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Comparative Meta-analysis of Fifty-one Iranian Medical Universities Regarding Faculty Members Information

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ABSTRACT

Background: Faculty members are the key components of any medical university. The number, specialty, scientific rank, and H-index play a significant role in the general primacy of any university. This study compared 51 Iranian medical universities regarding faculty members in terms of total number of faculty members per medical university, ISI articles of each top faculty member, citations, average citations per paper of each, H-index, their scientific rank, and their specialty.

Methods: In this analytic-descriptive study conducted in 2018 in Yazd, Iran, the data were gleaned from 51 Iranian medical universities affiliated to the Iranian Ministry of Health, Treatment, and Medical Education using Electronic Scientific Measurement System and analyzed with $SPSS_{19}$ (SPSS Inc., Chicago, IL, USA) using descriptive statistics of frequency, range, mean, SD, and also correlations. Independent medical schools, medical research centers, and Islamic Azad University medical schools were excluded.

Results: Data analysis showed the maximum and minimum number of faculty members at each medical university, total number of ISI articles, total citations, citations per paper, H-index, scientific rank, and specialty of each top faculty member. There were statistically weak, moderate, and strong correlations between the five variables under study.

Conclusion: The findings of this study showed that there were 18972 medical faculty members teaching and researching in Iranian medical universities. Yet, there was an imbalance in the variables under study in different medical universities located in different parts of Iran. A more balanced distribution of faculty members and resources is required to improve medical education in all parts of Iran. The findings of the study may be added to the WHO database to be used by foreign students and scholars who want to study medicine or carry out research in Iranian medical universities.

Key Words: Medical university, Faculty member, H-index, Citation, Resources distribution

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Introduction

Medicine is an old science related to the protection and maintenance of health in the human community and saving lives. One of the first books on medicine, i.e., *Canon of Medicine*, was written by Avesina, a Persian physician and Neo-Platonist philosopher considered as a standard medical textbook used in Europe till the 17th century. Moosavi asserted that Avicenna was a Muslim scientist of the tenth and eleventh centuries who played an important role in the history of medicine in Iran and the world, so that the modern medicine is laid upon the infrastructure of his medicine.(1). He believes that from 11th to 17th centuries, the scholarly and academic endeavors of medicine round the globe were revolving round the hinge of Avesina medicine or were influenced by it tremendously. It is accepted that this science originated in ancient Persia and names like Avesina associated with traditional medicine is familiar to any scholar or clinician. A quick glance at the history of medicine, as practiced by trained professionals, elucidates how societies have undergone transformation in their attitude towards illness and disease from ancient times to the present. The pioneer medical traditions appeared in Babylon, China, Egypt, and India. Medical terms like medical diagnosis, prognosis, and medical ethics were developed in Greece. The Greeks also wrote the Hippocratic Oath in the 5th century BC. It is still taken by doctors nowadays. Moreover, Rogerius improved and then systematized surgical practices inherited from the ancient masters in the medieval age in his *The Practice of Surgery*. It was about 1220 that the established universities commenced systematic training of physicians in Italy. This was further accomplished when during the Renaissance, anatomy was perceived better and the microscope was invented, followed by the presentation of the germ theory of the disease in the 19th century that ultimately resulted in some cures for many maladies. As of necessity, the army physicians improved the approaches to trauma treatment and surgery. The Islamic states acquired primacy in medical science since its traditional physicians made significant contributions to the field of medicine and worked on improving disciplines such as anatomy, surgery, physiology, pharmacy, pharmacology, ophthalmalogy, and pharmaceutics. The Arabs developed these further as they were influenced by ancient Indian, Greek, Roman, and Byzantine medical practices. Public health measures were developed especially in the 19th century. Subsequently, the extensive growth of cities necessitated the systematic sanitary measures and advanced research centers opened in the early 20th century which were usually affiliated to important hospitals. Then, the widespread use of antibiotics emerged in mid-20th century. Briefly, these developments in addition to progress in genetics, chemistry, laboratory medicine, and radiography predisposed to today's modern medicine which was highly professionalized in the 20th century. Sarton asserts that Galen and Hippocrates were pioneer authorities (2). Hill states that some scattered old literature refer to the presence of higher education systems and centers in the ancient Persia (3) while Safa says that the deported Greek scholars and physicians were researching medicine and mathematics in old Iran during the Sassanid kings (4). Moreover, according to Meri, the Gondishapoor College was a famous center during the Sassanid dynasty which was active in medicine leading to the establishment of Beit-al-Hekmah in Baghdad in the following years (5). Parallel to the rest of the world, 51 governmental Iranian medical universities have been established in 31 provinces along with dozens of medical research centers and also tens of medical schools in Islamic Azad University in all parts of Iran. Faculty members are the key components of any medical university. The number, specialty, scientific rank, and H-index play a significant role in the general primacy and universal ranking of any university.

Medical education has faced many challenges over the past years. According to Raymond et al., some trends have been added to these challenges such as initial interventions to shorten education at medical schools, and containment of new

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pedagogic content into medical school curricula (6), and implementation of various other curricular reforms (7). Current and projected shortages of neurologists also highlight the need to recruit more students into the specialty (8).

Other scholars (9, 10, 11) have elucidated health education as an important factor in promoting client satisfaction, active independence, and contribution to healthcare programs. They have also referred to promoting healthy behaviors predisposing to helpful consequences such as improved quality of life and enhanced mental condition through diminishing disease sequelae and attenuating anxiety. In addition, Rankin & Stallings (12) and Glanz et al. (13) categorize access to complete information about their own health, disease, and even treatment as one of the most important rights of clients. That is why Close (14) and Zwanikken et al. (15) assert that depriving clients of such education and training is unethical.

This study compared Iranian medical universities regarding total number of faculty members and the top faculty member of each medical university in terms of number of ISI articles, total citations, H-index, citations per paper, scientific rank, and specialty.

Materials and Methods

In this descriptive-analytic meta-analysis, the Electronic Scientific Measurement System affiliated to the Ministry of Health, Treatment, and Medical Education available at www.research.ac.ir was used for data collection (16). This database provides us with information on 51 medical universities, 19 independent medical schools, and 835 medical research centers and covers 18972 registered medical faculty members. It provides the data on Iranian medical universities separately in 31 Iranian provinces so that if you click on the map of the intended province on the map of Iran given in the home page, you will have the medical universities of that province. Also, any faculty member can type in their forename and surname in the command line of the home page and the system quickly presents their data including rank in the university, name, affiliated university or center, specialty, scientific rank, number of ISI papers, citations, H-index, and citations per paper. The faculty members can fill in the boxes in the home page and click to be added to the database. These universities have different schools like school of medicine, school of dentistry, school of pharmacy, school of nursing and midwifery, paramedical school, school of health, school of well-being and rehabilitative sciences, school of nutrition, school of clinical psychology, etc. This database excludes the medical and allied health schools in the Islamic Azad University as they are not affiliated to the Ministry of Health, Treatment, and Medical Education. Using the mentioned system, the raw data of each medical university, total number of faculty members of each, the top faculty member of each along with his/her number of ISI papers, total number of citations, citations per paper, H-index, scientific rank, and specialty were extracted by the researcher manually. The raw data on 51 medical universities including total number of faculty members of each, the top faculty member of each along with his/her number of ISI papers, total number of citations, citations per paper, H-index, scientific rank, and specialty were tabulated, and rank-ordered. The culled data were analyzed with SPSS19 using descriptive statistics of frequency, range, mean, SD, and also correlation and rank order.

The Scientific Measurement System of the Iranian Ministry of Health, Treatment, and Medical Education (www.research.ac.ir) is an open access network database that allows the use of its data freely provided proper reference citation is mentioned. This paper entailed no human or animal subjects; so, there were no ethical concerns.

Results

The gleaned data are presented in Table 1.

The primary data in Table 1 were imported to SPSS19 and analyzed using descriptive statistics of frequency, range, mean, SD, and also rank order and correlations. The findings were tabulated in Table 2 and Table 3.

This study also investigated the correlations between the five variables under study among the

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Iranian medical universities. The findings are displayed in Table 3.

As can be observed, there was a statistically strong correlation between total number of articles and H-index of each faculty member (r = 0.833, P-value = 0.01), between total number of articles of each top faculty member and their total number of citations (r = 0.802, P- value = 0.01), and between total number of citations and H-index of each top faculty member (r= 0.877, P- value = 0.01). There was also a moderately strong correlation between scientific rank of each top faculty member and their H-index (r = 0.517, P-value = 0.01), between total number of citations and citations per paper (r = 0.468, P-value = 0.01), between citation per paper and H-index (r = 0.437, P-value = 0.01), and between scientific rank and total number of citations (r = 400, P-value = 0.01). Finally, there was a weak correlation between total number of articles of each top faculty member and their scientific rank (r = 0.322, P-value = 0.05), and between scientific rank and citations per paper of each top faculty member (r = 0.350, P-value = 0.05).

Table 1. Comparison of information on top faculty members of 51 Iranian medical universities

No.	University name	No. of faculty members	Top faculty member's articles	Citations	Greatest H-index	Citations per paper	Scientific rank	Specialty
1	Tehran University of Medical Sciences	1914	492	22460	60	45.65	Top Full professor	Clinical subspecialty of adults' gastroenterology and liver
2	Shahid Beheshti University of Medical Sciences	1503	917	14145	56	15.43	Full professor	Clinical subspecialty in adult endocrinology and metabolism
3	Mashhad University of Medical Sciences	917	240	5733	42	23.89	Full professor	PhD in pharmacology
4	Shiraz University of Medical Sciences	912	229	2888	29	12.61	Full professor	PhD in immunology
5	Isfahan University of Medical Sciences	900	467	7243	43	15.51	Full professor	Pediatrics
6	Tabriz University of Medical Sciences	876	206	4291	38	20.83	Full professor	PhD in pharmaceutics
7	Iran University of Medical Sciences	864	142	2973	27	20.94	Associate professor	PhD in infectious diseases

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No.	University name	No. of faculty members	Top faculty member's articles	Citations	Greatest H-index	Citations per paper	Scientific rank	Specialty
8	Jondishapoor University of Medical Sciences	661	166	1317	16	7.93	Full professor	Pediatrics
9	Kerman University of Medical Sciences	484	61	2293	21	37.59	Top Full professor	Endodontics
10	Hamedan University of Medical Sciences	450	32	625	16	19.53	Associate professor	PhD in pharmaceutical chemistry
11	Mazandaran University of Medical Sciences	416	165	2687	31	16.28	Full professor	PhD in Pharmacological chemistry
12	Kermanshah University of Medical Sciences	414	112	1189	20	10.62	Full professor	PhD in biochemistry
13	Yazd University of Medical Sciences	385	68	597	13	8.78	Full professor	Obstetrics
14	Urmia University of Medical Sciences	365	64	3244	29	50.69	Full professor	PhD in clinical biochemistry
15	Zanjan University of Medical Sciences	354	83	1932	19	23.28	Full professor	PhD in pharmaceutics
16	Zahedan University of Medical Sciences	326	195	2718	24	13.94	Full professor	PhD in clinical biochemistry
17	Qazvin University of Medical Sciences	293	61	1369	18	22.44	Full professor	PhD in pharmacology
18	Hormozgan University of Medical Sciences	287	32	388	10	12.13	Associate professor	PhD in genetics

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No.	University name	No. of faculty members	Top faculty member's articles	Citations	Greatest H-index	Citations per paper	Scientific rank	Specialty
19	Baqiatallah University of Medical Sciences	257	515	4659	31	9.05	Full professor	Clinical subspecialty of adults' gastroenterology and liver
20	Arak University of Medical Sciences	255	51	815	18	15.98	Assistant professor	PhD in environmental health
21	Lorestan University of Medical Sciences	254	93	817	19	8.78	Full professor	PhD in microbiology
22	Kurdistan University of Medical Sciences	251	104	584	15	5.62	Full professor	MSc in environmental health
23	Share Kord University of Medical Sciences	238	344	7142	52	20.76	Full professor	PhD in pharmacology
24	Ardebil University of Medical Sciences	237	39	850	15	21.79	Full professor	Clinical subspecialty of adults' gastroenterology and liver
25	Birjand University of Medical Sciences	220	60	573	15	9.55	Associate professor	PhD in clinical toxicology
26	Kashan University of Medical Sciences	211	136	864	18	6.35	Associate professor	PhD in nutrition
27	Bushehr University of Medical Sciences	207	140	1134	18	8.10	Full professor	Clinical subspecialty of adults' gastroenterology and liver
28	Semnan University of Medical Sciences	205	114	1311	23	11.50	Full professor	PhD in physiology
29	Qom University of Medical Sciences	196	91	732	11	8.04	Instructor	MSc in nursing
30	Rafsanjan University of Medical	188	126	1152	19	9.14	Assistant professor	PhD in immunology

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No.	University name	No. of faculty members	Top faculty member's articles	Citations	Greatest H-index	Citations per paper	Scientific rank	Specialty
	Sciences							
31	Yasooj University of Medical Sciences	176	8	345	8	43.13	Assistant professor	PhD in clinical psychology
32	Alborz University of Medical Sciences	163	267	2022	19	7.57	Assistant professor	PhD in epidemiology
33	Sabzevar University of Medical Sciences	162	29	234	9	8.07	Associate professor	PhD in physiology
34	University of Well-being and Rehabilitative Sciences	161	239	4474	35	18.72	Full professor	PhD in genetics
35	Ilam University of Medical Sciences	149	119	783	16	6.58	Full professor	PhD in epidemiology
36	Zabol University of Medical Sciences	138	32	216	9	6.75	Associate professor	PhD in pharmacological toxicology
37	Khorasan-e Shomli University of Medical Sciences	138	22	165	8	7.50	Associate professor	PhD in immunology
38	Shahed University of Medical Sciences	135	143	1462	21	10.22	Full professor	PhD in physiology
39	Artesh University of Medical Sciences	135	57	492	15	8.63	Full professor	PhD in physiology
40	Jahrom University of Medical Sciences	108	22	538	14	24.45	Associate professor	PhD in physiology
41	Tarbiat Modarres University of Medical	94	429	4902	33	11.43	Assistant professor	PhD in hematology

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No.	University name	No. of faculty members	Top faculty member's articles	Citations	Greatest H-index	Citations per paper	Scientific rank	Specialty
	Sciences							
42	Gonabad University of Medical Sciences	90	44	233	11	5.30	Instructor	MSc in environmental health
43	Fasa University of Medical Sciences	90	69	624	15	9.04	Instructor	MSc in biostatistics
44	Dezfool University of Medical Sciences	58	20	141	7	7.05	Assistant professor	PhD in pharmacology
45	Bam University of Medical Sciences	53	31	133	7	4.29	Instructor	MSc in environmental health
46	Jiroft University of Medical Sciences	50	6	57	5	9.50	Assistant professor	PhD in clinical biochemistry
47	Torbat-e Heidarieh University of Medical Sciences	47	52	314	9	6.04	Assistant professor	PhD in physiology
48	Guilan University of Medical Sciences	45	85	814	16	9.58	Full professor	PhD in biologic products
49	Babol University of Medical Sciences	37	123	835	16	6.79	Full professor	PhD in pharmacology
50	Maraqeh University of Medical Sciences	35	27	177	8	6.56	Researcher	PhD in History of Medical Sciences
51	Golestan University of Medical Sciences	29	93	1926	23	20.71	Associate professor	Clinical subspecialty of adults' gastroenterology and liver

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	N	Range	Minimum	Maximum	Mean ± SD
Faculty Members	51	1885	29	1914	335.9 ± 372.69
Articles	51	911	6	917	146.3 ± 166.97
Citations	51	22403	57	22460	2345.3 ± 3803.5
Greatest H-index	51	55	5	60	20.9 ± **12.66**
Citations Per Paper	51	46.40	4.29	50.69	14.7 ± **10.50**

Table 3. Correlations between the five variables under study

		Correlations				
		Articles	Scientific Rank	Greatest H-index	Citations Per Paper	Citations
Articles	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	51				
Scientific Rank	Pearson Correlation	.322*	1			
	Sig. (2-tailed)	.021				
	N	51	51			
Greatest H-index	Pearson Correlation	.833**	.517**	1		
	Sig. (2-tailed)	.000	.000			
	N	51	51	51		
Citations Per Paper	Pearson Correlation	.112	.350*	.437**	1	
	Sig. (2-tailed)	.435	.012	.001		
	N	51	51	51	51	
Citations	Pearson Correlation	.802**	.400**	.877**	.468**	1
	Sig. (2-tailed)	.000	.004	.000	.001	
	N	51	51	51	51	51

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Discussion

This study was the first one in its own type. This was because the Electronic Scientific Measurement System (www.resaerch.a.c.ir) is a new database and no study like the present one has been carried out on the topic previously. Hence, the researcher could not compare and contrast his own findings with previous ones. In this study, seven variables including total number of faculty members per medical university, the scientific rank of top faculty members of 51 Iranian medical universities, their specialties, total number of ISI articles of each top faculty member, total number of citations of each, H-index of each, and citations per paper of each were compared. The results showed that the maximum number of faculty members was 1914 that belonged to Tehran University of Medical Sciences while the minimum number was 35 belonging to Maraqeh University of Medical Sciences. Also, the maximum number of articles of the top faculty members of each university was 917 that belonged to the top faculty member of Shahid Beheshti University of Medical Sciences while the minimum number of articles was 6 belonging to the top faculty member of Jiroft University of Medical Sciences. Moreover, the maximum number of citations of the top faculty members was 22460 that belonged to the top faculty member at Tehran University of Medical sciences while the minimum number of citations was 57 belonging to Jiroft University of Medical Sciences. Additionally, the maximum H-index was 60 which belonged to the top faculty member at Tehran University of Medical Sciences whereas the minimum H-index was 5 owned by the top faculty member at Jiroft University of Medical Sciences. Furthermore, the maximum number of citations per paper was 50.69 for the top faculty member at

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Urmia University of Medical Sciences while the minimum number of citations per paper was 4.29 belonging to the top faculty member at Bam University of Medical Sciences. Finally, the maximum scientific rank of the top faculty members was senior full professor belonging to two faculty members at Kerman University of Medical Sciences and Tehran University of Medical Sciences whereas the minimum scientific rank was instructor owned by the top faculty member at Bam University of Medical Sciences.

Our findings demonstrated that the Iranian medical universities affiliated to Ministry of Health, Treatment, and Medical Education were not uniform in the seven variables under study. This indicates that manpower and resources are not evenly distributed among the 31 provinces in Iran. This situation asks the authorities of the less-privileged medical universities to make their best effort to absorb the required resources, manpower, equipment, and faculty members to develop their related medical university.

This study excluded the medical and allied health schools in the Iranian Islamic Azad University as they are not affiliated to the Ministry of Health, Treatment, and Medical Education. It also excluded Iranian medical research centers and independent medical schools. Also, it covered just the faculty members that had registered in the Scientific Measurement System.

Conclusion

The findings of this study showed that there were a total of 18972 medical faculty members teaching and researching in Iranian medical universities excluding the independent medical schools, medical research centers, and medical universities not affiliated to the Iranian Ministry of Health, Treatment, and Medical Education in the Islamic Azad University. This study presented some useful, information on top medical faculty members in Iranian medical universities in terms of total number of ISI articles, total citations of each, average citations per paper of each, H-index, scientific rank, and specialty. Yet, there was an imbalance in the variables under study in different medical universities located in different parts of Iran. A more balanced distribution of faculty members and resources is required to improve medical education in all parts of Iran. Our findings may be added to WHO data base to be used by foreign students or professors who are interested in studying or teaching in Iranian medical Universities.

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Conflicts of Interests

The authors declare that there is no financial support or relationships that may pose conflict of interest.

Author's Contributions

Barzegar, K designed research; Barzegar, K and Barzegar, S conducted research; Barzegar, K analyzed data; and Barzegar, K wrote the paper. Barzegar, K had primary responsibility for final content. All authors read and approved the final manuscript.

References

1. Moosavi, J. The Place of Avicenna in the History of Medicine. Avicenna Journal of Medical Biotechnology: 2009; Apr-Jun; 1(1) : 3–8.
2. Sarton, G. Introduction to the History of Science. (cf. Dr. A. Zahoor and Dr. Z. Haq (1997); Quotations from Famous Historians of Sciences, Cyberistan.
3. Hill, D. Islamic Science and Engineering. Edinburgh Univ. Press. 1993; ISBN: 0-7486-0455-3, p. 4.

[DOI: 10.18502/jebhpme.v3i1.577]

4. Safa ʿZabīḥ Allāh. Tārīkh-i 'ulūm va adabīyāt-i Īrānī. 1969; OCLC number 6899380.
5. Meri, JW, Jere L. Bacharach (ed.). 2015; Medieval Islamic Civilization: An Encyclopedia. Routledge Publications, UK.
6. Raymond, JR, Kerschner, JE, Hueston, WJ, Maurana, CA. The merits and challenges of three-year medical school curricula: time for an evidence-based discussion. Acad Med. 2015; 90: 1318–1323.
7. Skochelak, SE. A decade of reports calling for change in medical education: what do they say? Acad Med. 2010; 85:S26–S33.
8. Larsen, DP, Santini, VE. Increasing student recruitment into neurology: joining the family. Neurology. 2015; 84:2302–2303.
9. Auld ME. Health Education careers in a post–Health reform era. Health Promot Pract. 2017; 18(5): 629–35.
10. Wu T, Li L. Evolution of public Health Education in China: American Public Health Association; 2017.
11. Hwang HL, Kuo ML, Tu CT. Health Education and Competency scale: development and testing. J Clin Nurs. 2017.`
12. Rankin SH, Stallings KD, London F. Patient education in health and illness. New York: Lippincott Williams & Wilkins; 2005.
13. Glanz K, Rimer BK, Viswanath K. Health behavior and health education: theory, research, and practice. New York: Wiley; 2008.
14. Close A. Patient education: a literature review. J Adv Nurs. 1988; 13(2): 203–13.
15. Zwanikken PA, Huong NT, Ying XH, Alexander L, Wadidi MSA, Magaña-Valladares L, et al. Outcome and impact of master of public Health programs across six countries: education for change. Hum Resour Health. 2014; 40, 12(1).
16. Scientific Measurement System of Iranian Ministry of Health, Treatment, and Medical Education. 2017; www.research.ac.ir

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