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Study of Scientific Production of Community Medicines' Department Indexed in ISI Citation Databases

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ABSTRACT

Background. In the scientometric, the main criterion in determining the scientific position and ranking of the scientific centers, particularly the universities, is the rate of scientific production and innovation, and in all participations in the global scientific development. One of the subjects more involved in repeatedly dealt with science and technology and effective on the improvement of health is medical science fields. In this research using scientometric and citation analysis, we studied the rate of scientific productions in the field of community medicine, which is the numbers of articles published and indexed in ISI database from 2000 to 2010. **Methods:** This study is scientometric using the survey and analytical citation. The study samples included all of the articles in the ISI database from 2000 to 2010. For the data collection, the advance method of searching was used at the ISI database. The ISI analyses software and descriptive statistics were used for data analysis. **Results:** Results showed that among the five top universities in producing documents, Tehran University of Medical Sciences with 88 (22.22%) documents are allocated to the first rank of scientific products. M. Askarian with 36 (90/9%) published documents; most of the scientific outputs in Community medicine, in the international arena is the most active author in this field. In collaboration with other writers, Iranian departments of Community Medicine with 27 published articles have the greatest participation with scholars of English authors. In the process of scientific outputs, the results showed that the scientific process was in its lowest in the years 2000 to 2004, and while the department of Community medicine in 2009 allocated most of the production process to itself. Iranian Journal of Public Health and Saudi Medical Journal each of them had 16 articles which had most participation rate in the publishing of community medicine's department. On the type of carrier, community medicine's department by presentation of 340(85.86%) articles had presented most of their scientific productions in the format of article, also in the field of community medicine outputs, article entitled: "Iron loading and erythrophagocytosis increase ferroportin 1 (FPN1) expression in J774 macrophages"(1) with 81 citations ranked first in cited articles. Subject areas of occupational health with 70 articles and subject areas of general medicine with 69 articles ranked the most active research areas in the Production of community medicine's department. **Conclusion:** the obtained data showed the much growth of scientific production. The Tehran University of medical Sciences ranked the first in publishing articles in community medicine's department and with most collaboration with community medicine department of England writers in this field and most writers will present their works in paper format.

Key words: Scientometric, Scientific Production, Community Medicine Department, ISI.

1. INTRODUCTION

As the fact that today is conducted a number of scientific research works in the field of medicine, it is necessary to define the steps by which it is carried out to make it universal and to have scientific value (1, 2). True knowledge is extended through scientific research (3, 4). Scientometrics is part of scientology (the science of science) that analyzes scientific papers and their citation in the scientific journal selected sample (5-8).

Citation provides guidance to scientific work because it encourages scientists to deal with the most current research areas. So actually "terror of scientometrics indicators" organizing scientific work at the global level shapes and directs it (5). Special emphasis is placed on scientometrics as the science that evaluates scientific papers and their citation in the selected sample of journals. The indexed scientific publication in valid information databases like ISI is an im-

portant scale for rating universities (6). Currently, share of the scientific output, citation per paper, and co-authorship for articles indexed in databases such as ISI Web of Science, are very important criteria for the evaluation and ranking of countries, researchers, institutes, articles, disciplines and journals in the world (7). A rapid progress has been made in all branches of science and technology over the past two decades (8).

Nowadays the scientific research outputs indexed in international databases are used in the bibliometric rankings of researchers, departments and universities. Measuring the impact and value of scientific publications is used by policy makers to distribute the research funds in a way that support high quality research projects (9). Scientometry is one of the common methods for the assessment of scientific activity of researchers and research organizations, usually using databases (10). Scintometric indicators such as number of papers, number of citations and citation per paper have become increasingly important as instruments for analyzing scientific activities and their relationship with economic and community development. They can appraise the performance and improvement of national science and technology (11). One of the frequently used measures of research performance of a country or a university is counting the related scientific production. Development is one of the most frequently discussed issues of the third millennium. Due to the major role of research in sustainable development of countries all around the world, research policies must be designed according to the valid and updated information about the past and present status of research performance and scientific output. Research performance can be evaluated in a region, a country or a university by means of scientometric tools and techniques (12).

Quality of health services strongly depends on production, publication, dissemination and application of updated biomedical knowledge in order to prevent and treat diseases and improve health services. James Grant, the former executive director of UNICEF, remarked: "The most urgent task before us is to get medical and health knowledge to those most in need of that knowledge. Of the approximately 50 million people who were dying each year in the late 1980s, two thirds could have been saved through the application of that knowledge (13).

The primary variables of any scientometric investigation are authors, publications, references and citations. Scientometrics attempts to uncover specific characteristics of science and scientific research by studying the above mentioned variables separately, or by building appropriate indicator(s) based on several variables (14).

The validity of an article is determined based on citation and citing to it make more understanding of particular issue (15). When assessing a research article, one of the most important concerns is its validity. To properly evaluate the information provided, the reader must be able to determine if it is accurate and relevant to the topic at hand. Determining the validity of an article can help the reader better choose how to use the article and how much advantage to give the information. Publication and indexing of an article in an indexed journal shows the quality of the research. Quality of an article is attributed to the citation and being indexed in ISI (14).

In this research, we studied different dimensions of scientific products of community medicine department during 2000-2010 in ISI database, because, the knowledge of the scientific information generated by researchers, and helps to understand the problems of estimating talents, abilities, and shortcomings. This, in turn also helps to protect universities from managers and planners in decision making of research. This paper illustrates some studies results obtained in the community medicine department at the international level, could lead to the scientific identification in this area.

Noori, Norouzi and Mirzaee, in their study entitle: "Science production of IUMS researchers as appeared in the web of science from 1976 to 2006" concluded that most of the published articles belonged to the articles were original on the peripheral vascular diseases (16) .

Shahbodaghi et al. in their study entitled: "A comprehensive study of published articles by members of SBMU and their citation status as reported by the Institute for Scientific Information (ISI) from 1998-2007", in 2009 a total of 1431 articles were investigated. The data indicated on increase of SBMU articles during the study period. Most articles have published in "American journal of Gastroenterology" and "Journal of Endourology" (each with 35 articles, comprising 2.5% of the articles), most in the field of pharmacology & pharmacy. In 70% of the articles, SBMU researchers were the first author. Most rated citations belonged to the articles published in 2006 while articles of 2003 have the highest rate of indexing. The citation diagram shows an increasing curve.

Khasseh et al. studied on a survey of scientific production of Iranian researchers in the field of parasitology in the ISI database which concluded that 392 articles on parasitology published by the Iranian researchers indexed at the ISI from 1980 to 2009. Out of 72,229 articles written by Iranian authors during 1980-2009, a total of 392 articles (0.54 %) were in the domain of parasitology. Some of these articles are due to collaborative works and some of them are non-collaborative ones. Iranian authors of parasitology have many collaborative articles with their counterparts in United Kingdom (U.K). Moreover, Mohebali with 26 articles was the most productive scientists of parasitology; as well Tehran University of Medical Sciences with 114 records (29.08%) was the most productive institution in the field of parasitology. Results showed that indicated that the scientific productions trend including research and write down in the domain of parasitology have considerable been increased in 2008. As a whole, the journal entitled "Parasitology Research" published the 65 citations of all parasitology articles corresponding Iranian researchers (17)

2. METHODS

This study is scientometric and considering the vast verity of questions and the objective of the study, the survey and citation analysis method was used. For data collection ISI database was used. The study samples were all of the ISI indexed articles on the community medicine from 2000 t0 2010. In order to access the articles, the advanced method of searching was tried. All articles published by the Iranian authors were selected that numbered 396 by 125 authors. In average three authors contributed for one article's publication. Descriptive statistics were used for data analysis

3. RESULTS

University or Institution	Ranking	F	%
Tehran University of Medical Sciences (TUMS)	1	88	22.22
Shiraz University of Medical Sciences (SUMS)	2	48	12.12
Iran University of Medical Sciences (IUMS)	3	37	9.34
Mashhad University of Medical Sciences (MUMS)	4	24	6.06
Babol University of Medical Sciences(-TUMS)	5	23	5.81
	Total	220	55.55

Table 1. Iran's top five universities articles in the Community medicine department in the period 2000-2010 in ISI

Table 1 showed five major universities of Iran contributed in publishing of 220 (55.55%) articles on community medicine group, Tehran University of Medical Sciences with 88 (22.22%) articles, Shiraz University of medical Sciences with 48 (12.12%) and Iran University of Medical Sciences with 37 (9.34%) articles, in order first to third ranking.

Authors	Ranking	F	%
Askarian M	1	36	9.09
Nojomi M	2	16	4.04
Kolahi AA	3	11	2.78
Keshtkar AA	4	10	2.52
Shakeri MT	5	10	2.52
Total		83	20.96

Table 2. Top 5 writers in the community medicine department in ISI from 2000 to 2010

Table 2 showed that 5 main authors with highest number of ISI published article in the study period. In all, they published 83 (20.96%) titles in single or in collaboration with other authors (their name not given in the table). M. Askarian with highest number of article 36 (9.09%) in community medicine group, M. Nojomi with 16 (4.04%) articles in the second position in ISI database.

Table 3 showed the collaboration of the community medicine group of Iran with the same department in England, USA, Australia, Canada, Netherland, Sweden, and Ostrich. England with 27 (32.14%) articles highest number, USA and Australia stood the second and third correspondingly. In fact, one of the most important trends that exist today among most researchers is Propensity to cooperate with other researchers which can be either which internal or external researchers. The collaborations of Iranian authors with the other researchers of the different countries are in given below Table 3.

Countries	Ranking	N	%
England	1	27	32.14
USA	2	15	17.86
Netherlands	3	8	13.10
Australia	4	11	9.52
Canada	5	8	9.52
Sweden	6	8	9.52
Austria		7	8.33
	Total	84	100

Table 3. The ratio of cooperation and contribution of the Community medicine department publishing articles department with other countries in ISI from 2000 to 2010

The process of scientific productions of the Community medicine department from 2000 to 2010 is depicted in Figure 1. It shows the little progress of scientific production in the period of 2000 to 2004. To that extent that only 23 articles were published in 4-year period while from 2004 onwards the ratio of scientific production was exponential. Also, the scientific production showed highest rate in 2009. Journals had main role in publishing of scientific results of Community medicine department in ISI from 2000 to 2010.

Table 4 showed that 10 journals which had the highest contribution in publishing articles on community medicine department from 2000 to-2010. Theses number of articles constituted 111(28.3) documents of the total relevant published articles worldwide. Results showed that Iranian Journal of Public health and Saudi Medical Journal with 16 papers had the highest rate published articles in the field of community medicine.

Title of the Journal	Ranking	N	%
Iranian Journal of Public Health	1	16	4.04
Saudi Medical Journal	2	16	4.04
Iranian Journal of Pediatrics	3	15	3.79
Archives of Iranian Medicine	4	13	3.28
Asian Pacific Journal of Cancer Prevention	5	12	3.03
Pakistan Journal of Medical Sciences	6	9	2.27
American Journal of Infection Control	7	8	2.02
Infection Control and Hospital Epidemiology	8	8	2.02
Iranian Red Crescent Medical Journal	9	8	2.02
International Journal of Infectious Diseases	10	6	1.51
	Total	111	28.02

Table 4. Ten journals which have the highest production scientific results of community medicine department in ISI from 2000 to 2010

As is shown in Table 5, all published documents in the community medicine subject are in 6 forms presented. Documents of community medicine department in the form of article 340(85.86%) stood the first place and abstracts in the Conference book 27 (6.82%) in second place.

Form of papers	Ranking	N	%
Article	1	340	85.86
Conferences abstracts	2	27	6.82
Letter to editor	3	17	4.29
Review and criticism	4	7	1.77
Editor article	5	3	0.76
Conference articles	6	2	0.51
	Total	396	100

Table 5. Form of scientific research documents of Community medicine department in ISI from 2000 to 2010

As shown in Table 6, a total of 396 scientific documents of these groups 1111 time other researchers have cited this article which the average per article 82.2% has been used one time. In this article:"**Iron loading** and **erythrophagocytosis increase ferroportin** 1 (FPN1) expression in J774 macrophages" 162 articles have been cited among the most cited articles, and has won first priority (access date 22.8.2014 from Google scholar citation).

Table 7 shows the professional health with 70 articles and in 69 articles and general internal medicine with 69 articles were the most interest research topics in ISI from 2000 to2010.

Ranking	Title of the article	Authors	Year of publication	N	%
1	Iron loading and erythrophagocytosis increase ferroportin 1 (FPN1) expression in J774 macrophages	Knutson MD, Vafa MR, Haile DJ, Wessling-Resnick M.	2003	81	38.03
2	Leishmanization: Use of an old method for evaluation of candidate vaccines against leishmaniasis	Khamesipoura, A; Dowlatia Y, Asilianb A, Hashemi-Fesharkic R, Javadi A, Noazine S, Modabbere, F	2005	38	17.84
3	Results of a hospital waste survey in private hospitals in Fars province, Iran	Askarian M, Vakili M, Kabir, G	2004	36	16.90
4	Beneficiary effect of dietary soy protein on lowering plasma levels of lipid and improving kidney function in type II diabetes with nephropathy	Azadbakht L, Shakerhosseini R, Atabak S, Jamshidian M, Mehrabi Y, Esmaill-Zadeh A	2003	32	15.02
5	Prevalence of obesity, central obesity and the associated factors in urban population aged 20–70 years, in the north of Iran: a population based study and regression approach	Hajian Tilaki K, Heidari B.	2007	26	12.21
TOTAL				213	100

Table 6. The most cited scientific production of Community medicine department in ISI from 2000 to 2010

Ranking	Subject areas of scientific production	N	%
1	Public Environmental Occupational Health	70	31.11
2	General Internal Medicine	69	30.67
3	Oncology	30	13.33
4	Infectious Diseases	29	12.89
5	Pediatrics	27	12.00
	Total	225	100

Table 7. Subject areas domains of scientific production of Community medicine department in ISI from 2000 to 2010 in ISI

As is seen in Table 8, as the most commonly used word among other available words word of Iran in the title of scientific productivity of Iranian researchers in the Table 8 was in the first rank compared to other words. Also, 141 (34.9%) of cited words was the word of Iran in the scientific productivity of Iranian researchers.

Word	Ranking	N	%
Iran	1	141	34.90
Patients	2	53	13.12
Iranian	3	38	9.41
Prevalence	4	32	7.92
Factors	5	29	7.18
Cancer	6	27	6.68
Women	7	23	5.69
Risk	8	22	5.45
Children	9	20	4.95
Health	10	19	4.70
Total		404	100

Table 8. Most words found in articles title of scientific productivity of Iranian researchers in ISI from 2000 t0 2010

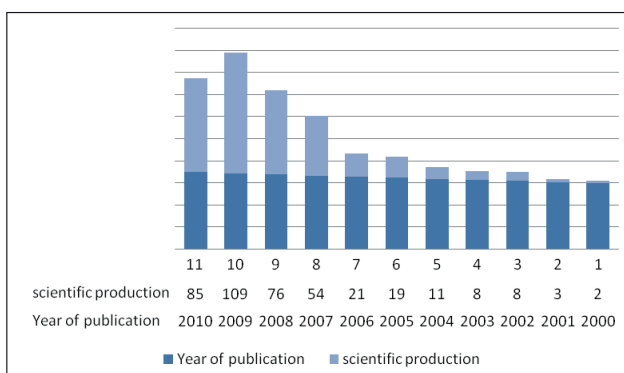|	11	10	9	8	7	6	5	4	3	2	1
scientific production	85	109	76	54	21	19	11	8	8	3	2
Year of publication	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000

■ Year of publication ■ scientific production

Figure 1. The scientific production of community medicine in the twenty-first century (2000-2010)

4. DISCUSSION

Siamian et al. in their study entitled: "Scientific Production of Medical Sciences Universities in North of Iran in 2013" found that H-Index of Babol University of Medical Sciences considering the number of published articles as compared to the Golestan and Guilan University of Medical Sciences is better than the high active writer of the Medical sciences. Authors having 23 published articles at the Scopus database were considered as the highest active author (Table 3), orderly belonged to the Mazandaran, Golestan, and Guilan University of Medical Sciences. The difference between numbers of the first author's article with the fifteenth author is 24, but the number of third to the tenth author had normal distribution. Among the 15 high active authors in the study period, 9, 5, 1, and none belonged to the Mazandaran, Golestan, Guilan, and Babol respectively (18).

Sabouri and Poursasan in their study in 2005 found that the contributions of Iran in science production in the world in science and community science have been 0.36 and 0.08 correspondingly. Universities of Sharif, Ian Medical Sciences, Tarbiat Modares and Shiraz by 9.6, 7.3, 7.0, 6.9 and 6.4 correspondingly of scientific production had the highest contributions among all Iranian academic centers (19).

Aminpour and Kabiri studied the scientific productivity of Isfahan University of Medical Sciences in a 22-year period started from 1985 to 2006 in Web of Science (WoS) as one of the major databases of Institute for Information (ISI) and also MEDLINE as the most important bibliographic database in medical sciences. The obtained data showed a sharp increase in scientific publications indexed in MEDLINE and WoS from 2000 and 2006 (20).

Research findings showed that scientific Production of community medicine in ISI Database from 2004 onwards took an upward turn, in fact, based on available information in ISI database in 2009 were 109 cases which compared with the years before 2004, that number was 32 Scientific Production Showed a 2.4 times increase of it. Therefore, scientific production reached its peak in 2009. Noori et al. and Shahbodaghi et al. in their study found the same results. It might be said factors that increase the number of Iranian articles in recent years include:

- compulsory and assign points to articles published in rated journals in ISI database, registration (membership) regulations, and the promotion of faculty members,

- Allocation of rewards to indexed articles in ISI database,
- Importance of ISI publications as one of the indicators and criteria for evaluation and ranking of scientific researchers, academics, universities and ..., and
- Competition between universities and institutions in order to achieve better rankings in national and international ranking systems.

Iranian authors of community medicine have good attitude and trends in collaboration and participation with researchers from other countries in the international arena and England has greater share and participation among the countries which showed the ability of Iranian scientists in international interaction and communication, Leading to increased joint research activities and follow the increasing number of articles with several authors and authorship and scientific productions in paper format are more than other information carriers. Results showed that five major universities of Iran contributed in publishing of 220 (55.55%) articles on Community medicine department and among the five top universities in producing documents; Tehran University of Medical Sciences with 88 (22.22%) documents are allocated to the first rank of scientific products. Research of Khaseh et al is consistent with this research. Subject areas of occupational health with 70 articles and subject areas of general medicine with 69 articles ranked the most active research areas in the Production of community medicine's department in 2000-2010 in ISI database. It could be judged, due to increasing interdisciplinary and multidisciplinary studies, in addition, interdisciplinary papers in this group has increased. As the studied variants could not satisfy all limits of the H-index, scientific society needs an index which accurately evaluates individual researcher's scientific output. As the multiple H-index has some advantages over the other studied variants, it can be an appropriate alternative for them (21-26).

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