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Original Article

The Presence of Iran and its Counterparts in Pathology and Forensic Medicine during 1996 to 2010

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ABSTRACT

Background and Objective: **Since it is essential for the research policy makers to acquire knowledge about the global ranks of their countries in in Pathology and Forensic Medicine subject areas, scientometrics experts have been always ranking and analyzing countries on the basis of 'total number of papers', 'total number of citations' and 'citations per paper', etc.**

Materials and Methods: **The data in SCImago has been used to analyze and evaluate the global ranks of Iran, Turkey, Saudi Arabia, India, Pakistan, South Korea and South Africa. These countries had a similar growth trend in many indicators of science and technology in the past.**

Results: **This article mainly deals with the extent of presence of these countries in Pathology and Forensic Medicine subject areas, their international global ranks and comparing them with each other. Furthermore, data show that these countries had a different situation considering "citations per Document"; because it did not match with their "number of Document" and "total number of citations" to their papers and did not increase accordingly. "Citations per Document" is considered as one of the most important indicators which show the average number of citations to each document.**

Conclusion: **The situation of Iran under the study seemed to be better in some areas such as 'Cite per Documents' than their situation in other areas; however, this point should be taken into consideration that they did not have an equal presence in all areas.**

Keywords: **SCImago, Scientific activity, Pathology and Forensic Medicine, Iran**

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Introduction

South Africa, one of the most important countries of Africa, has undergone numerous developments during the last two decades considering the expansion of its indicators of sciences and technology. These developments mainly resulted from its independence and freedom from Apartheid. Other countries such as South Korea and India in Asia have had such improvements in various indicators of sciences and technology that have attracted many communities of science and technology as well as global markets to their products and services. Moreover, Iran, as another Asian country which had faced imposed war up to late 1980s, initiated its development programs in different scientific, cultural, economic and political aspects (1).

The development programs in each of these countries have had different influences in their scientific, cultural, economic and social aspects. The extent of participation and the global place of each of these countries in the production of science have been always considered as the most important indicators of science and technology. Therefore, it is possible to evaluate the quality of performance of these countries with the above-mentioned information and merging them with the results of separate studies which are carried out on the situation of each country through other indicators of science and technology.

It is impractical to judge about their scientific developments in all aspects only on the basis of the information retrieved from these indicators. Therefore, this information makes it only possible to evaluate and compare the scientific outputs of these countries. The evaluation of ideality of their performance requires another independent research which would be conducted to identify the extent of input which was required to produce such output (2).

SCImago is one of the most important bases of SCOPUS which can be used to analyze the international places of countries regarding their production of scientific production. Besides, it offers data for ranking scientific production, countries, and journals in the world on the basis of these indicators: "number of document", "total number of citations", and "citations per document". Furthermore, introduces "H-index" and "International collaboration". Since SCImago covers a major portion of journals, it makes it possible to compare the global places and the extent of focus of countries; therefore, scientometrics experts and science and research policy makers have paid attention to it.

In this article, the global places of Iran, South Africa, South Korea, Saudi Arabia, Turkey, Pakistan and India are compared and evaluated according to the data retrieved from SCImago.

The most important purpose of this research is the study and comparison of the situation of Journals of each of the mentioned countries published in international journals during the fifteen years from 1996 to 2010. It was also tended to analyze the global ranks of each country according "number of document", "total number of citations", and "citations per document". Furthermore, introduces "H-index" and "International collaboration". Moreover, the analysis and comparison of this situation is also considered as one of the objectives of this research (3).

A comparative study of the situation of Iranian documents with the situation of other countries in the region can be influential in leading the major research plans of Iran to achieve its regional goals and outpace the countries in the region;

however, it must be taken into consideration that useful information can also be obtained from the study of this situation in the countries which have had considerable growth according to many indicators of research and development. Some of the most important benefits of this study are: to recognize the priority of Journal Ranking, in each country, to see which Journal have been paid less attention to, to recognize the growth rate of Document of these countries in order to use them in later researches which would deal with scientific developments of these countries and to evaluate and compare the extent of growth of Documents of these countries with their growth considering other indicators of scientific Production (4).

India, South Korea, India and South Africa have been chosen in this study because they had similar situations to Iran in the early 1990s, considering many of the global indicators of science and technology; however, all these countries have had quite different situations during the recent years. South Korea and India, as two Asian countries, have enjoyed considerable improvements considering various indicators of sciences and technology and have attracted the attention of many countries. South Africa has also had great improvements since its political independence.

Material and Methods

This study was conducted through library method and the data was analyzed via comparative and descriptive method. The data in this account was collected from SCImagi during February 20 to June 02, 2012. The data in SCImao covers papers during the fifteen years between 1996 and 2010. This data has been updated by SCImago on, 2012.

Results

Global Place of All Iranian Production in Pathology and Forensic Medicine vs. Other Countries under the Study

A comparison of the countries under the study on the basis of the data at SCImago shows that during the 15 years from 1996 to 2010, Iran, Turkey, Saudi Arabia, India, Pakistan, South Korea and South Africa were respectively in the 33th, 20th, 44th, 11th, 57th, 17th and 32th places in the world considering the number of Documents in all subject areas. Thus, India and South Korea outpaced other counties under the study during the mentioned 15 years (5).

Table 1 demonstrates details of the situation of each country considering “number of document”, “total number of citations”, and “citations per document”. Furthermore, introduces “H-index” and “International collaboration”.

Table 1 also shows that these countries were placed in almost the same order considering both “total number of citations” and “number of document”. India and South Korea were respectively placed in the 10th and 14th ranks considering “total number of papers” and in the 16th and 15th rank regarding “total number of citations”.

Thus, India and South Korea had higher ranks than Iran and South Africa regarding both “total number of papers” and “total number of citations”. Another important point is that although “total number of citations” of these countries was more than their “number of papers”, their global ranks on the basis of “total number of citations” were 2 to 7 times lower than their rank on the basis of “number of papers”.

Table 1- A Comparison of the global ranks of countries in Pathology and Forensic Medicine in SCImago

Country	Document	Cite able Document	Cites	Self-Citation	Cites per Document	Self-Citation per Document	H Index	%Citation per Document	International collaboration
Iran	692	607	2234	641	6.02	4.67	19	72.72	20.96
Turkey	1497	1420	9116	1471	7.49	6.22	31	81.62	18.75
Saudi Arabia	247	238	2198	190	9.81	8.96	22	82.16	43.40
South Korea	2099	1991	19357	3168	12.85	10.64	53	85.44	23.87
South Africa	694	650	7020	926	10.23	8.88	37	81.58	31.64
India	3087	2756	12629	4438	5.40	3.59	35	66.88	13.77
Pakistan	97	89	577	83	6.96	6.01	13	88.81	49.00

Furthermore, Table 1 show that these countries had a different situation considering "citations per Document"; because it did not match with their "number of Document" and "total number of citations" to their papers and did not increase accordingly. "Citations per Document" is considered as one of the most important indicators which show the average number of citations to each Document. According to Table 1, South Africa had a better situation than the 5 other countries regarding this indicator; because, in average, it had the highest number of citations to each Document. However, it must be taken into account that none of the countries under the study had a suitable global rank in this regard. Even India which achieved the 10th respectively regarding "number of Document" and "total number of citations" did not have a high rank considering "citations per Document". As observed in Table 1, Saudi Arabia had the lowest rank among these Islamic countries in this regard. Global Place of Iran VS Other Countries in SCImago considering "Total Number of Document in Pathology and Forensic Medicine" As mentioned earlier, the situation of Document of each country can be compared and evaluated according to other countries in SCImago. Therefore, the countries under the study are evaluated according to each other's.

Table 2- Ranks of these countries in SCImago considering "Total Number of Document"

Country	World Rank	Document	Cite able Document
India	11	3087	2756
South Korea	17	2099	1991
Turkey	20	1497	1420
Iran	33	692	607
South Africa	32	694	650
Saudi Arabia	44	247	238
Pakistan	57	97	89

However, India had more outstanding ranks in Documents in comparison with the other countries under the study. Among the 236 ranked countries, India achieved the 11th place in Documents and Cite able Documents. A comparison of the ranks of South Korea, South Africa and Iran shows that South Korea had higher ranks than Turkey and Iran.

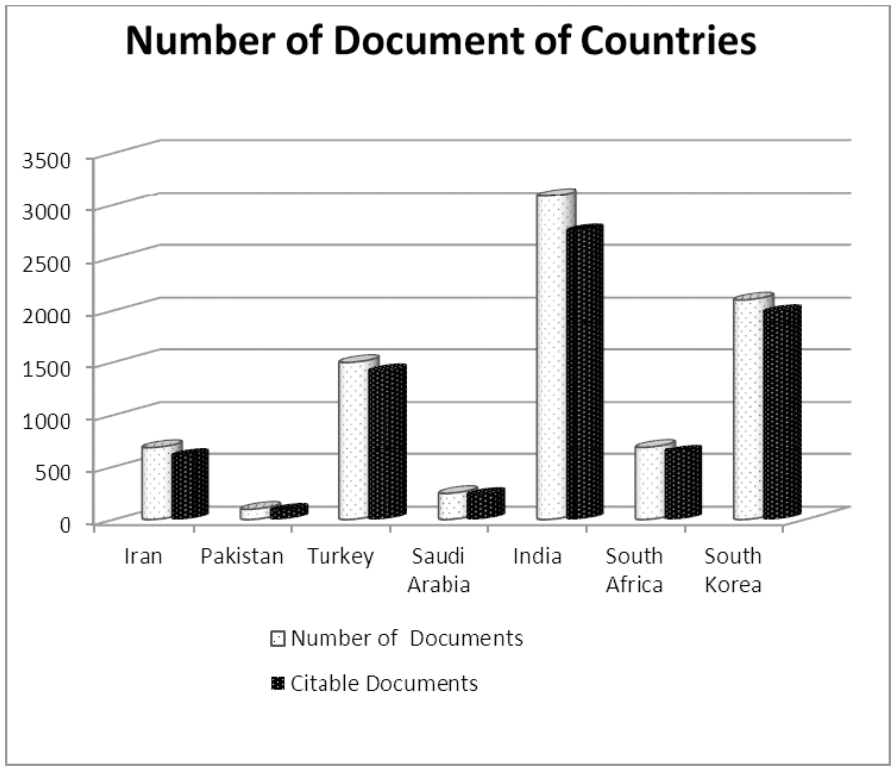

Fig. 1- Number of documents and number of cite able documents

On the other hand, as Fig. 1 demonstrates, India and South Korea had respectively higher ranks in comparison with each other.

Table 3- Comparison of ranks of countries in citation

Country	Cites	Self-Citation	Cites per Document
South Korea	19357	3168	12.85
India	12629	4438	5.4
Turkey	9116	1471	7.49
South Africa	7020	926	10.23
Iran	2234	641	6.02
Saudi Arabia	2198	190	9.81
Pakistan	577	83	6.96

South Korea and India had respectively better ranks in comparison with each other in 'Total Cites'. South Korea had better ranks than other countries under the study in Total Cites. In 'Cite per Document' South Korea had better rank than other countries. Therefore, South Korea, and South Africa gained higher ranks in comparison with each other in total Rank.

Table 4- Comparison of global ranks of countries in subject areas in pathology and forensic medicine

Country	Self-Citation	Self-Citation per Document
Iran	641	4.67
Turkey	1471	6.22
Saudi Arabia	190	8.96
South Korea	3168	10.64
South Africa	926	8.88
India	4438	3.59
Pakistan	83	6.01

Table 3 make it possible to compare the situation of the countries under the study with each other in regard to their number of Self-Citation and Self-Citation per Document in Pathology and Forensic Medicine, it also reveals the situation and rank of these areas in each country. In other words, study of the global ranks of each country in Self-Citation and Self-Citation per Document the extent of attention of that country to these areas. Therefore, considering the fact that India and Iran had better ranks in 'Self-Citation per Document' in comparison with its ranks in other subject, it can be concluded that Iranian scientists paid more attention to areas during the 15 years between 1996 and December 2010. However, South Korea had a different situation; it can be stated that South Korea had an outstanding presence in these areas.

However, it must be taken into account that publishing scientific Production is relevant to the number of researchers of a country. Thus, if it is planned to gain information about the scientific capabilities of research communities of a country in different subject areas in order to compare its situation with other countries, the judgment should be basically based on the rank and number of Documents of that country, not the number of its researchers or the investments of that country on special subject areas. As mentioned earlier, these indicators can also be useful if it is aimed to study the number of Documents of each country, without considering its research performance. However, this comparison should take place between the countries with similar situations in political, social, economic, cultural and scientific areas in order to come to a reasonable conclusion. Of course, a comparison of their situation with the target countries can provide research policy makers with useful information about the distance between the subject areas in the countries under the study and the situation of leading countries and can lead them to improve this situation. Therefore, one of the procedures for a comparative study of the performance of different scientific areas is to compare the situation of number of Document and their activity such as Citation, Self-Citation and H-index in one country with the situation of that area in other countries. Having more Documents does not necessarily indicate the success or superiority of scientific activities of scientists in Number of Documents in comparison with scientists in Cite per Document; because it might be resulted from differences between scientific natures of various fields. Considering these facts, it is essential to categorize and analyze the data retrieved from scientometrics studies on the basis of objectives in consideration.

Global Place of Iran VS Other Countries in SCImago considering "H-Index" in Pathology and Forensic Medicine

Ranking countries according to "H-Index" can be considered as one of the qualitative indicators of Documents which show their impact and usage.

According to Table 3, there are, in a few cases, some differences between the ranks of countries considering "H-Index" and "total number of Cites"; however, in most cases, there is a relation between their ranks regarding these two indicators. In general, there is a certain relationship between the extents of citations to the papers of a country. According to Table 3, for instance, Iran's global rank regarding "H-Index"

fluctuated between 32 and 83 during the eleven years from 1997 to 2007; however, in most subject areas such as 'chemistry', 'engineering', 'materials sciences' and 'mathematics', Iran had higher ranks in comparison with other countries under the study regarding both "total number of papers", and "total number of citations". On the other hand, Iran was situated in a low place in subject areas such as 'microbiology' and 'economics and business' considering both "total number of papers" and "total number of citations". Although there might be slight differences between some subject areas in Iran, the greatest difference is seen in 'multidisciplinary'; because Iran achieved the 14th place considering "total number of papers", but in the 63rd place regarding "total number of citations". Therefore, it can be stated that global rank of Iran regarding "total number of citations" had greater fluctuation than its rank considering "total number of papers".

Table 3 shows that there is a similar situation in other countries under the study. For instance, South Korea gained higher ranks in subject areas such as 'materials sciences, 'engineering', 'chemistry' and 'physics', in comparison with other countries under the study, considering both "total number of papers" and "total number of citations".

Table 5- Global ranks of countries in Scimago considering "Total Number of Cites"

Country	H-Index	Cites
South Korea	53	19357
India	35	12629
Turkey	31	9116
South Africa	37	7020
Iran	19	2234
Pakistan	13	577
Saudi Arabia	22	2198

In general, it can be stated that South Korea, India and Turkey had respectively the most number of citations in comparison with each other. Thus, it shows that Pakistan had a lower rank in other countries. The situation of Iran in 'total Cites' was better than Pakistan and Saudi Arabia in this regard. The situation of South Korea in H-Index had a better rank in other countries.

Discussion

According to the study, the situation of Iran under the study seemed to be better in some areas such as 'Cite per Documents' than their situation in other areas; however, this point should be taken into consideration that they did not have an equal presence in all areas. As mentioned earlier, considering "total number of Documents", Iran's global ranks in were higher than Saudi Arabia and South Africa and Iran's Rank in this area were lower than the other countries under the study. India gained the highest ranks, in comparison with the countries under the study, in 'Total of Documents'. South Korea had concentrated more on 'Total Cites' and 'H-Index' while South Africa had mainly focused on 'Cite per Document' (6).

In general, it can be stated that all the 6 countries had some situation in some indicator than other countries. The following reasons can undoubtedly be considered as some of the most important factors affecting this situation and can be studied in separate.

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