

# Self-citation in Iran in Comparison with Other Countries

Mousa Yaminfirooz<sup>1,2</sup>, Aram Tirgar<sup>2</sup>

<sup>1</sup>Department of General Education, School of Medicine, Babol University of Medical Science, Babol, Iran

<sup>2</sup>Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

Corresponding author: Mousa Yaminfirooz, PhD. Department of General Education, School of Medicine, Babol University of Medical Science, Babol, Iran. E-mail: mousa@gmail.com. ORCID ID: <http://www.orcid.org/0000-0000-0000-0000>.

doi: 10.5455/aim.2019.27.259-262

ACTA INFORM MED. 2019 DEC 27(4): 259-262

Received: Sep 15, 2019 • Accepted: Nov 16, 2019

© 2019 Mousa Yaminfirooz, Aram Tirgar

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Introduction:** Self-citation is a debate in citation analysis and evaluating research performance. **Aim:** This study aimed to investigate the self-citation rate of Iranian scholars in comparison with scholars of other countries in the World. **Methods:** The scientific output of 238 countries in the time span of 1996-2017 (two recent decades) was studied from perspective of some bibliometric indicators, using "country ranking" section in SJR database for data collection. **Results:** Regarding self-citation rate, Iran ranked third in the world, second in Asia and first in the Middle East. However, Iran ranked 22<sup>nd</sup> in the World, second in Asia and Middle East in scientific production. Iran has self-citation rate of 36.57%, which is higher than World standard level. **Conclusion:** It is needed that Iranian researchers consider their research quality as well as making the appropriate context for more visibility of their works by receiving more citations from other researchers and taking other scientific visibility modes into account. Science policy-makers in Iran should consider some approaches to decreasing the self-citation rate in Iranian publications.

**Keywords:** Scientometrics, Self-citation, Iran, SCImago.

## 1. INTRODUCTION

As one of the main bibliometric and scientometric approaches, citation analysis considers the rules of relationship between citing items (texts) and cited ones (documents) and detects and traces the ways of scientific thoughts and innovations (1). Despite its capacities in monitoring scientific output, citation analysis has been curarized by some bibliometric researchers for its defects and disadvantages, including self-citation (2). As one of the unethical and biased manifestations of scientific behavior, authors cite their previous works just for increasing their citation numbers by self-citation (3). Hyland conceives self-citation as a simple way of authors' increasing their credibility in an unnatural manner (3). More self-citation can be a sign of unethical scientific behavior. For this, 10-20% of self-citation in a scientific work is logical and acceptable (4) and self-citation more than 20% is considered as ostentation (5) and self-overpaying at-

titude (6). Self-citation is of main debates in the citation analyses of scientific output and knowledge performance (7). Since the authors try to guide their readers to their related works, unusual and exaggerated use of self-citation may be misguided and time-wasting.

Self-citation has opponents and supporters. Some conceived it as egoism (5) and narcissism (6) and others emphasize its necessity and inevitability (8). Ones agreeing self-citation argue that a researcher focusing deeply on a research topic needs to cite his/her previous scientific works on the topic. However, an attempt to increase one's h-index with increase in his/her self-citation rate is a non-scientific behavior. Self-citation has been one of the main problems in citation analyses (9-10) and manifests itself as a problem in scientific evaluation processes in author, institutional and country levels (2).

As the first author in systematically evaluating self-citation, Tagliacozzo reported that the rates

of self-citation in plant physiology and neurology amounted to 6.16 and 5.17, respectively (4). Self-citing is a common behavior among Iranian authors and journals, including ones in medical sciences (11). Taheri and colleagues found a relationship between self-citation and all qualitative and quantitative measures of scientific output of faculty members working in Isfahan University of Medical Sciences (12). Ghane founded that the self-citation rate was 5.61% in Iranian medical journals (13). In another study, the rate of self-citation in Iranian journals was found to increase from 8% in 2000 to 18% in 2005 (14).

In a study of 45000 Norwegian journals in a 3-year time span, it was revealed that 36% of total citations were self-citations, with significant difference in various disciplines (15). Investigation into the self-citation rates in scientific disciplines worldwide showed that the self-citation rate was 34.45% (16). Hyland found that in 70% of papers of 8 main disciplines, there was some self-citation, with biology as the most self-cited discipline that its self-citation rate amounted to 60% (17). A year-by-year downward trend was seen in self-citation rates among Chinese biomedical journals from 2005 (with .113) to 2007 among the studied journals (with .092) (18).

Considering an appropriate scientific performance made by Iranian scholars in recent decades, this study aimed to investigate the self-citation rate of Iranian scholars in comparison with those of other countries. This can be helpful in well monitoring and reflecting scientific production, dissemination and communication.

**2. AIM**

This study aimed to investigate the self-citation rate of Iranian scholars in comparison with scholars of other countries in the World.

**3. METHODS**

This study is a bibliometric analysis. The scientific output of 238 countries in the time span of 1996-2017 (two recent decades) was studied from perspective of some bibliometric indicators. "Country ranking" section in SJR database was used for data collection. Data were studied based on scientometric techniques of citation analysis such as published document number, received citation rate, self-citation rate, and citations per paper. Excel and SPSS were used for data analysis.

**4. RESULTS**

Table 1 shows top ten countries in the World with high self-citation rates and their ranks in paper number. Countries such as India, the United States, Iran and China have higher self-citation rates comparing other countries. Iran ranked third in self-citation worldwide (with 36.57%), despite being in 22nd rank in publishing scientific papers.

As Table 2 shows, despite of having the sixth rank in scientific production among Asian countries, Iran is ranked second (after China) in self-citation rate among

No.	Rank (in Paper No.)	Paper No.	Country	Self-citation %
1	2	5133924	China	55.63
2	1	11036243	United States	45.62
3	22	448079	Iran	36.57
4	9	1472192	India	34.26
5	15	834526	Brazil	33.13
6	13	956025	Russian Federation	31.73
7	41	171571	Ukraine	27.01
8	5	2539441	Japan	26.65
9	34	248457	Malaysia	26.10
10	46	127817	Pakistan	25.78

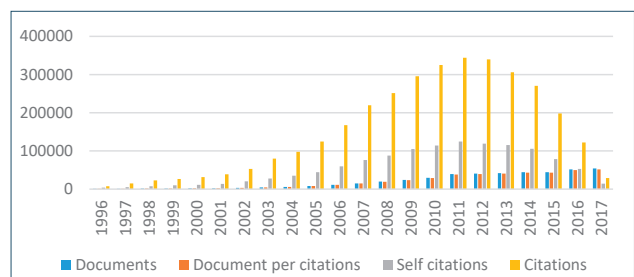
**Table 1. Top ten World's countries in self-citation rates, including Iran, during 1996-2017**

No.	Rank (in Paper No.)	Paper No.	Country	Self-citation%
1	1	5133924	China	55.63
2	6	448079	Iran	36.57
3	3	1472192	India	34.26
4	2	2539441	Japan	26.65
5	9	248457	Malaysia	26.10
6	11	127817	Pakistan	25.78
7	4	1004042	South Korea	20.34
8	5	614487	Taiwan	19.76
9	16	19444	Kazakhstan	19.45
10	14	40985	Bangladesh	17.51

**Table 2. Top ten Asian countries in self-citation rates, including Iran, during 1996-2017**

No.	Rank (in Paper No.)	(Paper No.)	Country	Self-citation%
1	2	448079	Iran	36.57
2	1	531899	Turkey	23.06
3	4	177824	Egypt	19.68
4	5	155805	Saudi Arabia	16.18
5	11	19023	Iraq	15.02
6	3	346372	Israel	12.87
7	10	21433	Qatar	12.18
8	7	35267	Jordan	12.05
9	12	16938	Oman	11.50
10	14	5927	Palestine	11.17

**Table 3. Top ten Middle Eastern countries in self-citation rates, including Iran, during 1996-2017**



**Figure 1. Citation and self-citation trends in Iranian scientific output in comparison with its total scientific product and citable documents by year (1996-2017)**

Asian countries. India, Japan, Malaysia and Pakistan are of Asian countries with high self-citation rates, too.

The top ten Middle Eastern countries in self-citation rates are shown in Table 3. Iran ranked first in this regard, followed by Turkey and Egypt.

Figure 1 depicts the trends in citation and self-citation in Iranian scientific productions comparing with its total and citable scientific output in two last decades (1996–2017). As can be seen, the trend in self-citation was upward until 2011 and downward until 2017, despite of increased trends in scientific production and citable documents. Our study showed that out of 30.24% of self-citation rate among countries in these decades, Iran share is 0.48% in total.

## 5. DISCUSSION

Self-citation, as a part of citing behavior (19) is one of challenges in evaluating researchers' scientific performance. It is an inevitable action with some logical reasons, such as presenting previous research findings, increasing the visibility of published works, making a work to be dynamic in citation cycle, confirming the findings and validating and providing evidence for the research at hand (20). In addition, it may result from the cumulative nature of individual research, the need for personal gratification, or the value of self-citation as a rhetorical and tactical tool in the struggle for visibility and scientific authority (21–26).

In this scientometric study, the self-citation rate in Iran's scientific publications was compared with those of the world, Asian and Middle Eastern countries. Regarding self-citation rate, Iran ranked third in the world, second in Asia and first in the Middle East. However, Iran ranked 22<sup>nd</sup> in the World, second in Asia and Middle East in scientific production during 1996–2017. The trends in citation and self-citation in Iran's publication increased from 1996 to 2011 and decreased then. One of reasons for decrease or increase in received citation could be decrease or increase in self-citation. This finding accords with that found by Biglu in which the amount of Iranian journals' self-citation increased from 8% in 2000 to 18% in 2005 (14). The self-citation rate among world countries amounted to 30.24 in our study, in line with reported self-citation rate in 27 scientific disciplines worldwide amounted to 34.45% (16).

With a main role in total received citations and making scientific papers visible, self-citation cannot be ignored in quantitative and qualitative evaluation of scientific output. However, immoderate self-citation (4) can negatively affect the value of research literature (2). Although Iran has a self-citation rate relatively close to that of worldwide, it is higher than normal. Some approaches need to be replaced exaggerated self-citation (27).

## 6. CONCLUSION

It is needed that Iranian researchers consider their research quality as well as making the appropriate context for more visibility of their works by receiving more citations from other researchers. Science policy-makers should consider some applicable approaches to decreasing the self-citation rate in Iranian publications.

• **Acknowledgments:** This study was granted by Babol University of

Medical Science and extracted from a research project with code no. 9502917 and code of ethics no. UBABOL.HRI.REC.1395.108. we acknowledge all members of the Research Council of the university.

- **Author's contribution:** All authors contributed to study conception and design, contributed to data acquisition, data analysis and interpretation, and writing of article. All authors and coauthors contributed to editing, reviewing and final approval of article.
- **Conflict of interest:** There are no conflicts of interest.
- **Financial support and funding:** Nil.

## REFERENCES

1. Bajpai M. Self citation in scientific literature: a reviewer's perspective. *Cukurova Medical Journal* 2016; 41(3): 609–609. Available at: <https://www.scopemed.org/?mno=212159>.
2. Mac Roberts MH, Mac Roberts BR. Problems of citation analysis: A critical review. *Journal of the American Society for Information Science*. 1989; 40: 342–349. Available at: [https://www.researchgate.net/publication/220433841\\_Problems\\_of\\_Citation\\_Analysis\\_A\\_Critical\\_Review](https://www.researchgate.net/publication/220433841_Problems_of_Citation_Analysis_A_Critical_Review).
3. Hyland K. Self-citation and self-reference: Credibility and promotion in academic publication. *Journal of the American Society for Information Science and Technology*. 2003; 54(3): 251–259. Available at: [https://www.researchgate.net/publication/220435626\\_Self-citation\\_and\\_Self-reference\\_Credibility\\_and\\_Promotion\\_in\\_Academic\\_Publication](https://www.researchgate.net/publication/220435626_Self-citation_and_Self-reference_Credibility_and_Promotion_in_Academic_Publication).
4. Tagliacozzo R. Self-citations in scientific literature. *Journal of Documentation*. 1977; 33(4): 251–265. Available at: <https://www.emeraldinsight.com/doi/abs/10.1108/eb026644>.
5. Lawani SM. On the heterogeneity and classification of author self-citations. *Journal of the American Society for information Science*. 1982; 33(5): 281. Available at: [https://www.researchgate.net/publication/229947698\\_On\\_the\\_Heterogeneity\\_and\\_Classification\\_of\\_Author\\_Self-Citations](https://www.researchgate.net/publication/229947698_On_the_Heterogeneity_and_Classification_of_Author_Self-Citations).
6. Pearce, J. Are you overpaying your academic executive team? A method for detecting unmerited academic executive compensation. *Tertiary Education and Management*. 2016; 22(3): 189–201. Available at: <https://www.tandfonline.com/doi/abs/10.1080/13583883.2016.1181198?journalCode=rtm20>.
7. Balon R. Politics of self-citation. *Acta Psychiatrica Scandinavica*. 2016; 133(2): 165. Available at: [https://www.researchgate.net/publication/283514136\\_Politics\\_of\\_self-citation](https://www.researchgate.net/publication/283514136_Politics_of_self-citation).
8. Gami AS, Montori VM, Wilczynski NL, Haynes RB. Author self-citation in the diabetes literature. *Canadian Med Ass J*, 2004; 170: 1925–1927. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC421720/>.
9. Glänzel W, Debackere K, Thijs B, Schubert A. A concise review on the role of author self-citations in information science, bibliometrics and science policy. *Scientometrics*. 2006; 67(2): 263–277. Available at: <https://link.springer.com/article/10.1007%2Fs11192-006-0098-9>.
10. Aksnes D. A macro study of self-citation. *Scientometrics*. 2003; 56(2): 235–246. Available at: <https://link.springer.com/article/10.1023/A:1021919228368>.
11. Nazarian S, et al. High rate of citation in multi authors in comparison with single authors in Iranian papers: is this related to a special period of time? *J Sci Inform Technol Iran*. 2012; 27(4): 945–960. Available at: <http://ensani.ir/fa/article/304432/> [in Persian].
12. Taheri B, Ghazavi R, Zahed A, Soleimanzade-Najafi NS. The effect of self-citation on quantitative and qualitative indicators of

- measuring the research output of faculty members in Isfahan University of Medical Sciences. *Caspian Journal of scientometrics*. 2015; 2(2): 28-35. Available at: <https://www.sid.ir/fa/journal/ViewPaper.aspx?id=355007>. [in Persian]
13. Ghane MR. Correlation between self - citation and impact factor in Persian journal citation report's medical journals. *Health Inform Management*. 2009; 6(1): 53-64. Available at: <http://him.mui.ac.ir/index.php/him/article/view/123>. [in Persian].
  14. Biglu M. Tendency towards the selfcitation among journals in Iran and Turkey. *Bilgi Dünyası*. 2007; 8(2): 297-309. Available at: <http://eprints.rclis.org/10733/>.
  15. Aksnes DW. A macro study of self-citation. *Scientometrics*. 2003 Feb 1; 56(2): 235-246.
  16. Pandita R, Singh SH. Self-citations, a trend prevalent across subject disciplines at the global level: an overview. 2017; 36(3): 115-126. Available at: <https://doi.org/10.1108/CB-03-2017-0008>
  17. Hyland K. Self-citation and self-reference: Credibility and promotion in academic publication. *Journal of the American Society for Information Science and technology*. 2003 Feb 1; 54(3): 251-259.
  18. Liu XI, Wang MY. Self-citation in Chinese biomedical journals. *Learned Publishing*. 2010; 23: 93-100. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1087/20100203>.
  19. Alemokhtar MJ, Boroumand MA, Parsaei I, Ghafouri M. Investigation of the Correlation between Self-Citation and Impact Factor in Iranian Journals Indexed by the Institute for Scientific Information. *Health Inf Manage* 2016; 13(3): 197-202.
  20. Kousha, K., Tabatabaei, Y. Self-citation and its application in scientific studies. *Rahyaf*. 2009; 19(44): 25-29.
  21. Fowler J, Aksnes D. Does self-citation pay? *Scientometrics*. 2007; 72(3): 427-437.
  22. Masic I. How to Search, Write, Prepare and Publish the Scientific Papers in the Biomedical Journals. *Acta Inform Med*, 2011; 19(2): 68-79.
  23. Masic I. Medical Publication and Scientometrics. *Journal of Research in Medical Sciences*. 2013 Jun; 18(6): 624-630.
  24. Masic I. Plagiarism in Scientific Research and Publications and How to Prevent it. *Mater Sociomed*. 2014 Apr; 26(2): 141-146. doi: 10.5455/msm.2014.26.141-146.
  25. Masic I, The Importance of Proper Citation of References in Biomedical Articles. *Acta Inform Med*. 2013 Sep; 21(3): 148-155. doi: 10.5455/aim.2013.21.148-155.
  26. Masic I. Plagiarism in the Scientific Publishing. *Acta Inform Med*. 2012 Dec. 20(4): 208-213. doi: 10.5455/Acta Inform Med.2012.20.208-213. doi: 10.5455/aim.2012.20.208-213.
  27. Costas R, van Leeuwen T, Bordons M. Self-citations at the meso and individual levels: effects of different calculation methods. *Scientometrics*. 2010; 82(3): 517-537.