A SCIENTOMETRIC STUDY OF GENERAL INTERNAL MEDICINE DOMAIN AMONG MUSLIM COUNTRIES OF MIDDLE EAST (1991 – 2011)

Niloofar Hodhodinezhad¹, Razieh Zahedi², Hassan Ashrafi-rizzi¹, Asadollah Shams¹

Isfahan University of Medical Sciences, Isfahan, Iran¹

Tehran University of Medical Sciences, Tehran, Iran²

Corresponding author: Hasan Ashrafi-rizzi. Assistant Professor of Medical Library and Information Science, Isfahan University of Medical Sciences, Isfahan, Iran. hassanashrafi@mng.mui.ac.ir

Original paper

ABSTRACT

Background: The position of General Internal Medicine in the Islamic countries in the Middle East has been investigated in the present study. **Material and methods:** The scientific productions of the countries in the area on Web of science database during 1990-2011 constitute were examined. **Results:** The result of the survey showed that the share of these

countries in world scientific productions is very low. Turkey, Saudi Arabia and Iran are the first to third ones in this domain in order. In view of annual growth rate, Kuwait having high growth rate, is the first one. Libya and Syria are the next ones. The scientific poverty line of Islamic countries in the area was surveyed. The result showed that in view of the scientific poverty line, the highest is Kuwait with the population of 0.04 percent of

the world. Next to it, Saudi Arabia and Bahrain are the second and third ones. **Conclusion:** The results of this research showed that the share of Islamic countries in the Middle East in scientific production of this medicine domain is very low. It needs to be paid more attention by the countries in the area.

Key word: Web of Science, Scientometrics, General Internal Medicine, Muslim Countries, Middle East countries, scientific production.

1. INTRODUCTION

Today, the countries in all around the world show their power not by their natural resources, such as petroleum or natural gas, but by the amount of their scientific information and productions. Consequently, one of the most important concerns of societies and especially developing countries is to promote in different fields of science and technology; they then can increase their scientific metrics level among the science world ratings to be considered as active participants in the science world. So, the present study is performed by the reason of cited competition and aimed on the scientific productions of Middle East countries. Muslim countries of this area, as developing countries are competing in different economic, politic and scientific fields; however, there has been no research tends to evaluate the scientific productions of "General Internal Medicine" do-

main as an important and critical issue in medical science of the area. Based on definition of this science presented by Categories ISI-CRUI it can be defined as follow: "Medicine, general & internal, covers resources on medical specialties such as general medicine, family medicine, internal medicine, clinical physiology, pain management, and military and hospital medicine" (1). So, the present study tries to survey the metrics of General Internal Medicine among Muslim countries of the Middle East in the period of 1991 to 2011 by analyzing present documents in the citation database of WOS.

Attarha (2009) (2) writing his thesis, has investigated thematic orientation of the Middle East countries scientific productions on Sci-expanded database during 1998-2007. The results of his research showed that, in view of scientific productions Frequency distribution Turkey having wide discrepancy with Iran is

the second and Egypt is the first one. In view of scientific growth, Iran is the first. Turkey and Ghatar are the second and third ones. It has defined that thematic domains of medicine, physics and chemistry are the most production domains in all the Middle East countries (2).

Archambault (2010) (3) has investigated the scientific publications of East countries in each three documentary index on Web of Science. The relation between political geography and search activities factors based on the amount of scientific publications for a period of thirty years was investigated. Totally, the results showed that, the growth rate of scientific publication in the Middle East has been very fast (four times word rate). Iran and Turkey are in the highest point (3).

Didgah and Didgah (4), investigated the scientific productions of the Middle East countries in documentary index of social science

during 1980-2009. The result of his research showed that, very low world scientific productions are attributed to these countries on this database. Turkey, Iran and Egypt are the first to third ones on this database in order. In view of the growth rate, UAE is in the highest rank. Turkey and Iran are the second and third ones among other countries in the area in order (4).

2. METHODS

This research is of the survey type and performed by the science evaluation method. In this research, 20054 bibliographic records created by researchers of the Muslim countries of Middle East at 29/03/2012 from advanced search section of science information database of "WOS" website by the search strategy of SU=(General Internal Medicine), and for years between 1991 to 2011 by applying metrical limit of CU=(Turkey Or Iran Or Saudi Arabia Or Egypt Or Lebanon Or U Arab Emirates Or Kuwait Or Jordan Or Iraq Or Oman Or Qatar Or Syria Or Bahrain Or Libya Or Yemen)" were extracted and studied. Also, the procedure of scientific productions growth of active writers and institutions, target magazines, the amount of growth rate and scientific poverty line of each one of these countries in this area were surveyed and analyzed in a 21-years period in Muslim countries. In evaluating the scientific poverty line of emergency medicine for these countries, CU=(name of each country) was searched in the advanced search section. Also, for estimating the metrics of Muslim countries of Middle East in General Internal Medicine domain, the Xi formula was used; for specifying its metrics among Muslim countries of Middle East, the Yi formula was used; and for calculating the relative performance of countries of this area with regard to their population and for determining the scientific poverty line, the Sx formula was used. Finally, for analyzing data the Excel 2007 software and descriptive statistics were used (5).

3. RESULTS AND DISCUSSION

The results of this research show that the researchers of Islamic coun-

tries in the Middle East have totally published 20384 bibliographic records in General Internal Medicine domain on WOS during the years 1990 to 2011. 43042 writers and 7415 universities have had rolled in writing theses resources. The researchers have also published their research documents in 231 different magazines.

Table 1 shows the Frequency distribution of 10 writes having the most production is AL- Mendalawi, Mahmood D from Baghdad university of Iraq, having 96 documents (0.471%) Arabi Yaseen from King Saud bin Abdulaziz University for health sciences of Saudi Arabia having 62 documents (0.304%) is the second researcher having a lot of productions in this domain in the Islamic countries in the area. The third research having a lot of production during 20 years of research is Al- Salem Ahmad Hassan from maternity and children hospital department of pediatric surgery of Saudi Arabia who has published 52 documents (0.255%) in internal medicine domain.

% of 20384	Record Count	Authors	
0.471	96	Al-Mendalawi Md	1
0.304	62	Arabi Y	2
0.255	52	Al-Salem Ah	3
0.255	52	Yilmaz M	4
0.211	43	Yilmaz A	5
0.206	42	Fedorowicz Z	6
0.196	40	Abu-Zidan Fm	7
0.196	40	Manzar S	8
0.191	39	Sari I	9
0.186	38	Aydin S	10

Table 1. The Frequency distribution of 10 writers having a lot of productions from Islamic countries in the Middle East in general internal medicine domain during 1990- 2011 on web of science database.

The result of this research showed that 15 Islamic countries in the Middle East have totally published 20/384 documents on science documentary index during 1990 to 2011. As the total productions of all of the countries in the world on science documentary index are 761/545 documents during the years pointed, about 2.67 percent of to tall world production in general internal medicine domain is attributed to the Middle East countries.

As Table 2 shows, Turkey, having

7954 documents has attributed about 1.04 percent of total scientific productions of all countries in the world and 39 percent of total scientific production of the middle east countries itself and is the first among other countries in the area. Saudi Arabia having 5464 records and about 27 percent of total scientific productions in the area, is the second on WOS database. Next to Turkey and Saudi Arabia, Iran has about 15 percent of total publications of the Middle East countries and having 3038 documents, is the third one on science documentary database.

% of 20384	Record Count	Countries	
39	7954	Turkey	1
26.8	5464	Saudi Arabia	2
14.9	3038	Iran	3
4.76	972	Kuwait	4
3.04	621	Egypt	5
2.59	529	Jordan	6
2.25	460	U Arab Emirates	7
1.76	359	Oman	8
1.66	338	Iraq	9
1.29	263	Lebanon	10
1.02	209	Qatar	11
0.95	194	Bahrain	12
0.66	139	Libya	13
0.56	116	Yemen	14
0.32	67	Syria	15

Table 2. Frequency distribution and the percentage of scientific productions of Islamic countries in the Middle East in General Internal medicine domain on web of on science database 1990- 2011.

According to data analysis, the three countries that have assisted much more with the researchers in general internal medicine domain in the Middle East are: the United States (US), having 3.6% (735 documents), England with 1.6% (330 documents) and Canada with 1.07% (220 documents). They gained the first to third grades of association in order.

Ten universities having a lot of production about General Internal Medicine domain has been shown in Table 3. According to this survey, 10 institutions of this science having a lot of productions in the Middle East are in these countries: Saudi Arabia (10.25%), Turkey (8.15%), Iran (7.04%) and Kuwait (2.75%). "King Saud university" and the research center of "King Faisal Specialist

% of 20384	Record Count	Countries	Institutions	
7.12	1453	Saudi Arabia	King Saud Univ	1
3.73	761	Saudi Arabia	King Faisal Specialist Hosp RES CTR	2
2.80	572	Iran	Univ Tehran Med Sci	3
2.75	562	Kuwait	Kuwait Univ	4
2.45	501	Turkey	Hacettepe Univ	5
2.42	495	Iran	Shiraz Univ Med Sci	6
2.29	468	Turkey	Istanbul Univ	7
1.82	371	Iran	Isfahan Univ Med Sci	8
1.73	354	Turkey	Gulhane Mil Med Acad	9
1.68	343	Turkey	Gazi Univ	10

Table 3. the Frequency distribution of ten institution having a lot of productions, from Islamic countries in the Middle East in General Internal Medicine domain on WOS during 1990-2011.

% of 20384	Record Count	Country	Source Titles	
25.17	5132	Saudi Arabia	Saudi Medical Journal	1
11.01	2245	Saudi Arabia	Annals of Saudi Medicine	2
6.13	1250	Turkey	Turkiye Klinikleri Tip Bilimleri Dergisi	3
3.84	783	Kuwait	Medical Principles and Practice	4
3.05	622	PAKISTAN	Pakistan Journal of Medical Sciences	5
2.88	588	Turkey	Turkish Journal of Medical Sciences	6
2.39	489	Iran	Archives of Iranian Medicine	7
2.37	485	Iran	Iranian Red Crescent Medical Journal	8
1.89	386	England	Burns	9
1.86	381	Iran	Journal of Research in Medical Sciences	10

Table 4. the Frequency distribution of journals having a lot of publications of the articles related to General Internal Medicine domain on WOS during the years 1990-2011.

Hosp RES CTR” of Saudi Arabia having in order 1453 and 761 documents, and have got the highest share in the scientific production in General Internal Medicine domain among the countries in the area. They are the first and second ones of this domain on WOS, too. Next to these two institutions, 572 documents has been published at Tehran University of Medical Sciences. It is the third one on WOS.

The result of Table 4 shows that the most number of documents (25.17%) with 5132 records have been published in Saudi Medical Journal. 231 journals of this area publish the articles of General Internal Medicine domain totally. An annal of Saudi Medicine is the second journal considered by the Middle Eastern researchers. 2245 documents have

been published in it. Turkiye Klinikleri Tip Bilimleri Dergisi of Turkey, having 1250 published documents is the third publication having a lot of productions about this medicine domain.

The performance of Islamic countries in the Middle East in General Internal Medicine branch were compared, based on existing standard during 1990-2011. First we evaluated Y_i to determine the amount of each Islamic country's regard to this domain. Turkey's, Saudi Arabia's and Iran's share of this domain are as follow in order: 3.09%, 12.72% and 2.23%. The shares of other countries in the area have been given in Table 5.

Then we evaluated X_i in General Internal Medicine domain. This index shows the percentage of total world articles of this domain which are related to each of every single Islamic countries in the Middle East. According to the evaluation, Turkey (1.04%), Saudi Arabia (0.71%) and Iran (0.39%) compared to other Islamic countries in the Middle East have had the highest share in world productions.

Y_i	Countries	
12.72	Saudi Arabia	1
10.75	Iraq	2
10.32	Yemen	3
9.07	Bahrain	4
8.04	Kuwait	5
7.34	Lebanon	6
7.34	Libya	7
6.63	Qatar	8
6.31	Oman	9
3.94	Jordan	10
3.59	U Arab Emirates	11
3.09	Turkey	12
2.24	Egypt	13
2.23	Iran	14
1.93	Syria	15

Table 5. The amount of Islamic countries regard to General Internal Medicine on WOS during 1990-2011.

X_i	Countries	
1.04	Turkey	1
0.71	Saudi Arabia	2
0.39	Iran	3
0.12	Kuwait	4
0.081	Egypt	5
0.069	Jordan	6
0.06	U Arab Emirates	7
0.047	Oman	8
0.044	Iraq	9
0.027	Qatar	10
0.025	Bahrain	11
0.018	Lebanon	12
0.018	Libya	13
0.015	Yemen	14
0.008	Syria	15

Table 6. The share of Islamic countries in the Middle East in world scientific productions of General Internal Medicine domain on WOS during 1990-2011.

We also considered the population of different countries in order to know about the performance of each country in comparison to other ones. S_x was used. Where ever S_x of Internal Medicine domain of each country is not longer or equal to one, it means that the country's scientific production is insufficient with regard to its population.

According to it, the country is blow the investigation done for the countries pointed recently, Kuwait with $S_x= 3.09$ and 0.04 percent of world population, Saudi Arabia with $S_x= 1.75$ and 0.41 percent of world population, Oman with $S_x=1.14$ and 0.04 percent of world population and Bahrain with $S_x=1.31$ and 0.019 percent of world population are in order the only Islamic

S_x	Countries	
3.09	Kuwait	1
1.75	Saudi Arabia	2
1.31	Bahrain	3
1.14	Oman	4
0.99	Qatar	5
0.98	Turkey	6
0.75	Jordan	7
0.56	Lebanon	8
0.52	U Arab Emirates	9
0.37	Iran	10
0.20	Libya	11
0.09	Iraq	12
0.07	Egypt	13
0.04	Yemen	14
0.03	Syria	15

Table 7. The scientific poverty line of each Islamic country in the Middle East on WOS during 1990-2011.

Growth rate	Countries	
112.968	Kuwait	1
80.068	Libya	2
77.146	Syria	3
71.383	Bahrain	4
67.172	Qatar	5
58.418	Lebanon	6
56.85	U Arab Emirates	7
56.655	Oman	8
55.318	Yemen	9
48.028	Iran	10
43.895	Egypt	11
35.792	Turkey	12
35.68	Iraq	13
33.764	Saudi Arabia	14
33.458	Jordan	15

Table 8. The growth rate of Islamic countries in the Middle East on WOS during 1990- 2011

countries in the Middle East which are over the scientific poverty line of General Internal Medicine. The position of other countries in the domain is shown in Table 7. The annual growth rate of publications of each Islamic country in the Middle East in General Internal medicine domain during 1990–2011 is shown in Table 8. According to the table, the growth rate was the highest in the following countries in order: Kuwait (112, 96%), Libya (80.6%) and Syria (77.14%).

4. CONCLUSION

According to the results of these research, the Islamic countries in the Middle East, have published 2.72% of the total world scientific productions in General Internal Medicine domain on WOS documentary database. In comparison with the scientific productions of the United States (30.5%), it should be deliberated. Turkey, Saudi Arabia and Iran have been attributed a great share of scientific production of this domain in the area. The result of Attarha's (2009) and Didgah and Didgah (2010) (researches showed that Turkey, Iran and Egypt are the first to third ones in scientific production on WOS database. It reflects the superiority of Turkey and Iran countries in different scientific domain on this database. In view of annual

growth rate of the scientific productions, Kuwait is 112.98 percent. It is noticeable compared to other countries in the area, whereas it has only 972 documents related to scientific productions in this domain. It was indicated in the investigation of the poverty line that this country has been in a better position. It's $SX=3.09\%$ Shows that it is over the scientific poverty line. The investigation of the amount of each country's regard to general Internal medicine showed that Saudi Arabia, Iraq and Yemen have been the highest in order. Totally, the results of this research shows that the share of countries in the Middle East, as a group of developing countries, compared with the total world scientific productions in general pay more attention and put a lot of effort into this domain (6-16).

REFERENCES

1. Categorie ISI-CRUI. https://civr.cineca.it/categorie_isi.html. cited at 07.29.2011
2. Hamed Attarha. Orientation of the subject in the scientific output of Iran and Middle Eastern countries in the Science Citation Index Gstrshyafth (SCI-EXPANDED) during 1998-2007. Library And Information science Master's thesis, School of Education and Psychology, Shiraz university, 2009.
3. Archambault Eric. 30 years in science, secular movements in knowledge creation. Canada USA. Science-Metrix Inc., 2010.
4. Didgah F, Didgah A. The investigation of scientific publications of Middle East countries in SSCI over the past years. Information Science & Technology. 2011; 26(3): 717-134.
5. Masic I, Milinovic K. On-line Biomedical Databases – the Best Source for Quick Search of the Scientific Information in Biomedicine. Acta Inform Med. 2012; 20(2): 72-84. doi: 10.5455/aim.2012.20.72-84.
6. Masic I. How to Search, Write, Prepare and Publish the Scientific Papers in the Biomedical Journals. Acta Inform Med. 2011; 19(2): 68-79. doi: 10.4555/aim.2011.19.68.79.
7. Markusova V. All Russian Institute for Scientific and Technical Information (VINITI) of the Russian Academy of Sciences. Acta Inform Med. 2012 Jun; 20(2): 113-117. doi: 10.5455/aim.2012.20.113-117.
8. Mehrad J, Arastoopoor S. Islamic World Citation Center (ISC): Evaluating Scholarly Journals Based on Citation Analysis. Acta Inform Med. 2012; 20(1): 132-138. doi: 10.5455/aim.2012.20.40-43.
9. Masic I. Ethical Aspects and Dilemmas of Preparing, Writing and Publishing of the Scientific Papers in the Biomedical Journals. Acta Inform Med. 2012 Sep; 20(3): 141-147. doi: 10.5455/aim.2012.20.141-147.
10. Gasparyan YA, Ayvazyan L, Kitas DG. Biomedical journal editing: elements of success. CMJ. 2011; 52: 423-428. doi: 103325/cmj.2011.52.423.
11. Marusic A. Importance of Ethical Publishing in Developing Countries. Acta Inform Med. 2012; 20(1): 4. doi: 10.5455/aim.2012.20.4-4.
12. O'Dowd A. Peer review system needs thorough evaluation. MPs hear. BMJ. 2011; 342: d3046. doi: 10.1136/bmj.d3046.
13. Masic I. Plagiarism in Scientific Publishing. Acta Inform Med. 2012 Dec; 20(4): 208-213. doi: 10.5455/aim.2012.20.208-213.
14. International Committee of Medical Journals Editors. Uniform Requirements for Manuscript Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication. (Updated October 2008). Available: <http://www.icmje.org/>. Accessed April 12, 2012.
15. Council of Science Editors. CSE's White Paper on Promoting Integrity in Scientific Journal Publications. Editorial policy committee (2005-2006). Available: <http://www.CouncilScienceEditors.org>. Accessed April 12, 2012. Accessed April 12, 2012.
16. Salehzadeh Sadegh, Bayat Mehdi. Iranian scientific leap over a decade (1998-2008). Rahyafth Journal. 2009; 19(44): 30-36.