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A Scientometric Study of Oral Medicine Articles from Iran Published in PubMed-Indexed Journals

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Objectives This study aimed to scientometrically assess the oral medicine articles from Iran published in PubMed-indexed journals.

Methods In this descriptive cross-sectional study, the author information section of PubMed database was electronically searched for oral medicine articles published from the beginning of 2006 to the beginning of 2016 with at least one author from Iran using the keywords "oral medicine", "oral and maxillofacial medicine", "stomatology", "stomatologist", and "Iran". The results were reported as frequency, and trend analysis was performed.

Results A total of 280 oral medicine articles published from the beginning of 2006 to the beginning of 2016 were found to have at least one author from Iran, which comprised 2.9% of the entire articles in this field. The majority of published articles were original articles (77%) followed by case reports (15%), review articles (5%), short communications (2%) and letter to editors (1%). The majority of articles had been published in J Dent Res Dent Clin Dent Prospects (18%), followed by J Dent (Tehran) (6.7%), and J Contemp Dent Pract (5.5%). The trend of publication of articles was ascending during this time period except for the year 2011. The frequency of articles had a significantly ascending trend during the aforementioned time period (P=0.004).

Conclusion From the beginning of 2006 to the beginning of 2016, Iran's share of oral medicine articles published in PubMed-indexed journals was around 3% and had an ascending trend.

Keywords Iran; Oral Medicine; Publications; Research

Introduction

Scientometrics is the knowledge of measurement, assessment and analysis of scientific data by quantitative and qualitative methods. It is commonly used to reliably assess the scientific progress and prosperity of a country in a specific field of science.[1, 2] Scientometrics evaluates the published scientific articles, manufactured products, and patented inventions in a certain field of science to estimate the knowledge generation and level of contribution of a country to the global science in general.[1, 2] Information in this respect plays a fundamental role in determining the 20-year perspective of medical and dental research. According to the 20-year perspective, Iran is going to acquire the first rank in science and technology in southwest Asia by 2025. Iran has made great scientific progress in different fields in the past couple of years.[3] According to a report published in 2009, of 141 Iranian English journals, 16 were ISI-indexed while none of the Iranian dental journals were PubMed-indexed by that time. The first Iranian dental journal in English was published in 2004.[4] The progression and promotion of dental field in Iran ranked 43rd in the world and 14th in Asia in the recent decades.[5]

Some valuable scientometric studies have evaluated the number of published articles per year, type of articles qualitatively, number of articles published from each university, academic level of the authors and some other related scientometric data.[6] Dentistry is an evidence-based science aiming to use the best evidence acquired of scientific methods to reach an efficient decision and clinical approach to achieve the highest standards of oral and dental care. This further highlights the significance of evidence and studies with the highest level of quality.

In terms of the levels of evidence, systematic reviews randomized clinical trials and patents have the highest level of evidence while case reports have a lower level.[7-10] Despite the availability of scientometric studies in dental fields such as endodontics, scientometric studies on oral medicine are limited. Thus, this study aimed to scientometrically assess oral medicine articles from Iran published in PubMed-indexed journals from the beginning of 2006 to the beginning of 2016.

Materials and Methods

This descriptive, observational, cross-sectional study evaluated all oral medicine articles published from the beginning of 2006 to the beginning of 2016 in PubMed-

indexed journals with at least one author (oral medicine specialist) practicing in Iran. Selection of this time frame was based on the fact that the oldest article meeting these criteria had been published in 2006. Post-graduate oral medicine students were also considered as oral medicine specialists in this study and articles authored by them were also included. All studies with at least one Persian author with the academic degree of Masters in oral medicine were included as oral medicine articles. The exclusion criteria were studies with incomplete author information, articles published by Persian authors without Iranian academic affiliation, and studies conducted by the Iranian authors practicing outside of Iran. For articles that had both electronic publishing date and final publishing date, the final publishing date was recorded.

An electronic search was carried out in PubMed database (https://www.ncbi.nlm.nih.gov/pubmed/advanced) according to the specific goals as follows:

In PubMed website (www.ncbi.nlm.nih.gov/pebmed), the "advanced" option was clicked.

On "advanced" page, "affiliation" searching option was chosen, the "AND" conjunction was selected and the keywords "department of oral medicine", "department of oral and maxillofacial medicine", "department of stomatology", "stomatologist" and "Iran" were typed in the respective box. Each term was searched along with the term "Iran". The retrieved results were evaluated and compared. The duplicates were then removed to obtain a list.

All items of the list were evaluated one by one. The abstracts were retrieved and authors' information was retrieved by clicking on the author information link. Articles with at least one author (oral medicine specialist) practicing in Iran were selected. The affiliated university of the author and the academic degree and affiliations of other authors were also recorded. In cases where the author information link did not provide all the required information, the journal website was visited to obtain the full-text of the article with complete information of the authors.

To determine the complete journal name and its characteristics, the abbreviated journal name was clicked on and the "search in NLM catalog" was chosen from the drop-down menu of the action box. The impact factor of ISI-indexed journals was also recorded by visiting the journal citation report in the website of Web of Knowledge.

The study design was determined by evaluating the title, abstract and materials and methods section of the articles.

All the collected information was recorded in datasheets and tabulated. The absolute and relative frequency of oral medicine articles published by the Iranian authors in PubMed-indexed journals were calculated to determine the share of Iran in science generation in the field of oral medicine separately for each year and also based on the type of article, type of journal, and affiliated university.

The clever Q trend analysis software was employed to assess the trend of growth of published articles from Iran during the study period.

Results

A total of 294 articles published from the beginning of 2006 to the beginning of 2016 were originally retrieved; after applying the eligibility criteria, 14 were excluded and 280 remained in the study. Since the total number of articles published during this time period was 9,583, the selected articles comprised 2.92% of the total. Of all, 56% had been published in foreign journals while 44% had been published in the Iranian journals. The majority of published articles were original articles (77%) followed by case reports (15%), review articles (5%), short communications (2%), and letter to editors (1%). The majority of the Iranian authors were affiliated to the School of dentistry of Tehran University of Medical Sciences (16.7%) followed by Shahid Beheshti University of Medical Sciences (14.6%) and Tabriz University of Medical Sciences (13.21%; Figure 1).

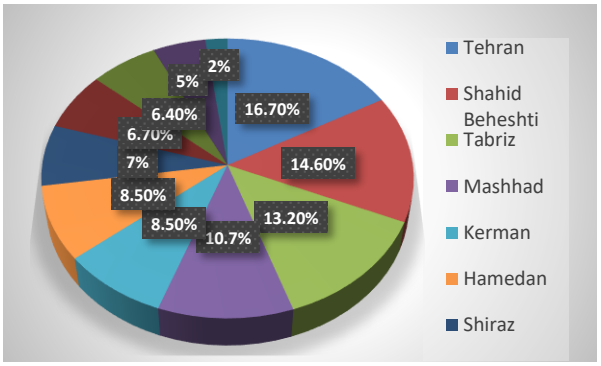

Figure 1- Frequency distribution of articles affiliated to different dental schools in Iran

A total of 280 oral medicine articles published between 2006 and 2016 were found to have at least one author from Iran, which comprised 2.9% of the entire articles in this field. Original articles had the highest (77%) and letter to editors (1%) had the lowest frequency. The majority of authors were affiliated to the School of dentistry of Tehran University of Medical Sciences (16.7%). The articles had a significantly ascending trend during the aforementioned time period (P=0.004).

The majority of articles had been published in J Dent Res Dent Clin Dent Prospects (18%) followed by J Dent (Tehran) (6.7%), and J Contemp Dent Pract (5.5%; Figure 2).

The trend of publication of articles was ascending during this time period except for the year 2011. The highest number of articles was published in 2015 (20%; Figure 3). Table 1 shows the characteristics of 10 journals in which, most of the articles were published. According to the trend analysis, articles published by the Iranian oral medicine specialists had a significantly ascending trend during 2006-2016 (P=0.004). However, the growth ratio index of Iranian articles was not ascending when compared to the global rate

(P=0.927).

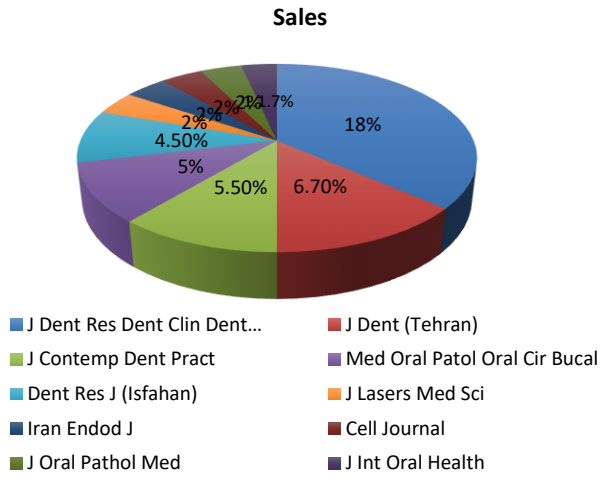

Figure 2- Frequency distribution of articles published in different journals

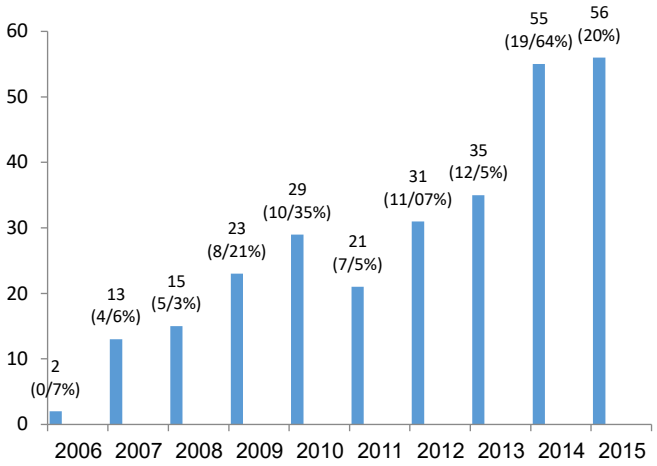

Figure 3- Frequency distribution of articles published in years 2006 to 2016

Table 1- The characteristics of 10 journals in which most of the articles were published

First year of publication	Publication period	Impact Factor	ISI index	Medline index	Country	Journal's name
2007	Quarterly	-	-	-	Iran	J Dent Res Dent Clin Dent Prospects
2003	Two issues per year	-	-	-	Iran	J Dent (Tehran)
1999	Six issues per year	-	-	indexed	India	J Contemp Dent Pract
2004	Six issues per year	1.087	indexed	indexed	Spain	Med Oral Patol Oral Cir Bucal
2003	Four issues per year	-	-	-	Iran	Dent Res J (Isfahan)
2010	Quarterly	-	-	-	Iran	J Lasers Med Sci
2006	Quarterly	-	-	-	Iran	Iran Endod J
2010	Quarterly	1.275	indexed	-	Iran	Cell journal
1989	Ten issues per year	1.859	indexed	indexed	Denmark	J Oral Pathol Med
2000	Bimonthly	-	-	-	India	J Int Oral Health

Discussion

In the recent years, science generation has considerably advanced especially in medical and dental fields. Thus, scientometry has gained increasing popularity. Scientometric knowledge about science generation in universities and by the faculty members helps the authorities to better detect the strengths and weaknesses and aids them in paving the way to achieve their goals. Also, by creating a positive competitive environment, advances in knowledge and technology can be further encouraged. This study scientometrically assessed oral medicine articles from Iran published in PubMed-indexed journals during 2006-2016.

To the best of the authors' knowledge, this is the first scientometric study on oral medicine articles published by the Iranian authors. However, scientometric studies in the field of endodontics are available. Asgary et al. evaluated articles published by the Iranian authors in the field of endodontics in PubMed-indexed journals and showed that of 41,148 endodontic articles published in PubMed-indexed journals worldwide, 307 had been authored by the Iranian authors affiliated to 22 Iranian universities. The number of published endodontic articles by the Iranian authors increased from one in 2002 to 82 in 2010 and 54 in 2011; 48.5% of them were original articles with in vitro design. Mashhad, Tabriz, Tehran and Shahid Beheshti universities had the highest number of articles, respectively, which was in agreement with our findings.[8] Similarly, Asgary et al, in another study showed that Iran ranked second after Turkey in terms of total number of published endodontic articles among 29 Asian countries.[11] Our results revealed that

during 2006-2016, a total of 9,583 articles had been published in PubMed-indexed journals worldwide and the Iran's share of this number was 280 articles (2.9%). However, it should be noted that now after three decades of introduction of oral medicine specialty in Iran, the first related article was published not earlier than 11 years ago; which calls for further attention. Over half of the oral medicine articles had been published in non-Iranian journals. In terms of type of articles, original articles comprised over two-thirds of the articles followed by case reports and review articles in decreasing order of frequency. The majority of articles had been authored by the authors affiliated to Tehran University of Medical Sciences followed by Shahid Beheshti University and Tabriz University of Medical Sciences in decreasing order of frequency. The highest number of articles had been published in the Journal of Dental Research, Dental Clinics and Dental Prospects, which started its activity in Iran in 2007 and is a quarterly journal, which has been indexed in PubMed since 2010. The Journal of Dentistry of Tehran University of Medical Sciences ranked second, which is also published in Iran since 2003 and is also PubMed-indexed. The Journal of Contemporary Dental Practice published in India ranked third. The highest number of articles were published in 2015, and article publication had an ascending trend during 2006-2016 except for the year 2011. The 3% share of Iran highlights its prominent role in knowledge generation in the field of oral medicine. A noteworthy finding was that over half of the retrieved 280 articles had been published during 2014-2016. Evaluation of the trend of article publication during 2006-2016 revealed a significant spurt in 2007, indicative of over 500% scientific growth from 2006 to 2007. This ascending trend continued during the next years but with a milder gradient until 2011, when it showed a descending trend, and calls for further attention. It then again continued the ascending trend with an over 50% growth in 2014 compared with 2013. Original articles comprised the majority of published articles in 2014 and 2015. Original articles had an ascending trend during the study period expect for 2011. Case reports ranked second in terms of frequency. The first case report was published in 2006. Publication of case reports increased from 2006 to 2008, and then decreased from 2008 to 2011. It then had an ascending trend from 2011 to 2014. In 2015, a sudden drop occurred in publication of case reports. The first review article on this topic from Iran was published in 2007. There was no published review article in 2009 and 2012. The highest number of review articles were published in 2015. The first short communication was published in 2011; the publication of this type of article remained constant in 2012, reached zero in 2013 and 2014, and had a significant increase in 2015. The first letter to editor was published in 2011. There was no letter to editor in other years except for 2013 and 2014. In spite of an increase in publication of articles from 2006 to 2009, the Iran's share in knowledge generation also increased from 0.7% in 2006 to 8.2% in 2009; however, this trend did not continue during the next years. In 2008, the trend of article publication was descending worldwide; however, Iran was an exception. In 2011, despite the ascending trend of publication of oral medicine articles worldwide, Iran showed a descending trend. This may be due to financial limitations and immigration of specialists in 2011. Trend analysis revealed ascending trend of publication of oral medicine articles in Iran (P=0.004). However, this increase was not significant compared with the trend worldwide (P=0.927). In order to prevent gap formation between the quality and quantity of knowledge generation, both the quality and quantity of articles should be evaluated in scientometric studies to ensure adequately high quality in addition to quantity. Scientometric studies are imperative for assessment of the quality and quantity of publications of researchers and research centers, and their results can be used to decide on academic promotion of individuals and organizations. Thus, authorities should provide budget for such studies and enhance the access of researchers to major databases like the PubMed. Also, scientometrists should use both quantitative and qualitative criteria in their studies to obtain more comprehensive results.

Conclusion

Iran's share in knowledge generation in the field of oral medicine by publishing articles in PubMed-indexed journals was 2.9% of the entire publications during 2006-2016. The article publication had an ascending trend during this time period (except in 2011), and Tehran University of Medical Sciences had the greatest contribution. Original articles had the highest frequency, and the articles were mainly published in non-Iranian journals.

Conflict of Interest

Non Declared ■

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