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Research Article

**MAPPING THE STRUCTURE NOSE SURGERY DISCIPLINE
IN SCIENCE CITATION INDEX (SCI) DURING THE PERIOD
OF 1999-2012****Hossein Safari¹, Milad Ahmadi², Saeid Shirshahi^{3*}**¹Master of Library and Information Science, Iran Public Libraries Foundation; Khuzestan, Ahvaz²Master of Library and Information Science, Iran Public Libraries Foundation; Markazi, Kondab,
Meraj Public Library³Master of Library and Information Science, Iran Public Libraries Foundation; Markazi, Kondab,
*Librarian of Adib Almamalek Library of Javersiyan***Abstract:**

Aim: Scientometric studies are among the most effective methods for evaluating the status of scientific outcomes. These studies are considered as the most practical methods for evaluating the scientific production of countries, individuals and organizations. Using the Web of Science (WoS), the present study aimed to Mapping the structure Nose Surgery discipline in Science Citation Index (SCI) During the Period of 1999-2012

Method: This study is a descriptive-analytical research which was conducted using the scientometric indices. All materials produced in the field of nasal surgery, with 2282 scientific records, were reviewed on the Web of Science database. The analysis was done using the softwares of HistCite, VOSviewer, and Exel and finally, a map of science-based on the nasal surgery field was drawn.

Findings and Conclusion: The United States accounted for the 870 records and 38.124% of the total documents; Turkey with 259 records and 11.350% of the total number of documents was in the second rank of the scientific production in this field. Iran was placed in the 9th rank with regard to the production of documents on the nasal surgery with 53 records and 2.322% of the total documents. Most of the materials are in the form of papers which include 1732 records (71%). The University of Texas was ranked in the first position with 96 records (4.207%). Authors from the US had the highest level of collaboration with the authors of other countries, followed by the authors from Germany, England, Australia, and Canada.

Keywords: Mapping of Science, Nose Surgery, Science Citation Index (SCI)

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INTRODUCTION:

Due to the increase in the amount of information and the expansion of scientific production, quantitative approaches to the measurement of the amount of scientific information in various fields of science have become commonplace (1). Scientometric studies are among the most effective methods for evaluating the status of scientific outcomes (2). Scientometrics is the quantitative study of science and technology; it is also mainly concerned with the study of the history of science by drawing its structure in the specialized fields (3). The scientific map deals with the representation of the structure of scientific texts (4). These studies are considered among the most practical methods for the assessment of the scientific production of countries, individuals and organizations. To evaluate the scientific activities and their efficiency, scientometric method counts the number of scientific productions in different fields and, through providing a proper combination of different indices, determines the process of science production (5). Through mapping a scientific structure, information can be organized and the structure and growth of science can be identified (6). The idea of presenting the science spatially and multi-dimensionally has been investigated since previous years, and various softwares have been designed and developed in this regard (7). Among these softwares are HistCite and VOSviewer.

Research in the fields of medical sciences promotes the advancement of medical sciences and this is among the most important activities for the faculties of medicine and related sciences (8). Nasal surgery is one of these areas; nose surgery is the most commonly used cosmetic surgeon and has become very common throughout the world in recent years; this is true about the people of Iran (9). In order to

gain a stronger position in the new and challenging areas, there is a need for the scientometric studies (10). Considering the importance of nose surgery and its prevalence in the world, especially in Iran, and given the importance of scientometrics and drawing the scientific structure, the present study aimed to draw the scientific map of the nasal surgery outcomes using the Science Citation Index (SCI) from 1999 to 2012.

METHOD:

This is a descriptive-analytical study conducted using the scientometric indices. In this study, all of the documents produced in the field of nose surgery on the Web of Science database, including 2282 scientific records, were studied. To this end, in the first step, the data were extracted using the "Web of Science" database in the form of 500 plain text files, and then all of the 500 files were merged and analyzed by IntColl.EXE Software. This software identifies, analyzes and counts the data and allows data setup and analysis through the VOSviewer software. In the second step, the data (500 files) were given to the HistCite software and analyses carried out by this software and ultimately, the map of science-based on the nasal surgery area was drawn.

FINDINGS:

Of the influential countries in the field of nasal surgery, the United States ranked first with 870 documents and 38.124% of the total; Turkey is in the second place with 259 documents and 11.350% of the total; South Korea with 143 documents and 6.266% of the total has been positioned in the third rank. It should be noted that Iran has achieved the ninth rank in the field of nose surgery with 53 records and 2.322% of the total documents.

Table 1: Influential Countries in the Field of Nasal Surgery

	Percentage of documents	Number of documents
USA	38.124	870
Turkey	11.350	259
South Korea	6.266	143
England	5.390	123
Italy	4.777	109
Germany	4.601	105
Canada	3.330	76
Netherlands	2.366	54
Iran	2.323	53
Brazil	2.060	47

The most scientific documents produced in the field of nasal surgery was related to 2012 with 254 records, followed by 2010 with 214 records, 2011 with 212 records, and 2009 with 167 records. The years 2008, 2007, 2006, 2002, 2005, and 1999, with 162, 135, 115, 110, 99, and 95 records were ranked fifth to tenth, respectively. Most of the produced documents (1732 documents) are in the form of paper (71%). Furthermore, English, with 2208 documents, achieved the highest rank among the languages used (97%).

In general, 179 journals published the retrieved records in the nasal surgery field; the top 5 journals in

terms of the number of records, and TLCS (Total Local Citation Score) and TGCS (Total Global Citation Score) indices are shown in Table 2. The Journal of Plastic and Reconstructive Surgery was positioned in the highest rank with 407 records. The TLCS and TGCS indices for this journal is also higher than other journals (Table 2).

Table 3 examines the top universities in the field of nasal surgery in terms of the scientific output in the corresponding time period. The University of Texas was ranked first with 96 records (4.207%). The ranking of other universities is indicated in the following table (Table 3).

Table 2. Top Journals in the Field of Nasal Surgery

Journal Title	Recs	TLCS	TGCS
PLASTIC AND RECONSTRUCTIVE SURGERY	407	2699	3958
AESTHETIC PLASTIC SURGERY	199	593	870
ARCHIVES OF FACIAL PLASTIC SURGERY	139	607	787
JOURNAL OF CRANIOFACIAL SURGERY	112	127	331
FACIAL PLASTIC SURGERY	87	85	110

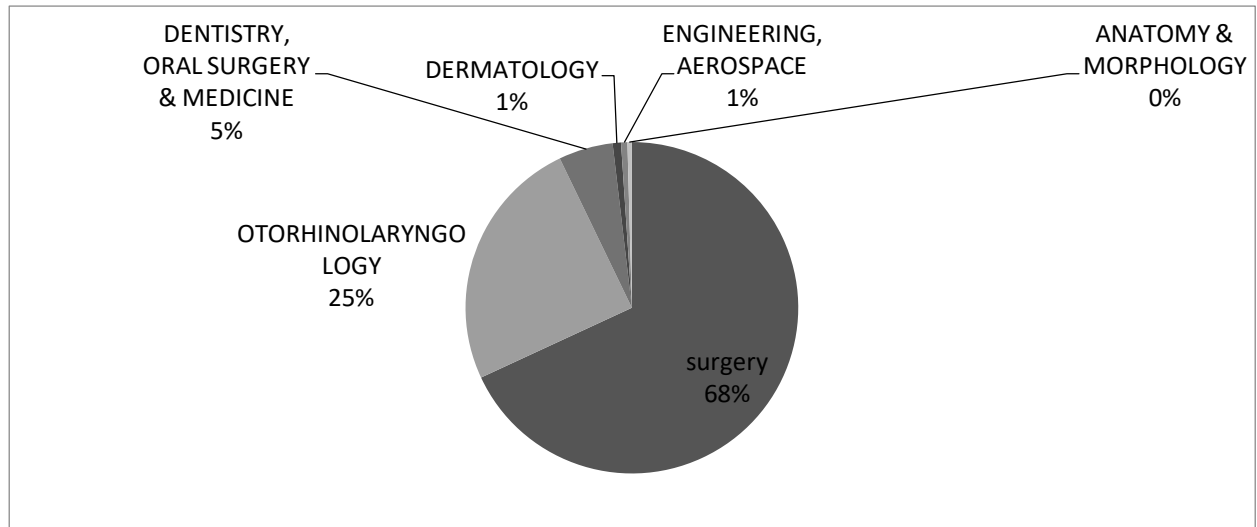
Table 3. Top Universities in the Field of Nasal Surgery

University	Number of documents	Percentage of documents
UNIV TEXAS	96	4/207
STANFORD UNIV	46	2/016
UNIV TORONTO	40	1/753
UNIV CALIF IRVINE	39	1/709
CASE WESTERN RESERVE UNIV	34	1/490
UNIV ILLINOIS	30	1/315
UNIV ULSAN	30	1/315
UNIV CALIF SAN FRANCISCO	29	1/271
UNIV TEXAS SW MED CTR DALLAS	29	1/271
UNIV TEHRAN MED SCI	23	1/008

Diagram 1 shows the frequency of 5 main key words in the field of nasal surgery based on the Web of Science Thesaurus.

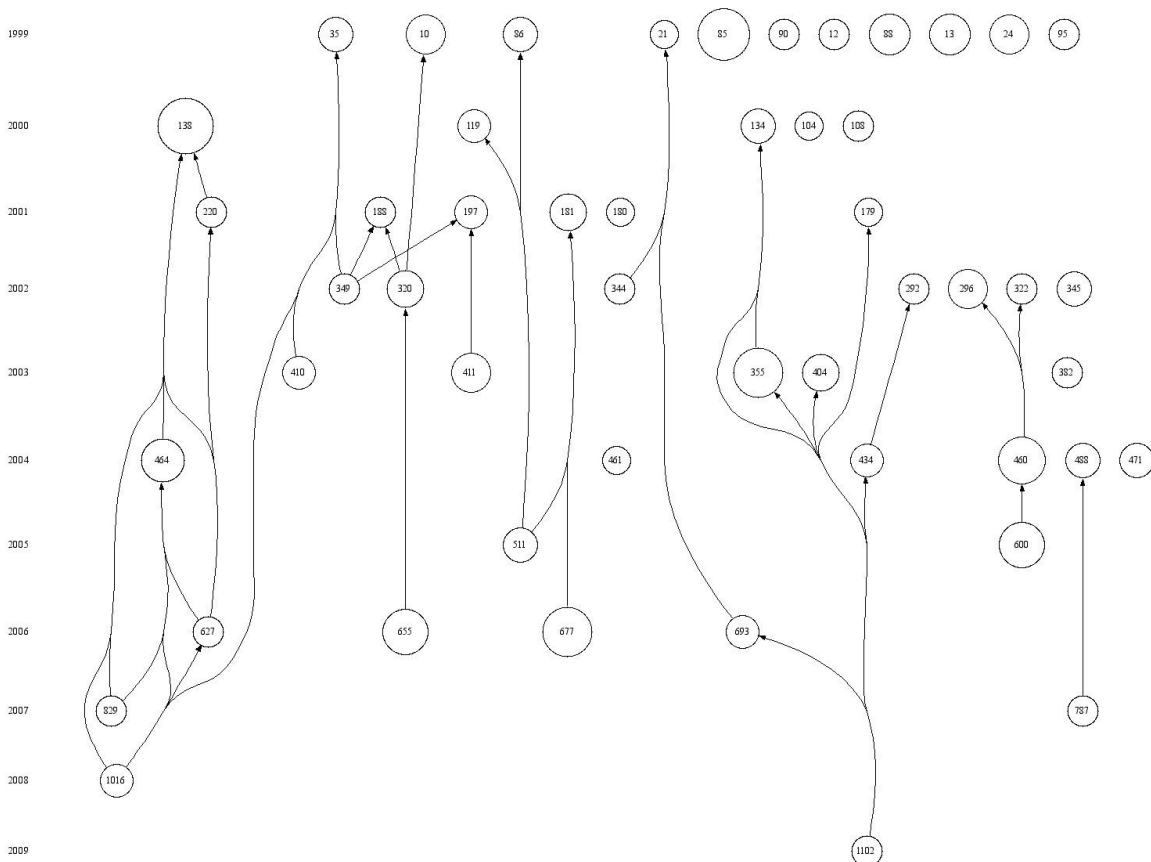
The key word surgery achieved the highest score with the frequency of 68%.

Diagram 1. The Frequency of 5 Key Words (based on the Web of Science Thesaurus) in the Scientific Production of Nasal Surgery

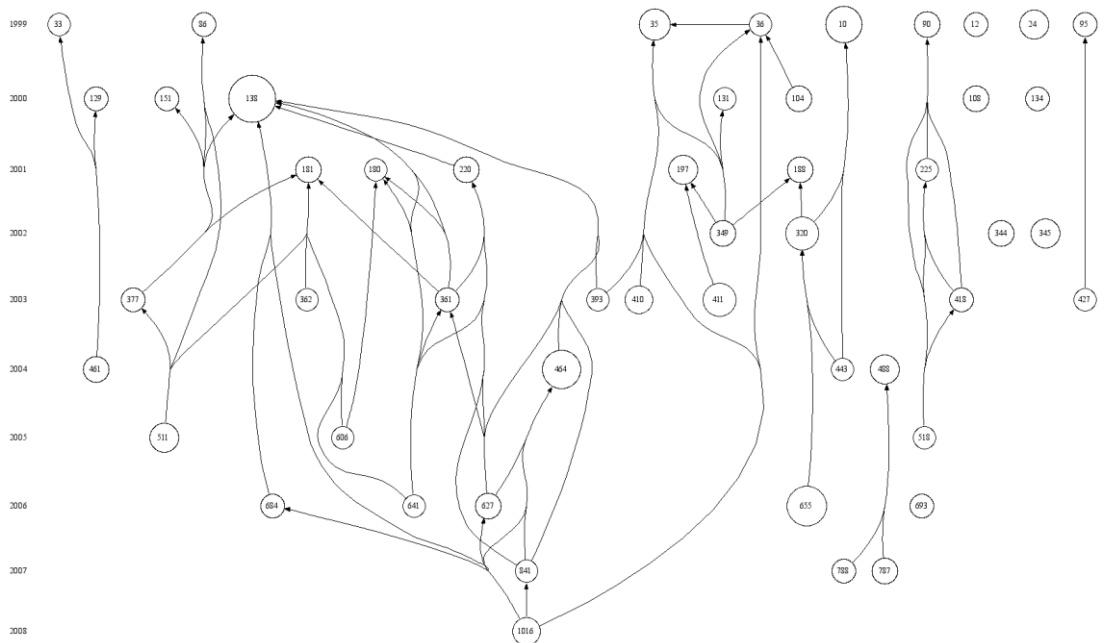


The most important subject clusters formed in the field of nasal surgery during the time period of 1999 to 2012 are as follows (Map 1 and 2).

Map 1. GCS Diagram of the Nasal Surgery Field during the Time Period of 1999 to 2012



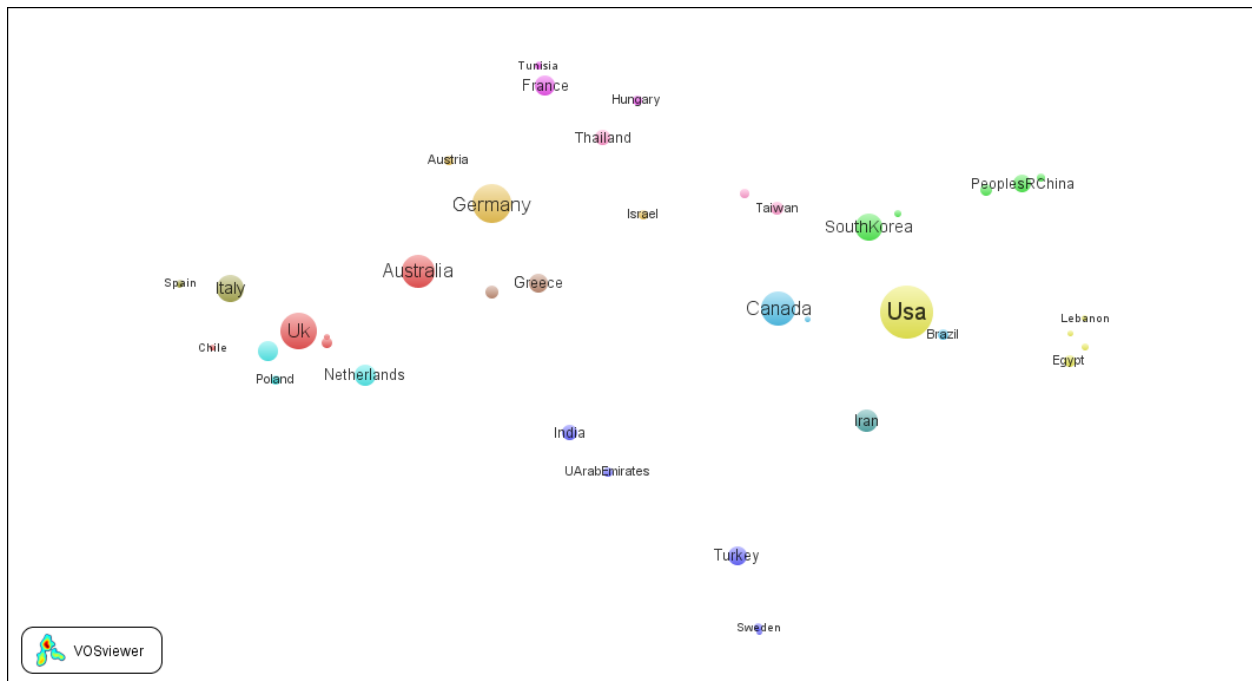
Map 2. LCS Diagram of the Nasal Surgery Field during the Time Period of 1999 to 2012



Map 3, which is drawn up using the VOSviewer software, shows the degree of scientific collaboration between the authors of different countries; countries whose authors contributed more to the authors of other countries are represented with larger circles.

According to this map, American authors had the highest level of collaboration with the authors of other countries, after which the authors from Germany, the United Kingdom, Australia, and Canada were placed in the next ranks in this regard.

Map 3. Scientific Relationships Between Countries in the Field of Nasal Surgery during the Time Period of 1999 to 2012



Using the same methodology as the present study, Pashutanizadeh and Osareh (2009) investigated the citation analysis and plotting the mapping history of agricultural production in the science citation index by using the scientometric tools during the time period of 2000-2008 (11). Moreover, in a study done by Hodhodinejad, Zahedi and Ashrafi, the scientific production and mapping of Iranian researchers in the field of traditional medicine was investigated during the years from 1990 to 2011 at the Web of Science database. The results showed that Iran ranked 26th in the field of traditional medicine and the average growth rate of scientific production in this field was 53.33% (12), while in the nose surgery Iran has been ranked ninth. Maki Zadeh and Osareh (2011) also studied the citation analysis and drawing a scientific map in the field of medical ethics on the WoS database between the years from 1990-2008 (13). In a study conducted by Gupta and Adarsh (2011), they analyzed the research activities of India in medicine during 1999–2008; in this study, the Scopus database was used to extract the records, while in our study, we used the WoS database for this purpose (14). Osareh and McCain (2008) in a similar study to the present one, plotted the map of science-based for the Iranian scientific productions in the field of chemistry between 1990 and 2006 and analyzed the cited authors using the science citation index (15).

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