

## Scientific production of Shahid Beheshti University of Medical Sciences in Scopus between 2011-2014

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### Abstract

**Background:** Scientometric evaluations can help universities to monitor their achievements and assess the effect of policy changes and investments in the field knowledge development. The current study aimed to evaluate the scientific production of the faculty members affiliated to Shahid Beheshti University of Medical Sciences, Tehran, in Scopus database between 2011- 2014.

**Methods:** Faculty members of Shahid Beheshti University of Medical Sciences, Tehran, participated in the present study. All the faculty members were recruited in the study based on the names and their affiliation in the Human Resources Management database of the university. Scopus online webpage was the source of extracting the total number of the articles, total article citations, and H Index between 2011-2014.

**Results:** Information obtained from 1299 faculty members, including 165 (12.7%) full professors, 335 (25.8%) associate professors, 656 (50.5%) assistant professors, and 112 (8.7%) instructors, were included in the study. The findings of current study showed that each faculty member averagely contributed 14 articles and there have been 95 citations, on average, to the articles. The mean H index for the university was  $3.1 \pm 3.90$ . Also, 20% percent of faculty members had no article published during the last 4 years and 10% had no article at all in Scopus database.

**Conclusion:** The current study illustrated a general image of the articles affiliated to Shahid Beheshti University of Medical Sciences, Tehran, which were indexed at Scopus database from 2011-2014. The results showed that the scientific production of the university has had a significant growth during these years.

**Keywords:** Achievement; Faculty; Science; University

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### Introduction

Scientometric evaluation is an important part of research assessment. Without scientometric indices, we would suffer from mismanagement of our resources to have the highest

efficiency and effectiveness in research purposes. Many countries use these indices for ranking their academic institutions and prioritizing research funds (1).

There are different scientific databases and indices in the field of biomedical research. Scopus, along with Web of Knowledge, is one of the most valid indexing sources in this field, which contains nearly 22,000 titles from over 5,000 publishers (2). There have been different indices for evaluation of scientific production and scientists in these databases. One of the mostly accepted indices is Hirsh index, suggested in 2005 by Jorge E. Hirsch. An H Index of a scholar defines as "h papers published each of which has been cited in other papers at least h times." (3).

Scientometric evaluations of university outputs can help universities to visualize the effect of their achievements and assess the effect of policy changes and investments in the field knowledge development (4-7). Since multiple scientometric evaluations are needed for this purpose, the current study aimed to evaluate the scientific production of the faculty members affiliated to Shahid Beheshti University of Medical Sciences, Tehran (SBUM), in Scopus database between 2011- 2014.

### Methods

All SBUM faculty members participated in the present study. The names and affiliations of the faculty members were obtained from Human Resources Management database of the university.

The total numbers of the articles, articles' citations, and H Index between 2011-2014 were used for evaluation. Scopus online webpage was the source of extracting the indices (8).

We searched the first letter of the first name and full last name of the author in the search box. After searching for the names, those who were affiliated to SBMU were extracted. Total numbers of articles and indices were derived as well. A number was also assigned for each faculty member.

Taking into account different spellings of some names, all writing forms of a name were considered for the possible

calculations. Research identity was utilized for data analysis which was defined as using faculty member's personal information, annual, and total number of articles in the past four years and Scopus H Index. The faculty member's research activities in the past four years were evaluated using this index.

Taking into account the possibility of multiple author participation in one article under SBUM affiliation, person-article was used instead of article for the faculty member's scientific production evaluation. Descriptive statistics were conducted using Microsoft Office Excell and SPSS software 16 (SPSS Inc., Chicago, IL, USA). P values lower than 0.05 were considered significant.

### Results

Based on the list of SBUM Human Resources Management database, 1299 faculty members were working at the university at the time of data collection. A total of 165 (12.7%) participants were full professors, 335 (25.8%) were associate professors, 656 (50.5%) assistant professors, and 112 (8.7%) instructors.

Up to the end of 2014, 9250 articles were located affiliated to SBMU from which 6984 articles were recorded after 2009. As in Figure 1, there has been an increasing trend in the scientific production of SBMU, despite the downward trend of the scientific growth of the country.

The number and the mean (Standard Deviation) for articles and citations are given in Table 1.

According to Table 2, 90% of the faculty members had at least one article and 80% had an H-index of at least 1 in Scopus database from 2011 to 2014.

Table 3 illustrates the mean (Standard Deviation) for articles based on different schools of SBMU in the Scopus database. The highest numbers of articles, citations, and H index were 11.4, 67.6, and 4.9, respectively, for the School of Pharmacy. School of Medicine had the least number

of articles (2.9), and the least number of citations and H-index was related to the School of Nursery and Midwifery (15.5 and 1). Means (SD) for the articles of all Schools of SBMU in Scopus database

during 2011-2014 is shown in Table 4. The highest increase in the number of articles was seen for the School of Pharmacy (Table 4).

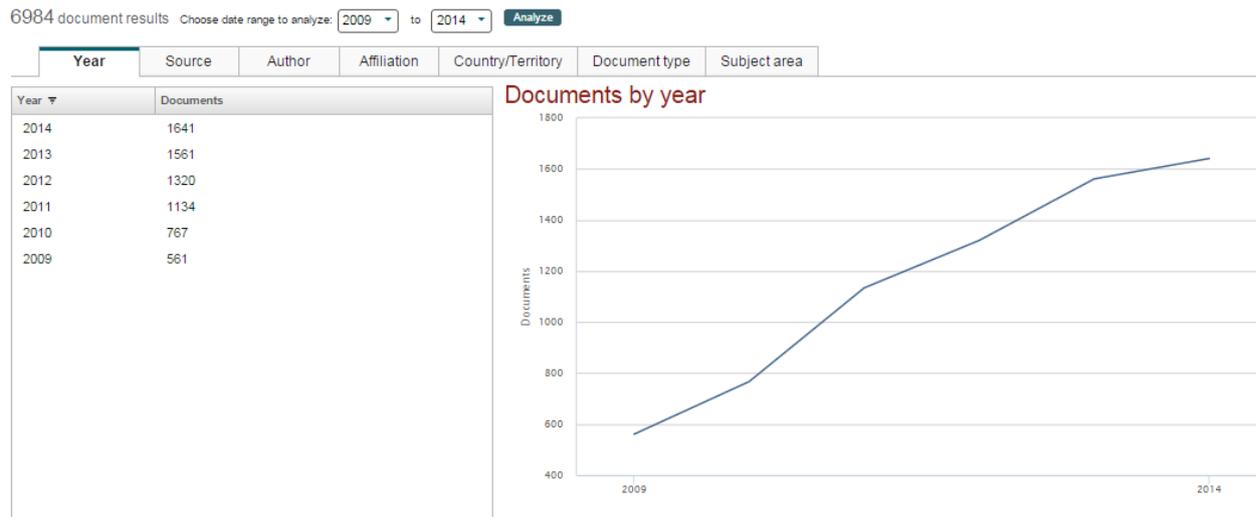


Figure 1. Number of documents affiliated to SBMU in Scopus in 2009 and 2014

Table 1. Means for scientometric indices of faculty members of SBMU in Scopus during 2011-2014

Year		Articles	Citations
2011	Total number	2125	15500
	Mean (SD)	1.6 (4.1)	11.97 (39.2)
2012	Total number	2421	19207
	Mean (SD)	1.87 (4.2)	14.8 (48)
2013	Total number	2523	22182
	Mean (SD)	1.95 (3.7)	17.1 (51.8)
2014	Total number	2490	22708
	Mean (SD)	1.9 (3.96)	17.6 (54)
2011-2014	Total number	18316	123485
	Mean (SD)	14.1 (30.4)	95.5 (234.3)
H Index	Mean (SD)	3.17 (3.90)	

Table 2. Percentiles for scientometric indices of faculty members of Shahid Beheshti University of Medical Sciences, Tehran, in Scopus during 2011-2014

	percentiles										
	10	20	30	40	50	60	70	80	90	95	97
Total articles	0	1	2	4	6	9	13	20	34	50	65
Total citations	0	0	2	7	13	25	46	93	251.4	429.2	601.8
Articles 2014	0	0	0	0	1	1	2	3	5	8	9
Articles 2013	0	0	0	0	1	1	2	3	5	7	10
Articles 2012	0	0	0	0	1	1	2	3	5	7	10
Articles 2011	0	0	0	0	0	1	1	2	4	7	9
Citations 2014	0	0	0	2	4	7	11	19	47	76.5	107.2
Citations 2013	0	0	0	1	3	6	10	18	44	77.2	103.1
Citations 2012	0	0	0	1	2	4	8	15.8	36	69	92.4
Citations 2011	0	0	0	0	1	3	5	12	29.4	54.2	86.4
H Index	0	0	1	1	2	3	4	5	8	11	13

Table 3. Mean (Standard Deviation) for Articles of Schools of Shahid Beheshti university of Medical Sciences, Tehran, in Scopus databases during 2011-2014

Schools	Number of faculty members	Articles	Citations	H-Index
		Mean (SD)	Mean (SD)	Mean (SD)
School of Medicine (Faculties of clinical disciplines)	677	2.9 (3.3)	71.5 (182.6)	2.9 (3.3)
School of Medicine (Faculties of basic Sciences disciplines)	128	19.2 (26.3)	142 (269)	4.6 (4.2)
School of Dentistry	131	5.7 (7.8)	24.1 (50.2)	1.8 (2)
School of Pharmacy	48	26.5 (22.9)	228.2 (272.8)	6.6 (4.6)
School of Rehabilitation	37	3.9 (7)	19.8 (69.5)	1.1 (2)
School of Paramedical Sciences	53	9.1 (16.5)	36.1 (76.6)	2.1 (2.5)
School of Public Health	30	17 (25.9)	110.1 (286.6)	3.3 (3.6)
School of Health, safety and environment	20	5.4 (6)	35.3 (69.6)	1.7 (2)
School of Nutrition	32	21 (35.6)	201.9 (562.2)	4.9 (5.7)
School of Nursery and Midwifery	54	4.1 (7.9)	15.5 (45.7)	1 (1.6)
Traditional Medicine	10	10.6 (12.3)	36.2 (45)	3 (2)

Table 4. Means (SD) for articles of schools of Shahid Beheshti University of Medical Sciences, Tehran, in Scopus database during 2011-2014

Schools	Number of faculty members	2011	2012	2013	2014
School of Medicine (faculties of clinical discipline)	677	1.4 (2.76)	1.5 (2.54)	1.6 (2.44)	1.5 (2.34)
School of Medicine (faculties of basic sciences discipline)	128	2.3 (3.45)	2.2 (3.10)	2.4 (3.32)	2.6 (3.32)
School of Dentistry	131	0.7 (1.26)	0.9 (1.86)	1.2 (2.52)	0.7 (1.37)
School of Pharmacy	48	0.19 (2.11)	2.9 (3.03)	3.9 (3.57)	3.9 (3.44)
School of Rehabilitation	37	0.4 (1.13)	0.7 (1.42)	0.6 (1.12)	0.5 (1.13)
School of Paramedical sciences	53	1.3 (2.83)	1.5 (2.69)	1.8 (4.19)	1.5 (3.33)
School of Public Health	30	1.8 (2.78)	3.5 (5.93)	2.3 (4.30)	2.97 (5.58)
School of Health, Safety and Environment	20	0.7 (1.03)	0.5 (0.88)	0.9 (1.05)	0.9 (1.43)
School of Nutrition	32	2.3 (4.71)	2.9 (5.06)	3.7 (4.96)	3.6 (4.75)
School of Nursery and Midwifery	54	0.5 (1.43)	0.8 (1.57)	0.6 (1.49)	1 (2.33)
Traditional Medicine	10	0.8 (2.20)	2.1 (2.02)	1.9 (1.59)	2.6 (1.26)

## Discussion

Findings of the current study showed that each faculty member averagely contributed 14 articles and there have been 95 citations, on average, to the articles. The mean H index for the university was 3.2.

A total of 18316 articles were indexed in Scopus from 2011-2014. This number was 10698 from 2009 to Mid-2012, which showed a 60% increase in scientific production (4). This incremental trend is in line with Abolghassemi Fakhree et al. study, who showed an increase from about 100 articles in 2001 to 1000 in 2009 for Tehran University of Medical Sciences (9). The total number of the articles were 3165 in Hamadan, 1157 in Ilam, 4807 in Kermanshah, 1194 in Kurdistan, and 630 in Lorestan universities of Medical Sciences in a 5-year period between 2010-2014 (10). In a study by Khalihi et al. in Gilan University of Medical Sciences, a total of 845 articles were reported from the foundation of the university in 1986 till 2014 (11). The total number of articles for Northern universities of Iran were reported

as 546, 288, 258, and 256 for the Medical universities of Mazandaran, Golestan, Guilan, and Babol, respectively (12). It seems that the number of faculty members, researchers, students, and budgeting per university should be taken into account so as to making better conclusions because these factors can affect scientific production of the universities.

The total number of citations in our study was 123485. In the period between 2009 - Mid 2012, the citations were 54300 in the same university (4). The numbers of citations in Scopus database for Mazandaran, Golestan, Guilan, and Babol Medical universities were 1728, 608, 482, and 441, respectively, between 2005-2010 (12). Also, per article citation of medical universities in the west of Iran were 3.3, 3.1, 5, 3, and 1.9 for Hamedan, Ilam, Kermanshah, and Kurdistan universities, respectively (10). In a scientometric study in Gilan University of Medical Sciences, 3.64 citation/paper was reported (11).

In Rasolabadi et al. study, H indexes of western Medical universities of Iran were

between 14-38 (10). The H indexes for were between 11-19 (12). In addition, the total H indexes for the articles of Iran University of Medical Sciences, Isfahan University of Medical Sciences, Mashhad University of Medical Sciences, SBMU, Shiraz University of Medical Sciences, Tabriz University of Medical Sciences, and Tehran University of Medical Sciences were 27, 31, 22, 39, 34, 24, and 46, respectively (9). In a study conducted in Guilan University of Medical Sciences, the H index was reported to be 23 (11). Although the mean H index of the current study was 3.17, which was 1.9 in the time period between 2009 to Mid-2012 (4), showing an increasing pattern, this index refers to the faculty members' H indexes and not the university.

It was found that 90% of the faculty members had at least one article and 80% had an H-index of at least one in Scopus database from 2011 to 2014. This was 80% for articles and 50% for H-index of the university between 2009-mid 2012 (4). School of Paramedical Sciences had a mean H index of 2.1 in our study. In comparison to a study in the same university between 2009 - mid 2012, the mean H index was 0.9 for this School, which shows an H index growth. This growth is observed although the number of faculty members reduced from 62 to 55 (4,13).

The scientific production of Shahid Beheshti University of Medical sciences has had an increasing trend. This finding is in line with those of different universities in Iran (9,14,15). This can be due to supportive research policies of the university in the period under the study.

The current study illustrated a general image of the articles affiliated to Shahid Beheshti University of Medical Sciences, Tehran, indexed at Scopus database from 2011-2014. The results showed that the scientific production of the university had a significant growth. Supportive research policies could guarantee continuation of the scientific production of the university.

medical universities in the north of Iran  
*Conflict of interest*

Authors declare no conflict of interests.

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