is to present scientometric analysis of founding members of the International Academy of Health Sciences Informatics, to evaluate members and their scientific rating.

3. MATERIAL AND METHODS

In this study were included 121 Medical informatics and scientists from all continents chosen by voting from 200 founding members proposed by Election Committee chaired by professors Edward Ted Shortliffe (from USA) and Patrice Deugelet (from France). The work has an analytical character and presents analysis of the data obtained from the Google Scholar and Scopus database. Results are shown through number of cases, percentage and graphically.

4. RESULTS

The analysis showed a significant correlation between the Academy and the country (continent) of origin of the academician. In IAHSI are mainly represented academics originating from Europe - 40 members (33,3%), North America - 39 members (32,5%), Asia - 20 members (16,6%), South America - 9 members (7,5%), Australia - 7 members (5,8%), while only 5 members or 4,16% come from Africa (Figure 1).

Number of publications cited in Scopus and Google Scholars (GS) of IAHSI members from different countries are presented on Figures 2-7. Score of H indexes in Scopus and Google Scholar databases of IAHSI members from different countries are presented on Figures 8-13. Finally, number of citations of members of IAHSI from different countries in databases Scopus and Google Scholar are presented on Figures 14-19.

There is no significant correlation between the observed parameters (Scopus parameters - number of publications and Google Scholar parameters - number of publications) in work of mostly members originating from Europe. There is occurrence of members without data. Graphic shows two cases with extremely high difference between numbers of publica-

Figure 1. Distribution of IAHSI members per continents

tions on Scopus and Google Scholar.

Analyse of parameters (Scopus parameters - number of publications and Google Scholar parameters - number of publications) in work of members originating from North America is analogous to the results of members originating from Europe. Graphic shows one case with extremely high difference between numbers of publications on Scopus and Google Scholar. Situation in Asia is completely different from results showed above. Number of members is evidently lower followed by a reduced number of publications. Graphic also shows two cases with deviation in number of publications in these two databases.

South America, Australia and Oceania, and Africa are continents with the least number of representatives followed by decreased number of publications. In each group we have extreme deviations.

There is no significant correlation between the observed parameters (Scopus parameters - H-index and Google Scholar parameters - H-index). There is exception in number of H-index in case of one member from Europe and one from North America. There is occurrence of members without data. In Asia H-index numbers from two databases follow each other with one case of extreme deviation.

5. DISCUSSION

Author of this paper last years were interested by scientometrics and common database indexes which are used in scientific literature for scientific and academic validity and quality assessment of work and achievements of scientists, experts and academics in different fields of science. There are not so many articles published in the world about analyses like this one. We try to start with idea how to choose the best way, methods, methodology, and finally kind of indexes to assess scientific and academic work in the praxis. Academies (national or in some biomedical or other scientific disciplines) are very attractive for this matter because they represent top of people who are leaders in their science or academic work at universities (2).

This analysis showed a significant correlation between the Academy IAHSI as institution and the country (continent) of origin of the academicians. In IAHSI are mainly represented academics originating from Europe - 40 members (33,3%),

Figure 2. Number of publications cited in Scopus and GS database of IAHSI members from Europe

Figure 3. Number of publications cited in Scopus and GS database of IAHSI members from North America

Figure 4. Number of publications cited in Scopus and GS database of IAHSI members from Asia

Figure 5. Number of publications cited in Scopus and GS database of IAHSI members from South America

Figure 6. Number of publications cited in Scopus and GS database of IAHSI members from Australia

Figure 7. Number of publications cited in Scopus and GS database of IAHSI members from Africa

Figure 8. Score of H index in Scopus and GS database of academicians from Europe

Figure 9. Score of H index in Scopus and GS database of academicians from North America

Figure 10. Score of H index in Scopus and GS database of academicians from Asia

Figure 11. Score of H index in Scopus and GS database of academicians from South America

Figure 12. Score of H index in Scopus and GS database of academicians from Australia

Figure 13. Score of H index in Scopus and GS database of academicians from Africa

Figure 14. Number of citations in Scopus and GS database IAHSI members from Europe

Figure 15. Number of citations in Scopus and GS database IAHSI members from Europe

Figure 16. Number of citations in Scopus and GS database IAHSI members from Europe

Figure 17. Number of citations in Scopus and GS database IAHSI members from Europe

Figure 18. Number of citations in Scopus and GS database IAHSI members from Europe

Figure 19. Number of citations in Scopus and GS database IAHSI members from Europe

North America - 39 members (32,5%), Asia - 20 members (16,6%), South America - 9 members (7,5%), Australia - 7 members (5,8%), while only 5 members or 4,16% come from Africa.

Scientific impact measures are increasingly being used for academic promotions, grant evaluations and evaluation of job vacancy of candidates (they are also being used for the evaluations of university departments and research centres).

Based on the cited literature scientometric indicators can be used to analyze and evaluate the work of researchers, institutions, regions and countries.

Scientometric indicators of work of an author, in addition to the number of citations which is a priority in the modern

scientific community, are (2-8):

★ H index - in August 2005, Jorge Hirsch introduced a new indicator for quantifying the research output of scientists. Hirsch's so-called H index was proposed as an alternative to other bibliometric indicators - such as the number of publications, the average number of citations and the sum of all citations - "a scientist has index h if h of his or her N_p papers have at least h citations each and the other (N_p-h) papers have $\leq h$ citations each" (7).

★ i10 index - the number of publications with at least 10 citations (7).

★ g-index - articles ranked in decreasing order of the number of citations that they received, the g-index is the

(unique) largest number such that the top g articles received (together) at least g^2 citations – an academic has a g -index of 30 if the top 30 most cited of his/her papers combined have at least 900 citations (3).

Google Scholar project or platform Google Scholar enabled a comprehensive approach to the list of articles of an author, and allowed access to the number of citations of one article, and based on the information found on Google Scholar creation of many list is enabled, in order to rank authors in a certain field (7-9).

Portal webometrics.info regularly provides lists in which they rank the authors based on the h index (taking into account the authors whose h index is over five) (3, 10).

All analysis are conducted on the basis of the profile on Google Scholar platform, where the profile must be public (the condition that the profile is public is that the profile is verified via mail of the institution of the author).

Google Scholar collects information on internet, and from address that are not most credible, and as such, is accessible to manipulation of content. Emilio Delgado Lopez- Cozar, Nicolas Robinson-Garcia and Daniel Torres-Salinas made an experiment, they created six documents authored by a faked author and uploaded them to a researchers personal website under the University of Granadas domain (3, 10).

However, one should take into account a number of researchers in later years, who are not interested in this kind of self-promotion, and lists that are made without them, are not valid and are not a realistic indicator of the development of a certain field in one state.

Work of the author of this article is also analyzed, and different values are obtained, and the fact is that Scopus is quite selective, but it is still not clear whether it is more valid. One of the major problems is the method of verification of Google Scholar, for whose activation of profile is required mail address of the institution where the author works. Manipulation are often possible when creating the profile, so a lot of inconsistencies in the information can be seen (4, 11, 12).

Although the index is most often used, the e index is an add-on to the analysis of the work of an author (considering the contributions of excess quotations) (10).

Use of mentioned indexes for scientific evaluation of authors evaluation is possible, but all of these indicators are not sufficient to evaluate scientific work. However, in the scientific world, some things can not be evaluated.

6. CONCLUSION

Based on the cited literature scientometric indicators can be used to analyze and evaluate the work of researchers, institutions, regions and countries. Scientometric indicators of work of an author, in addition to the number of citations which is a priority in the modern scientific community, are: Google Scholar H index, g index, $i10$ index and H Scopus index. The problem with using those indexes for scientific or academic validity and integrity of some author arises in the fact that many software work on the basis of information that offers Google Scholar (Publish and Perish), so they also give

the wrong information. Sometimes the same names of the authors, are an additional problem, so we come to the conclusion that the identification number of an author (The Open Researcher and Contributor ID (ORCID) (8), should become a requirement when publishing a paper, because it is the only way to make a distinction between authors, and to conduct analysis of the work of one author in the right way

Criteria for number of representatives of each continent to main academic communities are relatively questionable, as this analysis showed. Development of Health Sciences Informatics should be the main purpose, and it should be evenly distributed with slight deviations in number of representatives of each continent.

The analysis showed a significant correlation between the Academy and the country (continent) of origin of the academician. In IAHSI are mainly represented academics originating from Europe (40 members, 33,3%) and North America (39 members, 32,5%), while only 5 members or 4,16% come from Africa.

In the future, scientometric indicators could be useful, as one of criteria in process of election of new members of IAHSI, beside of other criteria mentioned in IAHSI Statute and other official IMIA documents and also bisketchs of potential candidates.

• Disclosures of Potential Conflict Interest: The author declares that there are no conflict of interest.

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