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Comparative analysis of pulmonary and respiratory medicine research in middles east region

Abstract

Pulmonary and respiratory researches play a crucial role for all implementation decisions in the human health. The studies were carried out by researchers to treat and prevent breathing disorders for all age groups. Therefore, this evaluation was performed in respiratory medicine publications of Middle East region. We conducted Medline/PubMed and SCImago journal ranking (SJR) searches using selected MeSH keywords to identify pulmonary and respiratory medicine papers published from 1996 to 2012. The SJR database, accessible free of charge, was selected as the most suitable source for ranking specifically. Furthermore, the trend analysis evaluation of clinical, basic and epidemiologic papers was performed. The used indicators were the global ranks of each country according to "number of document", "total number of citations", "citations per document", "Self-Citation", "H-index", and "international collaboration". The world rankings of these countries showed their level among 20-45. Turkey with a total of 2446 papers, 2102 citable publications, 16325 citations, 10.5 citations per paper, and the H-index of 49 took the 20st place among world countries. Iran with a total of 573 papers, 539 citable publications, 2044 citations, 13.24 citations per paper, and the H-index of 20 took the 20st place. The highest "citations per documents" and "international collaboration" among these countries were belonging to Egypt. The lowest "self -cite per documents" was belonging to Iran. Although the productions of scientific productions are neither qualitatively nor quantitatively compared with other countries, the global places of Turkey, Iran, Egypt and Saudi Arabia were 20th, 25th, 42th and 45th, respectively. As a result, scientific collaboration between these four big Muslim countries in Middle East region will boost their rankings. Furthermore, the results may improve perform of the health service policy makers in Muslim countries including Iran to do more effective attentions, management and establishing pulmonary and respiratory medicine research centers.

Keywords: Iran, Egypt, Saudi Arabia, Turkey, pulmonary, respiratory research, middle east

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Abbreviations: COPD, chronic obstructive pulmonary disease; CAP, community-acquired pneumonia; ARDS, acute respiratory distress syndrome; ISI, institute for scientific information; ANOVA, analysis of variance

Introduction

Respiratory medicine includes a variety of extremely common diseases, such as chronic obstructive pulmonary disease (COPD), bronchial asthma, respiratory tract infections, community-acquired pneumonia (CAP) or hospital-acquired pneumonia, lung cancer, acute respiratory distress syndrome (ARDS), and pulmonary embolism. Because of the high prevalence of respiratory diseases and their associated morbidity and mortality, a considerable proportion of medical research all over the world got involved in research efforts.[1]

North Africa and the Middle East with over 60% of the global dust load are the main dust sources and populations in these regions, have higher risk for pulmonary and respiratory disease.[2] Among the many advantages brought about by recent technological developments, air pollution will be an important contributor to pulmonary and respiratory diseases and the human well-being. The pulmonary and respiratory effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma, which can result in increased medication use. The studies showed that air pollution is reason for myocardial infarction.[3] Over a million premature adult deaths attributable to air pollutions occur each year in world.[4] Unfortunately, epidemiological studies and adequate air quality data are largely lacking in Middle East. Pulmonary and respiratory medicine progress is one of the most important indicators for the health development of different countries. Evaluation of pulmonary and respiratory in every country often depends on its publications.

There are some databases for indexing scientific activities publications in the world, such as: Thomson Reuters Institute for Scientific Information (ISI),[5] Scopus[6] and Google Scholar.[7] SCImago (the base of SCOPUS) is a bibliographic database that uses to analyze the international places of countries, about their production in scientific production.[8] Since it includes a major part of journals, often it uses to compare countries scientific progress in the global places. Iran however as another Asian country which had faced imposed war up to late 1998, but scientific output shows that faster than any country in the Middle East. A comparative study of the number of Iranian scientific publications with the number of other countries scientific publications show that Iran has a progressive quantitative and qualitative growth in the past years.[9]

It is imperative for Muslim countries, to realize the importance and long-term impact of scientific research, in order to overcome the threat of exclusion from the race for economic prosperity. It is also very important to encourage and involve the youth in the research process, thereby harnessing their tremendous potential. Evidence indicates that considerable majority of scientists, involved in the study and treatment of common human diseases such as pulmonary diseases, should work closely with the clinical scientists as this approach results in the overall progress of research works and in the improvement of results.

The main purpose of this study is to expand cooperation among Islamic countries. With respect to specific science and research progress in recent years, these countries have been selected. With the development of scientific research and relations between scientific centers in these countries, the possibility of expanding political, economic cooperation, investment, trade, cultural, tourism, also will be provided. Collaboration between researchers and scholars of Islamic countries achieve common progress in this field. The results of this research will be useful for others as well. The other goal of this study is to enhance cooperation and collaboration for advancement of pulmonary and respiratory science. Therefore Middle East countries should implemented a large number of programs to enhance interaction among research institutions, universities, science academies and scientific community in this field.

A comparative study of bring out Middle East documents with other countries is effective in forwarding scientific progress, especially, healthcare and medicine. Therefore, the scientific activities of Iran, Turkey, Egypt and Saudi Arabia were evaluated based on their publications in pulmonary and respiratory medicine in SCImago during the 1st of January, 1996 to the 31st of December, 2012.

Materials and methods

The literature source and searching methods were conducted Medline/Pubmed searches using ["Pulmonary" (Mesh) OR "Lung" (Mesh) OR "Basic" (Mesh) OR "Clinical" (Mesh) OR " Epidemiologic" (Mesh)] AND "Turkey" (Mesh) OR "Iran" (Mesh) OR "Saudi Arabia " (Mesh) OR "Egypt" (Mesh) as keywords to search papers published from the 1st of January, 1996 to the 31st of December, 2012 (17 years). The studies should be published in English language. The nonrelevant and repeated literatures were excluded. Further data were recognized from SJR during the 1st of January, 1996 to the 31st of December, 2012. Research strategy in SJR was based on the keyword "pulmonary and respiratory medicine". Reviews, journal articles, case reports, and similar types of citations included in the study and language restrictions were not considered. All the number of documents that published in English was chosen. The used indicators were the global ranks of each country according to "number of document", "total number of citations", "citations per document", "Self-Citation", " Sited documents", "H-index", and "international collaboration". In following, we chose the "Countries" icon for comparison and then in the "Select countries or regions to compare" tool bar, the leader countries in this region were selected. The search and evaluation were done on August 2014.

Results

Analysis of data showed that the research activities in the field of pulmonary and respiratory medicine research have been increased recently through the period of study. The characterizations of all searched articles were summarized in Table 1. Table 2 shows the characteristics of each country considering "Document', Citable Document", "Cites", Self-citation per Document", Cite per Document", "H-index", "% Citation Per Document" and "International collaboration". Table 2 reveals that Iran by 573, 539 of "total number of document" and "total number cite able per document" located in the second place after Turkey by 2446, 2102. Turkey and Saudi Arabia had higher "total number of citations" and %Citation per document than Iran and Egypt. Turkey by 2959 had highest "total number of self - citation" and Iran had least "self-citation per document". This Table 2 showed that "total number of document" and "total number of citation" did not match "cite per document" in these countries. Accordingly, Egypt and Iran by 1554, 1324 in "cite per document" respectively, had a better condition than Turkey and Saudi Arabia by 1054, 999, respectively. The Figure 1, Figure 2 and Figure 3 show the trend analysis evaluation of clinical, basic and epidemiologic papers respectively,

Table 1 Description of pulmonary and respiratory medicine papers during the seventeen years from 1996 to 2012

	Turkey			Iran			Saudi Arabia			Egypt		
Years	Clinical	Basic	Epidemio-logic	Clinical	Basic	Epidemio-logic	Clinical	Basic	Epidemio-logic	Clinical	Basic	Epidemio-logic
1996	16	25	4	0	0	2	7	6	3	1	3	1
1997	22	15	4	2	0	1	9	4	2	0	2	2
1998	24	17	7	1	0	2	8	7	4	2	1	3
1999	23	11	1	0	3	1	6	7	1	1	1	2
2000	38	15	4	4	4	2	11	10	6	3	1	1
2001	46	33	7	0	0	1	9	6	6	4	1	2
2002	63	36	8	4	2	3	11	9	1	5	0	1
2003	82	48	15	6	1	3	12	6	1	3	1	1
2004	89	65	18	7	3	4	17	9	3	3	4	3
2005	124	72	11	12	8	3	11	8	2	4	3	3
2006	153	78	16	15	11	10	9	5	6	8	5	0
2007	121	62	14	16	15	8	16	4	4	7	4	2
2008	121	56	15	22	18	11	13	5	2	3	3	1
2009	125	47	13	29	26	14	13	11	4	6	6	1
2010	130	53	21	40	27	14	18	8	8	9	8	3
2011	154	42	21	49	42	20	26	10	3	15	8	4
2012	163	72	26	45	48	14	22	11	9	7	11	4
Sum	1494	747	205	252	208	113	208	126	65	81	62	34

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Table 2 A comparison in the research activities in the field of pulmonary and respiratory medicine of countries (Iran, Turkey, Egypt and Saudi Arabia) from SCImago Journal Ranking (SJR) during the 1st of January, 1996 to the 31st of December, 2012

Country	Document	Cite able Document	Cites	Self-Citation	Cite per Document	Self-Citation per Document	H-Index	%Citation Per Document	International Collaboration
Turkey	2446	2102	16325	2959	10.54	8.46	49	74.5	9.57
Iran	573	539	2044	634	13.24	8.1	20	67.07	20.29
Saudi Arabia	399	316	2787	338	9.99	8.85	24	79.87	29.78
Egypt	177	153	1470	60	15.45	15.2	21	75	47.81

Analysis of variance (ANOVA) was used to compare the total citable publications among the countries in three fields of research. We found that Turkey was significantly higher in citable publications in clinical studies (P<0.001), but no significant differences between other countries (P>0.05). Further assessing showed that Turkey had considerable publications till 2006, while during 2007-2010 its citable clinical publications decreased. However from 2011 return to its previous growth (Figure 1).

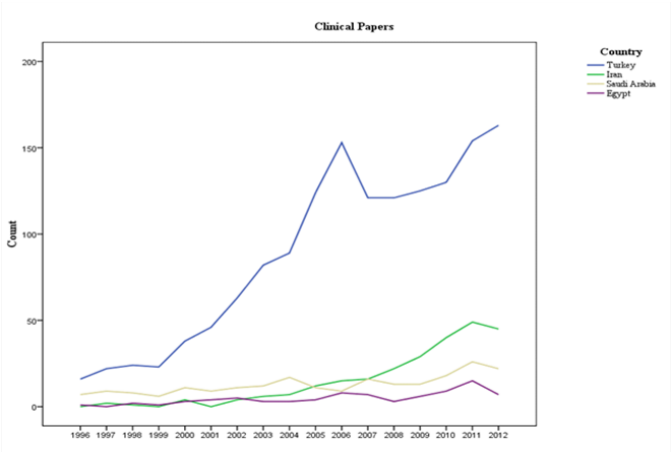

Figure 1 The trend analysis evaluation of clinical papers of four countries, Turkey, Iran, Saudi Arabia and Egypt during the seventeen years from 1996 to 2012.

Evaluating publications in basic studies also revealed same result in comparing the countries. In other word, Turkey has significantly higher citable basic publications (P<0.001). Iran showed high increasing in this publication from 2004. However, it didn't reach statistical significant difference (P>0.05). Egypt and Saudi Arabia had not special jump point for increasing or decreasing and they exhibited smoother trend (Figure 2). Epidemiological citable publications showed noisy process during 1996-2012 in all countries. Our result in evaluating the Total citable publications in Epidemiological studies showed significantly higher proportion for Turkey (P<0.001) and minimum proportion for Egypt and Saudi Arabia. 2005 was increasing jump in Iran (Figure 3).

Table 3 make it possible to compare world rank of the countries with each other in regard to "total number of document" and "total number of Cite able Document ", in pulmonary and respiratory medicine. Turkey had higher rank. Turkey gained the 20th world place in documents and cites able documents. The global places of Turkey, Iran, Egypt and Saudi Arabia were 20th, 25th, 42th and 45th, respectively.

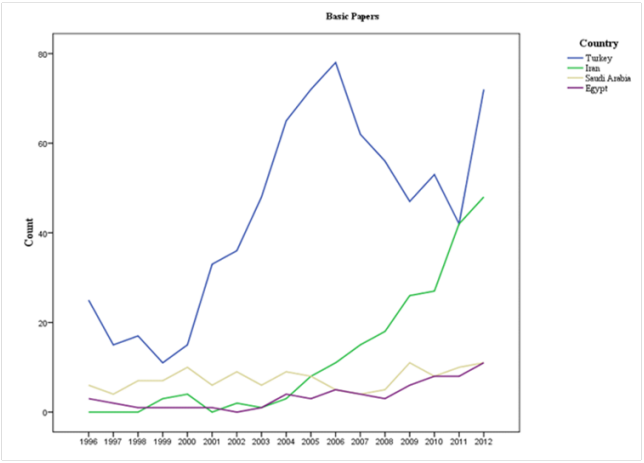

Figure 2 The trend analysis evaluation of basic papers of four countries, Turkey, Iran, Saudi Arabia and Egypt during the seventeen years from 1996 to 2012.

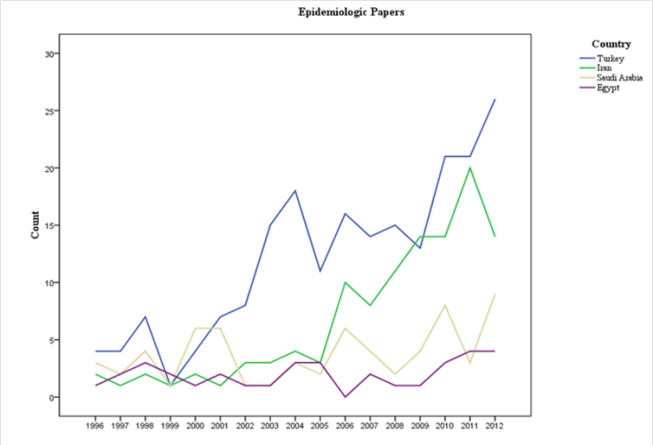

Figure 3 The trend analysis evaluation of epidemiologic papers of four countries, Turkey, Iran, Saudi Arabia and Egypt during the seventeen years from 1996 to 2012.

Turkey had better ranks than other countries in total Cites. However In 'Cite per Document that is one of the most important factors which shows the middle number of citations to each document, Egypt and Iran gained higher condition in comparison with other countries. Turkey and Saudi Arabia had better 'Total Cites'. The highest "citations per documents" and "international collaboration" among these countries were belonging to Egypt. The lowest "self -cite per documents" was belonging to Iran (Table 4).

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Table 5 reveals compare Self-Citation and Self-Citation per Document in pulmonary and respiratory medicine in mention countries. Iran had a better situation in Self-Citation per Document. Therefore it can be concluded that this indicator considered more by Iranian researchers during the period of study. The concept of self –citation is not only used about authors, but also, such as, about countries. This result emphasizing strengthening Iranian authors knowledge claims, research credibility, and wider standing in the discipline.

Comparing document citation and H-Index that reveal their impact and usage, is a procedures to show of the documents qualitative in each country. According to Table 5, Turkey had higher rank in citation and H-Index. However, it must be taken into account that document citation and H-Index is relevant to the number of published productions and researchers in each country. If we agree that H-index is better indicator than other bibliometric indicators, such as total number of papers or total number of citations to measure the simultaneously the quantity and quality of scientific publications, Turkey has both high qualitative and quantitative pulmonary and respiratory medicine publications (Table 6).

Table 3 Rank of four countries (Iran, Turkey, Egypt and Saudi Arabia) in the field of pulmonary and respiratory medicine from SCImago Journal Ranking (SJR) during the 1st of January, 1996 to the 31st of December, 2012 considering "Total Number of Document" and "cite able Document" indicators

Country	World Rank	Document	Cite able Document
Turkey	20	2446	2102
Iran	25	573	539
Egypt	42	177	153
Saudi Arabia	45	399	316

Table 4 Rank of countries (Iran, Turkey, Egypt and Saudi Arabia) in Citation indicators of pulmonary and respiratory medicine researches from SCImago Journal Ranking (SJR) during the 1st of January, 1996 to the 31st of December, 2012

Country	Cites	Self-Citation	Cite per Document
Turkey	16325	2959	10.54
Saudi Arabia	2787	338	9.99
Iran	2044	634	13.24
Egypt	1470	60	15.45

Table 5 Comparison of countries (Iran, Turkey, Egypt and Saudi Arabia) in Self-Citation and Self-Citation per Documents of pulmonary and respiratory medicine researches from SCImago Journal Ranking (SJR) during the 1st of January, 1996 to the 31st of December, 2012

Country	Self-Citation	Self-Citation per Document
Turkey	2959	8.46
Iran	634	8.1
Saudi Arabia	338	8.85
Egypt	60	15.17

Table 6 Comparison of global ranks the "Total number of citation" and "H-Index"of pulmonary and respiratory medicine of countries (Iran, Turkey, Egypt and Saudi Arabia) in SCImago during the 1st of January, 1996 to the 31st of December, 2012

Country	H-Index	Cites
Turkey	49	16335
Saudi Arabia	24	2787
Egypt	21	1470
Iran	20	2044

Discussion

Citation analysis along with peer judgments and assessments of document counts and venues is one of the most widely used methods for evaluating the research performances of scholars.[10] Citation counts provide researchers and administrators with a reliable and efficient indicator for assessing the research performances of authors, institutions, and countries with their relative impacts and work qualities.[11,12] The leaders of production of respiratory medicine research were from Western Europe and the United States, Canada, and Oceania. This study aimed to rate Middle East leaders countries in respiratory research productivity. This study was performed a comparison between the countries with similar situations in political, social, economic and culture. The comparison performed between Iran, Turkey, Saudi Arabia and Egypt on the basis of the data at SCImago. The comparison reveals that during the 17 years from 1996 to 2012, Iran, Turkey, Egypt and Saudi Arabia were in the 25th, 20th, 42th, 45th places respectively considering the number of Documents in all subject areas. Thus, Turkey and Iran outpaced Middle East region in this field of study.

Iran situation in some subjects such as 'self-Cite per Documents' is better if compared with other indicators. However, it should take into account that Iranian researches did not have an equal presence in all subjects. As mentioned earlier, considering "total number of Documents", Iran's global ranks were higher than Saudi Arabia and Egypt. Iran gained the 25th place in world considering "total number of document" and "cite able documents". Iran documents in the period of study located in the second place after Turkey. This situation of Iran under the study seemed to be similar to other science in this country, but this point should be taken into consideration that air pollution and respiratory disease cause problems in some of area in the region. Therefore, this subject need to more support. This study shows an important point that the number of 'cite per document' to Iranian articles had a lower rank in comparison with the articles of Saudi Arabia. Therefore our researchers should try to arise quality of papers for outpace the countries of Middle East region. Table 6 show Iran had the lowest H-Index in comparison to other countries. Therefore Iranian authors should have more attention to this entity. We authors of the present study paper believe that policy makers in Iran should pay more attention to pulmonary and respiratory medicine research and allocating more budget to developing human resources and infrastructure.

Conclusion

Iranian scientists have been productive in this field. Considering the growth rate of pulmonary disease in world, significant attentions and highly expensive instruments especially for pulmonary researches

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should be provided in Iranian universities.

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Conflict of interest

The authors declare that there is no conflict of interests involved in this study.

References

1. Michalopoulos A, Falagas ME. A bibliometric analysis of global research production in respiratory medicine. *Chest*. 2005;128(6):3993–3998.
2. Giannadaki D, Pozzer A, Lelieveld J. Modeled global effects of airborne desert dust on air quality and premature mortality. *Atmos Chem Phys*. 2014;14:957–968.
3. Schinasi L, Horton RA, Guidry VT, et al. Air pollution, lung function, and physical symptoms in communities near concentrated Swine feeding operations. *Epidemiology*. 2011;22(2):208–215.
4. Amato F, Cassee FR, Denier van der Gon HA, et al. Urban air quality: The challenge of traffic non-exhaust emissions. *J Hazard Mater*. 2014;275:31–36.
5. ISI Web of Knowledge. 2014.
6. Scopus preview. 2014.
7. Google Scholar. 2014.
8. SCImago Journal & Country Rank. 2014.
9. Kharabaf S, Abdollahi M. Science growth in Iran over the past 35 years. *J Res Med Sci*. 2012;17(3):275–279.
10. Lewison G. Evaluation of books as research outputs in history of medicine. *Res Evaluation*. 2001;10(2):89–95.
11. VanRaan AFJ. Fatal attraction: Conceptual and methodological problems in the ranking of universities by bibliometric methods. *Scientometrics*. 2005;62(1):133–143.
12. Cronin B. *The citation process: The role and significance of citations in scientific communication*. UK, London: Taylor Graham; 1984:1–107.