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Original Research

Survey of the statues of Iranian medical science journals indexed in databases of Web of science, Scopus and PubMed

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Abstract

This study evaluated the scientometrics indices of Iranian medical sciences journals indexed in Web of Science, Scopus and PubMed databases until 2020. The present study is a descriptive and practical survey which was done using scientometric methods. The source of data collection includes Web of Science, Scopus and PubMed databases. Excel statistical software was used to analyze the data, and net draw software was used to plot the graphs. A survey on Iranian medical journals' status revealed that the number of journals in all three databases has been growing. "General and Internal Medicine", "Health", and "Pharmacology, Toxicology and Pharmacy" are the subjects with the highest number of indexed journals in these databases. Furthermore, a qualitative review of indexed journals showed that more than 70% of Iranian journals have an impact factor of less than two. "International Journal of Health Policy and Management" of Kerman medical sciences university and "Bioimpacts" of Tabriz medical sciences university are the only medical journals with impact factors greater than 3 (5.007 and 3.831). Conclusions: Generally, despite the significant growth of indexed medical journals in recent years, most Iranian journals are not ranked among high-quality journals according to global indexing criteria.

Keywords: Scientific Journals; Status Evaluation; Web of Science; Scopus; PubMed; Iran.

Introduction

The publication of scientific journals is known as one of the most significant ways of disseminating science and knowledge in the world. The publication is also an essential tool for helping researchers to share their achievements with others (Dennis, 2007). Furthermore, the increment in scientific publications reflects the development of knowledge and the status of science and technology in countries at national and international levels (Rezaeian, Hadavi,

Bakhtar, Davvodi Salestani & Karemeian, 2014). In fact, scientific journals are considered one of the most powerful platforms to exchange information and a tool to transfer the results of other research worldwide (Karami & Alijani, 2010).

Nowadays, researchers all over the world try to do authentic studies and make them much more effective by publishing these studies in international publications. In academic and scientific societies, the quality of scientific output is judged by the quality of the Journal in which they were published. One factor that indicates the credibility of scientific and specialized journals is whether they are indexed in world-renowned databases and citation databases, including Web of Science, Scopus, and PubMed.

The status of scientific journals, especially their indexing in reputable databases, can significantly impact the evaluation of scientific products. (Tahmasebi, Foroughi & Alizadeh Navai, 2017). Moreover, these journals are essential tools for assessing the development and advancement of continuous education, promoting research, stimulating thinking, and disseminating scientific activities (Riahi, Sohbatiha & Zare, 2015). Therefore, it can be stated that the dissemination of scientific works, especially as an article or Journal, is the most critical factor that the assessing trustees use in analytical processes of science development. Thus, in the way of scientific systems evolutions, the world has reached a point where the scientific ability of each country is considered as a language or a tool to attend the international scenes, and without it, the society would be secluded (Norouzi & Abdkhoda, 2011).

Problem statement

One of the criteria of scientific development in any country is the international extent of research. International availability of the results of any research makes it to be evaluated and criticized universally and benefit more people. Moreover, the results of scientific research and productions are accessible to different research groups and experts through journals. Therefore, journals have played an essential role in scientific development (Zamani & Azizi, 2011).

The status and performance of scientific products indexed in databases are one of the most important indicators that can be considered as the research community's success of any country in disseminating their scientific findings in international publications. On the other hand, the publication of scientific findings in international journals represents the scientific acceptability of the researchers' achievements. So, increasing the number of scientific journals indexed in reliable databases is one indicator to evaluate any country's scientific progression.

Indexing the journals in databases is essential to provide the basis for the international publication and availability of the scientific results and also provides a chance for the country's research system to have adequate attendance in the process of evaluating and disseminating global scientific outputs (Nowruz Chakoli, Hasanzadeh, Nourmohammadi & Etemadifard, 2009). Generally, journals that are listed in Web of Science and Scopus and PubMed journals are accredited as reliable sources, and the publication of any scientific article in reputable journals is very important in the research performance of countries and their rankings (Sabouri & Poursasan, 2006).

Awareness of the status of Iranian medical journals in databases is one of the main issues that can be used to evaluate the research outputs in the country. The present study aims to evaluate the Iranian medical sciences journals indexed in Web of Science, Scopus and PubMed databases by 2020. Knowing the current status of Iranian medical journals indexed in these

databases may lead to organizing and standardizing the Iranian journals and increasing their chance of indexing in internationally accredited databases.

Purpose of the study

The main goal of the current study is to evaluate the Scientometrics Indices of Iranian medical sciences journals indexed in the Web of Science, Scopus and PubMed Databases till 2020.

Aims:

1. To determine the bibliographic information of Iranian medical science journals Indexed in the Web of Science, Scopus, and PubMed;
2. To determine the citation information of Iranian medical science journals Indexed in the Web of Science, Scopus, and PubMed;
3. To discover relationships between authors' affiliation and the Journal's quality indicators.

Research Questions

1. What is the bibliographic information of Iranian journals of medical journals indexed in the Web of Science, Scopus and PubMed databases?
2. What are the frequencies, subjects, Impact Factor, H-index, and number of citations of Iranian medical sciences journals indexed in the Web of Science, Scopus and PubMed databases?
3. Is there any relationship between authors' affiliation and the Journal's quality indicators?

Literature Review

Mousavi Chelak, Riahi, and Zare (2018) evaluated Iranian medical journals indexed in Scopus and showed that the number of Iranian journals increased from 2 cases, in 1999, to 78 cases in 2015. In addition, 29 centres and universities in fifteen cities have been active in publishing indexed journals. They reported that Tehran University was on top of the Iranian publishers with 19 journals. However, they also claimed that Iranian journals were not categorized as high-quality journals compared to other developing countries.

Azadeh, Ghazi Mirsaeid, Gharib and Nabiolahi, (2018) have examined the indexing status of the English medical journals approved by the Iranian medical sciences universities in international accredited indexes. Their survey showed that about 26% are indexed on the Web of Science and 69% in Scopus. Despite the significant growth in the number of scientific journals, they claimed that Iranian journals are in a poor conformity status with global indexing criteria.

Erfanmanesh and Nojavan (2016) evaluated the performance of 21 Iranian medical sciences journals indexed in the Journal Citation Report (JCR) in 2013, using 20 different indicators. Their results showed that the average impact factor of all Iranian medical journals was lower than the middle impact factor of peer-reviewed journals in the database of the Journals Citation Report. Furthermore, the authors showed a statistically significant relationship between the number of foreign articles and the number of foreign citations, as well as the number of collaborative articles and the number of citations. They also claimed that as the Iranian Journals publish more leading international articles, their quality evaluation indices increase.

Abazari, Riahi, Sohbatiha, Siamian and Yamin Firoz (2015) reviewed the growth of medical journals and articles of Eastern Mediterranean regional office members in the Scopus database. Their findings showed that the publications of scientific papers and journals in this region had grown from 2002 to 2012. As scientific journals grow in these countries, their scientific output has also been enhanced.

Mohammad Ismail, Riahi & Sabhati (2014), evaluated qualitative and quantitative factors of Iranian journals in the Scopus citation database during 2000-2012. Their findings showed that Iranian-indexed journals in Scopus jumped from 8 titles in 2000 to 113 in 2012. During those periods, the number of scientific and research centres and institutions responsible for managing and indexing scientific journals was elevated. However, the results represented that their scientific qualities were not satisfying despite the quantitative growth in the number of indexed journals.

Gu and Blackmore (2016) examined the development of academic journals. Their research results announced that, between 1986 and 2016, indexed academic journals had an average of 4.7 percent growth. Winarko, Abrizah and Tahira (2016) examined the quality and serviceability of Indonesian agricultural journals, they resulted that full-English journals have a greater chance of being indexed in reputable international databases.

Ram, Kataria & Ahmad (2014) evaluated the international visibility of 11 Indian journals indexed in the Journal Citation Database. The study's findings showed that overall Indian journals had an impact factor of less than 0.5, and the Indian journals are at the lower level compared to other journals based on the impact factor index.

Zainab (2008) examined the presence of Malaysian scientific journals in internationally acclaimed databases. The results indicated that nine journals were indexed in 2012 in the journal citation database, and the "Bulletin Malaysian Scientific Mathematical Society" has been the highest quality journal sitting in 2nd quartile (Q2).

Yamazaki and Zhang (1997) reviewed the international situation of four science-based English language journals in Japan. They assessed the articles' authors' qualitative and geographical distribution and concluded that three Japanese journals are at the level of national journals but not universally accepted.

Materials and Methods

The present study was an applied-descriptive survey. The source of data collection was the Web of Science, Scopus and PubMed databases. All the Iranian journals in the field of medical sciences, which were indexed in these three databases until 1 March 2021, were included in the study. Excel software analyses the data, and Netdraw's software plots the graphs. In this study, the qualities of journals have been evaluated based on the indicators such as; Impact factor, H-index, Citations, and Quartet.

Results

Frequency and indexing of Iranian medical sciences journals indexed in the Web of Science, Scopus and PubMed

The Islamic Republic of Iran's medical sciences journals and their related information have been obtained from the Web of Science, Scopus and PubMed. Findings showed that none of the Iranian medical journals had been indexed in the Web of Science and PubMed databases till 2006. However, Iranian medical journals have had a positive growth during the studying

years (Fig. 1). The number of Iranian-indexed journals in the Web of Science database has increased from 1 journal, in 2006, to 93 in 2020. The such increment was also evident in the Scopus database, from 1 in 1989 to 130 in 2020, and PubMed database, from 3 in 2006 to 82 in 2020. During the studied years, some indexed journals have been removed from the databases, one Journal from Scopus, one from PubMed, and five from Web of science.

While Considering the publishing languages, 4 Persian journals were indexed in WOS, 18 Persian journals in Scopus, and all of the published journals on PubMed were in English. The frequencies of Iranian medical science journals indexed on the Web of Science, Scopus, and PubMed were 93, 130, and 82, respectively.

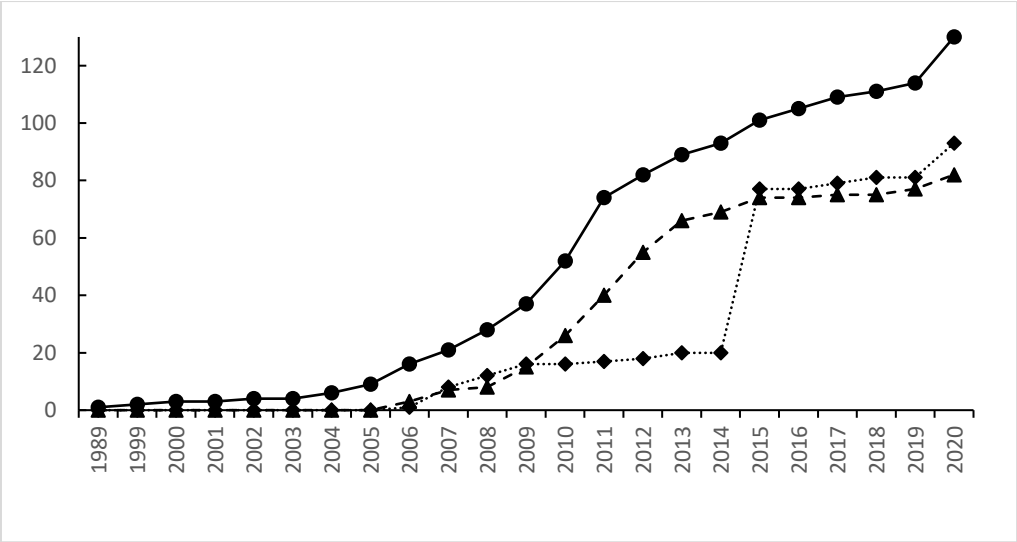

Fig 1: The growth of Iranian medical sciences journals indexed in the Web of Science (dotted line), Scopus (continues line) and PubMed (dashed line)

Subject distribution of Iranian medical science journals indexed in Web of Science, Scopus and PubMed

The fields of the Iranian indexed journals in the intended databases are shown in Fig. 2. Findings show that the indexed Iranian journals cover 30 subjects of the medical sciences in Web of Science whose top subjects are "General and Internal Medicine" and "Health" each with ten journals, "Children's Diseases" with seven journals and "Pharmacology, Toxicology and Pharmacy" each with six journals. On the other hand, Scopus database indexed Iranian journals in 34 sub-branches of medical fields which, most of which were "Public and Internal Medicine" with 30 journals, "Pharmacology, Toxicology and Pharmacy" with 12 journals and "Health" with eight journals. In PubMed, the highest number of indexed journals belong to "General and Internal Medicine" with 14 journals, "Health" with seven journals and "Pharmacology, Toxicology and Pharmacy" and "Dentistry", each with 5 journals.

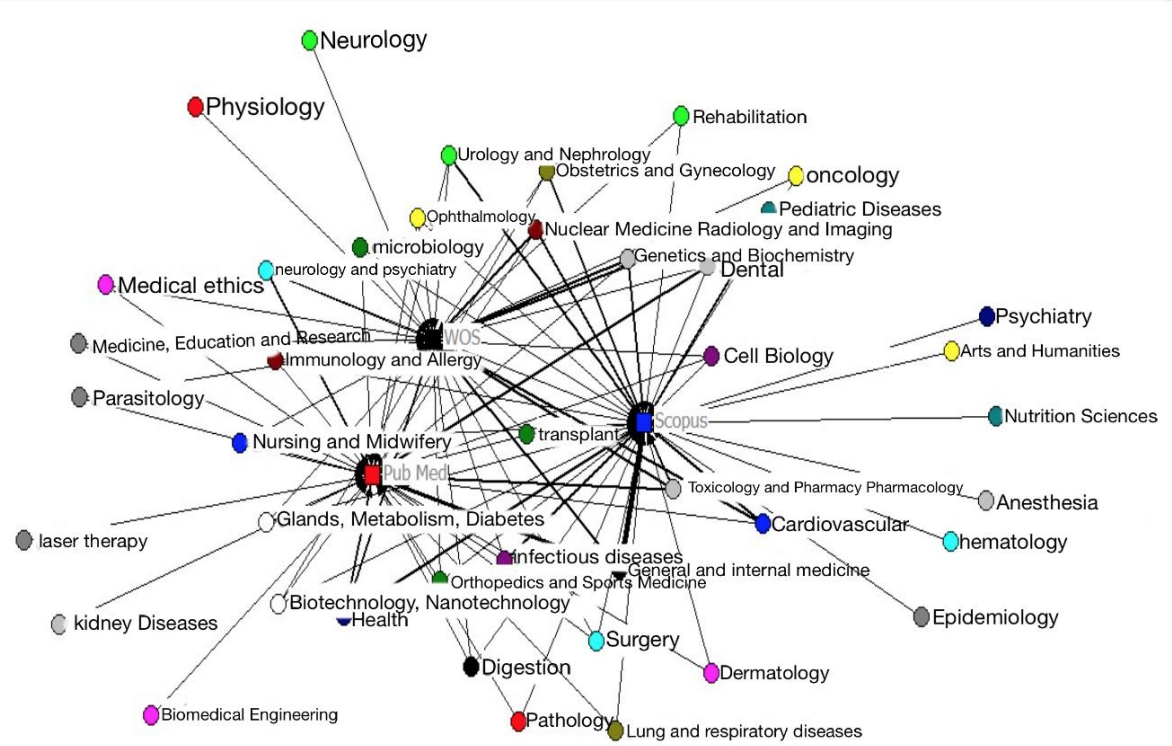

Figure 2: Thematic distribution of Iranian medical science journals indexed in the Web of Science, Scopus and PubMed

Impact Factor (IF) of Iranian medical sciences journals indexed in Web of Science, Scopus and PubMed

Based on the 2020 journal citation report (JCR), most of Iranian journals have no impact factor: 71 (76%) of journals indexed on the Web of Science, 109 (84%) indexed in Scopus, 67 (82%) of indexed in PubMed. The number of Iranian journals decreases as the impact factor increases (Table 1).

Table 1

The Impact Factor of Iranian medical sciences journals indexed in the Web of Sciences, Scopus and PubMed

Impact Factor	No Impact Factor	0-1	1-2	2-3	3-4	More than 4
Number of WOS Journals	71	7	10	3	2	0
Number of Scopus Journals	109	6	10	3	2	0
Number of PubMed Journals	67	1	9	3	2	0

H-Index of Iranian medical sciences journals indexed in Scopus and Web of Science:

"Archives of Iranian Medicine" with the H-index of 43 in WOS and 45 in Scopus has the highest H-index among all Iranian medical journals. Only eight journals in Web of Science and 9 in Scopus have an H-index higher than 30. Most Iranian-indexed journals have an H-index of less than 15 (Table 2).

Table 2
H- Index of Iranian medical sciences journals indexed in Web of Science and Scopus

H- Index	0-5	5-10	10-15	15-20	20-25	25-30	More than 30
Number indexed journals in WOS	8	21	27	13	10	5	8
Number indexed journals in Scopus	13	31	27	20	17	7	9

Citations of Iranian medical sciences journals Indexed in Scopus and Web of Science:

Regarding the number of citations received by Iranian-indexed medical science journals, the findings showed that the highest number of citations belongs to the Journal of "Archives of Iranian Medicine" by the data collection date,1 March 2021 (Table 3). Although the rank of journals citation differs in WOS and Scopus, the citations received in Scopus are higher than WOS. This can be due to the larger size of the Scopus database. All the top 15 journals in WOS were indexed in Scopus except for "Iranian Red Crescent Medical Journal" due to publisher problems at 2020.

Table 3
Top 15 journals ranked by the total number of received citations in WOS and their corresponding data in Scopus

	WOS			Scopus		
Journal	N. Citation	Rank	Indexed Year	N. Citation	Rank	Indexed Year
Archives of Iranian Medicine	*14,884*	1	2007	20980	1	2002
Journal of Research in Medical Sciences	*14,867*	2	2008	12576	7	2005
Iranian Journal of Pharmaceutical Research	*14,840*	3	2007	16504	4	2008
Iranian Journal of Public Health	*14,405*	4	2006	17850	3	1973-1980/2004-
Iranian Journal of Basic Medical Sciences	*12,474*	5	2009	14252	6	2010
Iranian Red Crescent Medical Journal	11,874	6	2007	*		
Hepatitis Monthly	*10,092*	7	2007	11134	9	2007
DARU Journal of Pharmaceutical Sciences	*8,339*	8	2007	12536	8	2000
Jundishapur Journal of Microbiology	*7,224*	9	2008	8900	11	2009
Journal of Environmental Health Science and Engineering	*6,211*	10	2013	7996	13	2012
Iranian Journal of Pediatrics	*5,668*	11	2007	6089	21	2008
Iranian Journal of Parasitology	*5,549*	12	2008	6705	18	2008

	WOS			Scopus		
Journal	N. Citation	Rank	Indexed Year	N. Citation	Rank	Indexed Year
Iranian Journal of Kidney Diseases	*5,394*	13	2009	6856	15	2007
Cell Journal	*5,114*	14	2011	5660	31	2011
Urology Journal	*4,867*	15	2009	6821	16	2007

*This Journal removed from Scopus due to some problems in publishing at 2020

The Quartile of Iranian medical sciences journals indexed in Websites of Science, Scopus and PubMed

A review of the journals in Table 4 shows that 19% of journals in Web of Science database are in the third and fourth quartiles, 1% in the first and 3% in the second quartiles, 76% lack the quartiles. In Scopus, 70 % of journals are in the third and fourth quartiles, only 6% are in the first and 19% in the second quartiles and six journals lack the quartiles. In PubMed 45% of the journals are in the third and fourth quartiles, 30% in the first and second quartiles and 21 (25%) journals lack quartiles. The results of this study indicate the poor quality of Iranian journals in the Quartile scale.

Table 4
Quartile of the journals of Iranian medical sciences in WOS, Scopus and PubMed

Quartile*	No Quartile	Q1	Q2	Q3	Q4
WOS	71	1	3	3	15
Scopus	6	8	25	56	35
PubMed	21	9	15	30	7

Publishers of Iranian medical science journals indexed in Web of Science, Scopus and PubMed

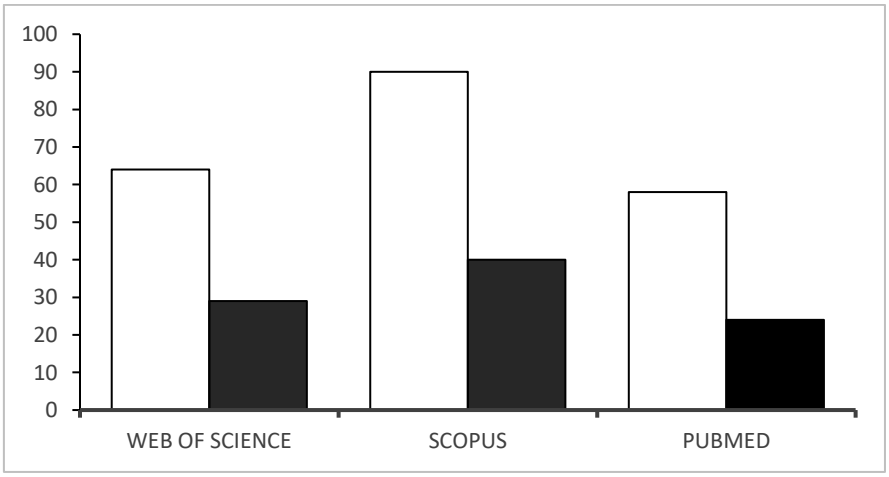

Fig 4: Number of Iranian medical sciences journals indexed in the WOS, Scopus and PubMed published by Universities (blank) and "accusations or other institutions" (filled)

Most of the indexed Iranian medical journals are universities in main cities (Fig. 4). Tehran hosts the publishers of 51 journals indexed in the Web of Science, 74 in Scopus, and 46 in PubMed. The findings of this study have shown that Tehran, Shahid Beheshti, and Isfahan

universities of medical sciences have the highest number of indexed journals among other Iranian universities and institutions (Fig. 5).

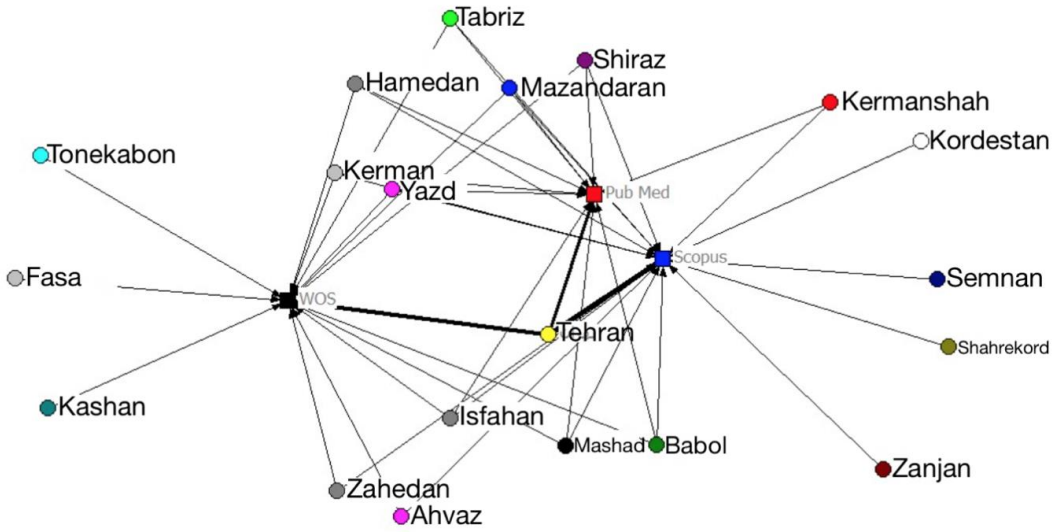

Fig 5: Distribution of Iranian-indexed medical journals across the Iranian cities.

The relationship ***between authors' affiliation and the Journal's quality indicators***

Universities publish most Iranian medical journals. Therefore, we investigated the relationship between the percentile of authors' affiliation and the Journal's impact factor, H-index, and quartile as quality indicators. The results showed that there is a weak relationship between these factors. The highest correlation is the impact factor and percentile of authors with foreign affiliations (Fig. 6).

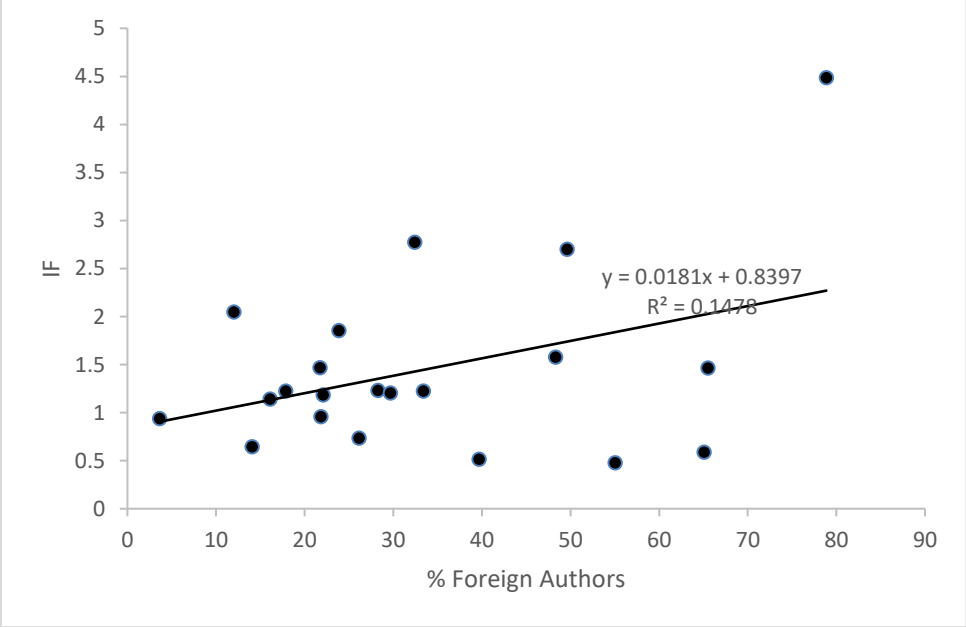

Fig 6. The relation of the Journal's impact factor with the percentile of articles affiliated with foreign authors

Discussion

The present study's findings showed that the number of Iranian medical science journals indexed on the Web of Science, Scopus and PubMed are 93, 130 and 82, respectively. The indexed journals in all three databases during the studying years (until 1 March 2021) have been positively growing, albeit some journals were removed over the time of studying; two from Scopus, three from PubMed, and five from Web of Science.

Studies in recent years have all demonstrated the growth of scientific journals in various fields and countries worldwide. The number of Iranian-indexed journals also have been increased over the years, with the highest growth in 2015 (70%) in Web of Science, in 2011 (19%) in the Scopus database and in 2012 (19%) in PubMed. (Mousavi Chalk et al., 2018; Azadeh et al., 2018); Erfanmanesh & Nojavan, 2016; Mohammad Ismail et al., 2014; Abazari et al., 2015; Basu, 2010; Vinkler, 2008; Salager-Meyer, 2008). Several factors may contribute to this growth, including the development of science in Iran during recent years (Riahi and Mousavi Chalk, (2016), changes in database policies and changing publishing language of journals from Persian to English (Mousavi Chalk et al., 2018). We think that publishing language may have the highest effect on this growth as 260/410 (63.4%) of Iranian-indexed journals have been publishing exclusively in English (Mousavi Chalk et al., 2018).

Some indicators including impact factor indices, H-index, citations and quartiles of journals, were used to evaluate the quality of medical journals indexed in the studied databases,. The results showed that Iranian-indexed medical science journals are not in a desirable situation in the studied databases. More than 70% of indexed journals in all three databases have an impact factor of less than 2. Only two Journal has an impact factor of more than 3. 71 (76%) of journals indexed in Web of Science, 109 (84%) of journals indexed in Scopus and 67 (82%) of journals indexed in PubMed have no impact factor. Only 8 journals in the Web of science and 9 in the Scopus database have an H-index of more than 30. Most indexed Iranian journals have an H-index of less than 15.

Regarding the citations, until the time of data collection (1 March 2021,) the highest number of citations in both Web of Science and Scopus databases belong to "Archives of Iranian Medicine" journal, with 14884 citations on the Web of Science and 20980 citations on Scopus. On the other hand, previous reports by Rahimi, Asghari, TaghiYar and Akbari (2008) and Monirie and Jafari (2010) claimed that the Iranian Journal of medical sciences received low citations.

In terms of the quartiles, more than 50% of the journals are in the third and fourth quartiles showing their lower quality than 50% of journals in the same subject. Following our results, other researchers also reported that the quality of Iranian journals is not desirable (Erfanmanesh & Nojavan's, 2016; Mohammad Ismail et al., 2014). In addition, most Iranian medical journals are not classified by quartile indicators since they are indexed in the Emerging Sources Citation Index (ESCI) of WOS or recently added to Scopus.

Although the IF, H-index, and Q of journals were improved by the percentile of foreign authors and authors affiliated outside the publisher, their relationships were fragile, as indicated by the R-square. It seems that the weak correlation originates from the small sample size.

A small number of Iranian journals in the Persian language were indexed in the Web of Science (4), Scopus (21) and PubMed (0). Since one of the most important reasons for indexing journals in a reputable scientific database is their language, preparing an English version of

journals would be better. This would increase the citation of Iranian journals on an international scale and improve the quality of publications.

Conclusion

Quantitatively and qualitatively enhancing Iranian journals and their indexing in scientific bases require proper policy and scientific attention by planners and authorities in the country since the indexing of journals on international bases is vital to improving international communication and scientific development. Therefore, we suggest the publishers provide accurate and continuous methods to evaluate their journals. We also recommend using universal patterns and standards in Iranian journals to increase the growth of indexed journals in credible databases. Some of the efforts to improve the quality of medical journals can be:

1) It is advised that the Commission of medical sciences journals, as the proctor of medical journals, update the approved scientific journals' provisions and guidelines based on the latest international journal indexing criteria.

2) State universities publish most Iranian journals, so it seems necessary to encourage Iranian scientific associations to be involved in journal publishing.

3) Most Iranian journals locate in low ranks of scientific databases, and they should make some efforts to improve their ranks, such as inviting international researchers to the editorial boards (Uzun, 2004; Morris, 1999), standardizing the manuscript processing, attracting more foreign audiences to study and cite Iranian articles.

4) It seems that the contribution of foreign authors improves the journal quality indicators.

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