JKMS

Original Article
Editing, Writing & Publishing

Check for updates

Top Central Asian Educational Institutions on Publons: Analysis of Researchers and Reviewers

Sakir Ahmed [ID] [1] **and Prajna Anirvan** [ID] [2]

[1]Department of Clinical Immunology & Rheumatology, Kalinga Institute of Medical Sciences (KIMS), KIIT University, Bhubaneswar, India
[2]Department of Gastroenterology, Sriram Chandra Bhanj Medical College and Hospital, Cuttack, India

ORCID iDs
Sakir Ahmed [ID]
https://orcid.org/0000-0003-4631-311X
Prajna Anirvan [ID]
https://orcid.org/0000-0003-4494-0865

ABSTRACT

Background: The Publons platform provides integrated information on researchers, peer reviewers, publications and certain author metrics. Central Asia is a potentially growing region in terms of young researchers.

Methods: Using the inbuilt Publons search, the top institutes of nine countries of Central Asia and neighbours were identified and data on their reviewers, number of publications, number of peer reviews completed were extracted. These were compared with demographics of the countries such as population, gross domestic product, number of physicians and proportion of population enrolled for higher education.

Results: Amongst the top 15 institutes in Central Asia, China has claim to 12 while Kazakhstan has two and Iran has one. The number of top peer reviewers, number of verified reviews and Web of Science indexed publications from these top institutes varied directly with the number of researchers each had. Afghanistan, Tajikistan and Turkmenistan are not performing well on most of these while China seems to be an outlier on the upper edge of the graphs. There is good correlation between the number of researchers in the top institutes per country and both number of publications and number of completed reviews. The number of total publications per top ten institutes of each country has high correlation with various demographic parameters like total population (Spearman rho, $\rho = 0.85$), gross domestic product ($\rho = 0.82$), total number of physicians ($\rho = 0.72$), and number enrolled for higher education ($\rho = 0.93$).

Conclusion: There appears to be much disparity among the rankings, number of researchers, reviewers and published manuscripts across various countries in Central Asia. The gross heterogeneity of Central Asia needs to be minimized by nurturing and mentoring potentially upcoming researchers in publication, peer reviewing as well as in ethics involved.

Keywords: Central Asia; Peer Review; Publications; Publons; Publons Ranking; Universities

INTRODUCTION

Publons is fast emerging as a trusted and integrated resource for various bibliometric data.[1] Though it initially focused on providing credits to reviewers without unblinding, it has expanded its scope in recent years.[2] Now it provides integrated information on researchers'

profiles, citations as well as peer review and editorial credits. It can import and synchronize data from ORCID which enables publication of authors despite the presence of variations in their names.[1] ORCID[1] is also important to recognize an author with multiple emails/affiliations/other variables. It also draws information from the Web of Science (WoS) platform to provide stringent citations and h-index origination only in journals indexed in WoS. It provides an online search interface that can be modified to search for individuals or institutes or even nations.[3]

There is no dearth of young scientists and reviewers in Central Asia who might soon emerge into a global force to reckon with.[4] However, many of them may not have adequate exposure to mentoring and guidance in research, scientific writing, or reviewing. Also, there might be impediments with regard to digital restrictions prevalent in some countries in the region.[5] Thus there appears to be an underrepresentation of Central Asia in world scientific literature.[6]

Recognition for authors and institutes can be measured with various metrics.[7] The citation count and impact factor are just single dimensions of the multi-faceted impact of an article, individual or institute.[8] Various alternative metrics are available that can predict the future citations and practical importance of manuscripts. However, Central Asian countries have variable access to the internet[5] and possibly limited learning opportunities about resources such as Publons. Thus, their research and publications do not garner enough international attention and they are deprived of their deserving credit. An in-depth analysis of the top institutes of these countries can inform us about how well they are being represented at a global level, the number of publications, the number of researchers, and the number of peer reviewers. This can help create awareness as well as devise educational campaigns to propel the best towards global recognition.[9]

Herein, we have utilised the unique resources of Publons to see how researchers and peer reviewers from the top most universities and institutions in Central Asia are represented. We analysed the top 10 institutes of the nine Central Asian countries as per Publons regarding the number of researchers and peer reviewers and publication statistics.

METHODS

Central Asia consists of nine countries, namely Afghanistan, China, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan and Uzbekistan in alphabetic order. The top 10 institutes of each country as per Publons rankings was used as a surrogate for representing the research and peer review output for that country.

Data extraction

A Publons search was made for top institutes of these nine countries on the 14th of March 2021 using the inbuilt search engine [https://publons.com/institution/?country= {country code} &order_by=num_researchers; where {country code} is specific for each country]. This Publons ranking depends on the number of verified researchers on Publons. The top 10 institutes of each country were identified, and data was imported into MS Excel spreadsheet for analysis. Data imported included the Publons rank for that institute, the number of researchers on Publons, the number of Publons certified "Top Reviewer", the total number of verified reviews from that institute overall, the number of peer reviews completed in the last 12 months, and number of publications in the WoS core collection from that institute.

Statistics applied

The Shapiro Wilk test was used to examine normality of data. Beyond descriptive statistics, correlation between these variables were explored. Since data was predominantly non-parametric, only Spearman correlation was applied. Also, information on each countries' population, gross domestic product (GDP), number of physicians per thousand population, and percentage of population ever enrolled in tertiary education were imported on the 26th of March, 2021 from Microsoft Online database using the Geography data function inbuilt in MS Excel. Spearman correlations between number of publications and these data were also explored.

Statistical software used

All data were transferred to R software (ver 3.3) and the ggpubr package was used for statistical analysis while the ggplot2 was used for preparing the figures.

RESULTS

China's top 10 institutes have the leading number of researchers (n = 15,461), followed those of Iran (n = 10,390) and of Kazakhstan (n = 7,406) while Afghanistan, Tajikistan and Turkmenistan have less than 100 researchers with accounts on Publons (**Table 1**). China predominates this list with 12 institutes which also contains 2 institutes from Kazakhstan and one from Iran. The top 10 institutes of each country are summarized in **Supplementary Table 1**. The number of publications from the top institutes is directly proportional to the number of researchers they have registered on Publons (**Fig. 1**).

Publons provides the number of peer reviews verified by them. China has 6 institutes amongst the top ten with the highest number of completed peer reviews (**Table 2**). Each of these institutes with top ten number of reviews have at least 20 peer reviewers who have achieved the distinction of being a "Publon Top Reviewer". The total number of reviews completed correlates directly with the number of researchers in each institute (**Fig. 2**).

The total number of publications from the top 10 institutes of each Central Asian nation in alphabetic order ranges from 0 to more than 327 thousand (**Table 3**). Four out of the nine countries have less than 1,000 manuscripts logged on the Publons.

Table 1. Top 15 universities of Central Asia as per the Publons ranking

Publons rank	Institute	Researchers	WoS indexed publications	Country	Country rank
29	Al-Farabi Kazakh National University	2,952	4,963	Kazakhstan	1
53	Tsinghua University	2,087	48,899	China	1
63	Zhejiang University	1,966	40,527	China	2
76	Shanghai Jiao Tong University	1,717	33,395	China	3
79	L.N. Gumilyov Eurasian National University	1,710	2,519	Kazakhstan	2
94	University of Tehran	1,597	21,478	Iran	1
107	University of Science & Technology of China	1,510	43,141	China	4
109	Xi'an Jiaotong University	1,480	28,950	China	5
113	Peking University	1,468	36,729	China	6
138	Sun Yat Sen University	1,334	17,661	China	7
139	Huazhong University of Science & Technology	1,333	25,013	China	8
140	Harbin Institute of Technology	1,327	19,911	China	9
153	Shiraz University of Medical Sciences	1,293	19,687	Iran	2
166	Xiamen University	1,239	33,438	China	10
184	Isfahan University of Medical Sciences	1,170	13,228	Iran	3

WoS = Web of Science.

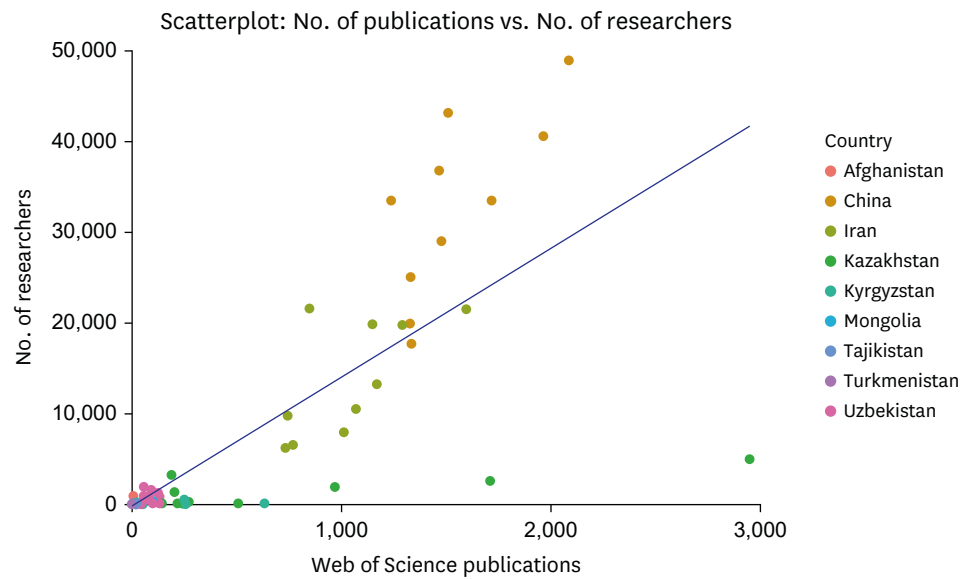## Scatterplot: No. of publications vs. No. of researchers

Fig. 1. Number of publications from the top 10 institutes per nation is proportional to the number of their reviewers, the countries being stratified by colour coding.
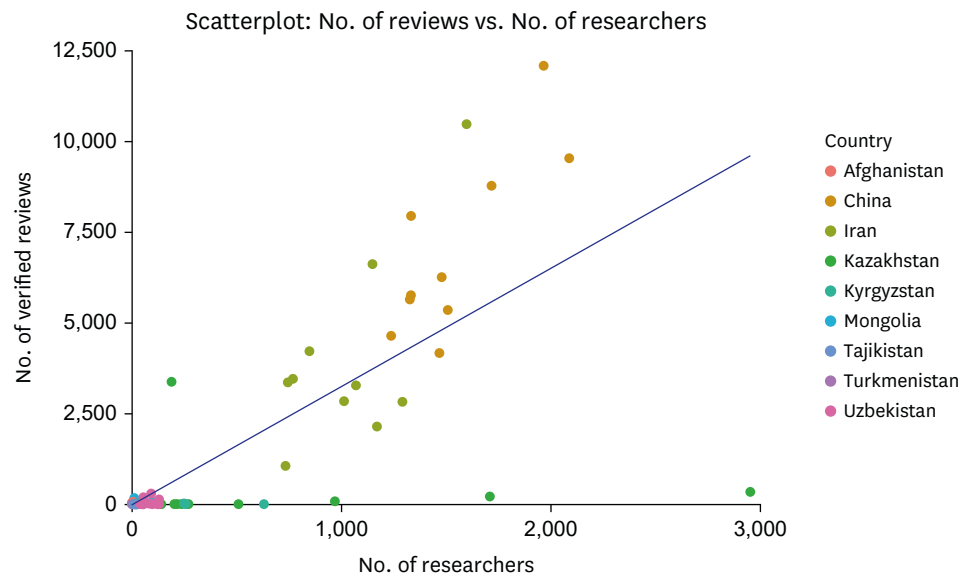
Scatterplot: No. of reviews vs. No. of researchers

Fig. 2. Total number of peer reviews logged from the top 10 institution of each country is proportionate to the number of researchers per institute.

Table 2. Top institutes with the maximum number of verified reviews

Publons rank	Institute	Publons top reviewers	Total reviews	Reviews in last 12 months	Country	Country rank
63	Zhejiang University	41	12,071	3,850	China	2
94	University of Tehran	33	10,473	3,096	Iran	1
53	Tsinghua University	37	9,536	3,191	China	1
76	Shanghai Jiao Tong University	25	8,772	2,909	China	3
139	Huazhong University of Science & Technology	35	7,937	2,473	China	8
193	Tehran University of Medical Sciences	23	6,616	2,340	Iran	4
109	Xi'an Jiaotong University	30	6,252	1,973	China	5
138	Sun Yat Sen University	22	5,751	1,856	China	7
140	Harbin Institute of Technology	24	5,641	1,768	China	9
107	University of Science & Technology of China	24	5,346	1,540	China	4

Table 3. Total number of publications from the top 10 institutes of each Central Asian nation

Country	No. of publications indexed in WoS
Afghanistan	1,138
China	327,664
Iran	136,540
Kazakhstan	14,163
Kyrgyzstan	874
Mongolia	770
Tajikistan	51
Turkmenistan	0
Uzbekistan	7,302
Grand Total	488,502

WoS = Web of Science.

Fig. 2 shows the total number of peer reviews logged from the top 10 institution of each country is also proportionate to the number of researchers per institute.

The number of manuscripts from the top institutes of each Central Asian country had high correlation with the population ($\rho = 0.85$; $P = 0.006$), GDP ($\rho = 0.82$; $P = 0.010$), total number of physicians in the country ($\rho = 0.72$; $P = 0.037$) and total number of citizens ever enrolled for tertiary education ($\rho = 0.93$; $P < 0.001$).

DISCUSSION

There appears to be much disparity among the rankings, number of researchers, reviewers and published manuscripts across various countries in Central Asia. China appears to rule the roost with the highest rankings and numbers in almost all categories. This may reflect national policies in matters of scientific publications. The number of publications from China has crossed those of the United States that puts China as the country with the maximum number of scientific publications.[10] China's spending on research and development is supposed to be more than that of the European Union combined.[11] In most of the analyses, China is an outlier with enormous number of researchers, peer reviewers, publications and verified reviews.

Behind the top three countries, China, Iran and Kazakhstan, the other six countries have less than 2,000 researchers from their top institutes on Publons. Thus, it is not surprising that all of these countries have less than 1,500 publications indexed on WoS from their top 10 institutes (Uzbekistan being an exception with more than 7,000). Though these countries have active researchers and authors, they may be handicapped by a lack of proficiency in anglophonic skills[12] or the knowledge to avoid predatory journals.[13] Publishing in predatory journals may lead to wastage of energy and demotivation for the upcoming authors.[14] Excluding China, Mongolia and Iran, the other countries publish mostly in English while Russian is the second most common language.[15] Being non-native speakers of English, certain authors may face some difficulty in publishing in WoS indexed journals that are mostly in English. They also need to be aware of the concept of plagiarism to avoid inadvertent errors.[16] Ethical post-publication promotion of their work can help bring better recognition to researchers.[17] Younger authors from Central Asia also need to be aware of how and when to declare potential conflicts of interests.[18]

Previously, other authors have analysed publications from Central Asia using the SCImago Journal & Country Rank database. These publications have shown an association of the

number of publications with GDP and population size.[6] However, the data available on Publons, has the added advantage of including researcher and reviewer numbers. It also provides information on number of peer reviews performed and limits publication counts to only journals indexed on WoS. In our analysis, we have shown that interdependent variables like population, GDP, number of physicians and number of persons enrolled for higher education are all associated with the number of WoS publications. It has been shown that GDP influences the spending on research and development (R&D) in countries. Asian countries spending more on R&D have more universities and indexed journals.[19] The same factors show a similar association even in East Asia[20] and in Europe.[21]

Kazakhstan and Uzbekistan seem to have increased their publications in recent years from non-indexed to indexed journals.[22] This should provide an example to the other neighbouring countries that have less than 2,000 WoS indexed publications each. These countries are gradually opening up to leaning English and increasing internet availability. There is much potential for education and research once these countries embrace the internet.[23] Even the World Bank is counting on microeconomy development in this region via global connections to expand research and education.[24] Non-anglophone authors do commit common errors while writing in English[25] and these may put off editors and reviewers. Thus, with increasing skills in English, the acceptance rates for these authors may increase. Also, various national and international bodies supporting research and education like the Central Asian Research and Education Network can help connect and support researchers.[26] It is also important to create awareness among local scientists so that they can avail help from various online education resources for both research[27] and publications.

The number of verified reviews is also proportionate to the number of researchers from the top universities. Affiliation to a reputed university seems to predict better peer review output.[28] All authors can act as reviewers if they are aware of research reporting standards and ethical standards.[29] It has been suggested that peer reviewing can be a part of online education[9]. Often the reviewer is blamed for a rejection.[30] These will only improve once awareness and mentoring for peer review is available.[31]

A limitation of Publons is that researchers need to actively start their accounts on the platform. Various Central Asian countries might be having active researchers who do not have Publons account and are thus missed in such analyses.

Ultimately, there is a wide divide between the leader, China, and the other countries in terms of institute ranking, number of reviewers, number of indexed publications, reviewers and number of completed peer reviews. Iran, Kazakhstan, and Uzbekistan appear in the middle rung while the other will need to take a leaf out of these three nations' approaches and increase their impact in terms of publications and presence on platforms such as Publons.

Thus, there are glaring differences between the top institutes of the countries of Central Asia and their neighbours. These correlate with population parameters, education and GDP. Concrete steps must be taken to ensure equity in the region.

SUPPLEMENTARY MATERIAL

Supplementary Table 1

Top 10 Institutes of each Central Asian country with their corresponding overall Publons rank

Click here to view

REFERENCES

1. Gasparyan AY, Gerasimov AN, Voronov AA, Kitas GD. Rewarding peer reviewers: maintaining the integrity of science communication. *J Korean Med Sci* 2015;30(4):360-4.
   PUBMED | CROSSREF

2. Gasparyan AY, Yessirkepov M, Voronov AA, Koroleva AM, Kitas GD. Comprehensive approach to open access publishing: platforms and tools. *J Korean Med Sci* 2019;34(27):e184.
   PUBMED | CROSSREF

3. Publons researcher search. https://publons.com/researcher/?research_field=5029&order_by=num_reviews. Accessed August 14, 2020.

4. Ahmed S, Pinto B. The peer review process in ASIA. *Cent Asian J Med Hypotheses Ethics* 2020;1(2):136-41.
   CROSSREF

5. Gaur PS, Gupta L. Social media for scholarly communication in Central Asia and its neighbouring countries. *J Korean Med Sci* 2021;36(4):e36.
   PUBMED | CROSSREF

6. Adambekov S, Askarova S, Welburn SC, Goughnour SL, Konishi A, LaPorte R, et al. Publication productivity in Central Asia and countries of the former Soviet Union. *Cent Asian J Glob Health* 2016;5(1):261.
   PUBMED | CROSSREF

7. Kavadichanda C. Journal metrics: different from author metrics. *Indian J Rheumatol* 2020;15(3):149-54.

8. Bornmann L, Marx W, Gasparyan AY, Kitas GD. Diversity, value and limitations of the journal impact factor and alternative metrics. *Rheumatol Int* 2012;32(7):1861-7.
   PUBMED | CROSSREF

9. Ahmed S, Zimba O, Gasparyan AY. Moving towards online rheumatology education in the era of COVID-19. *Clin Rheumatol* 2020;39(11):3215-22.
   PUBMED | CROSSREF

10. Tollefson J. China declared world's largest producer of scientific articles. *Nature* 2018;553(7689):390.
    PUBMED | CROSSREF

11. Basu A, Foland P, Holdridge G, Shelton RD. China's rising leadership in science and technology: quantitative and qualitative indicators. *Scientometrics* 2018;117(1):249-69.
    CROSSREF

12. Yakhontova T. English writing of non-anglophone researchers. *J Korean Med Sci* 2020;35(26):e216.
    PUBMED | CROSSREF

13. Yessirkepov M, Nurmashev B, Anartayeva M. A Scopus-based analysis of publication activity in Kazakhstan from 2010 to 2015: positive trends, concerns, and possible solutions. *J Korean Med Sci* 2015;30(12):1915-9.
    PUBMED | CROSSREF

14. Gasparyan AY, Nurmashev B, Udovik EE, Koroleva AM, Kitas GD. Predatory publishing is a threat to non-mainstream science. *J Korean Med Sci* 2017;32(5):713-7.
    PUBMED | CROSSREF

15. Yamshchikov GV, Schmid GP. Publication practices and attitudes towards evidence-based medicine in central Asia. *Lancet Glob Health* 2013;1(2):e73-4.
    PUBMED | CROSSREF

16. Ahmed S, Anirvan P. The true meaning of plagiarism. *Indian J Rheumatol* 2020;15(3):155-8.

17. Misra DP, Ravindran V, Agarwal V. Integrity of authorship and peer review practices: challenges and opportunities for improvement. *J Korean Med Sci* 2018;33(46):e287.
    PUBMED | CROSSREF

18. Gasparyan AY, Ayvazyan L, Akazhanov NA, Kitas GD. Conflicts of interest in biomedical publications: considerations for authors, peer reviewers, and editors. *Croat Med J* 2013;54(6):600-8.
    PUBMED | CROSSREF

19. Meo SA, Al Masri AA, Usmani AM, Memon AN, Zaidi SZ. Impact of GDP, spending on R&D, number of universities and scientific journals on research publications among Asian countries. *PLoS One* 2013;8(6):e66449.
    PUBMED | CROSSREF

20. Li M, Liu X, Zhang L. Scientific publications in public, environmental and occupational health journals by authors from China, Japan and Korea in East Asia: a 10-year literature survey from 2003 to 2012. *Int J Occup Med Environ Health* 2015;28(4):663-73.
    PUBMED | CROSSREF

21. Meo SA, Usmani AM. Impact of R&D expenditures on research publications, patents and high-tech exports among European countries. *Eur Rev Med Pharmacol Sci* 2014;18(1):1-9.
    PUBMED

22. Yessirkepov M, Nurmashev B, Anartayeva M, Seksenbayev B. The author's response: educating researchers and editors: contributing to ethical publication activity. *J Korean Med Sci* 2016;31(3):476-7.
    PUBMED | CROSSREF

23. Kelly T, Liaplina A, Tan SW, Winkler H. *Reaping Digital Dividends: Leveraging the Internet for Development in Europe and Central Asia*. Washington, D.C., USA: The World Bank; 2017.

24. Gould D, Kenett DY, Panterov G. *Multidimensional Connectivity: Benefits, Risks, and Policy Implications for Europe and Central Asia*. Rochester, NY, USA: Social Science Research Network; 2018.

25. Barroga E, Matanguihan GJ. Correcting language mistakes in qualitative research articles. *Cent Asian J Med Hypotheses Ethics* 2020;1(2):146-51.
    CROSSREF

26. Janz RF, Kutanov A. The case of NRENs in Central Asia. *Cent Asian J Glob Health* 2012;1(1):32.
    PUBMED | CROSSREF

27. O'Doherty D, Dromey M, Lougheed J, Hannigan A, Last J, McGrath D. Barriers and solutions to online learning in medical education - an integrative review. *BMC Med Educ* 2018;18(1):130.
    PUBMED | CROSSREF

28. Gasparyan AY, Kitas GD. Best peer reviewers and the quality of peer review in biomedical journals. *Croat Med J* 2012;53(4):386-9.
    PUBMED | CROSSREF

29. Zimba O, Gasparyan AY. Peer review guidance: a primer for researchers. *Reumatologia* 2021;59(1):3-8.
    PUBMED | CROSSREF

30. Misra DP, Agarwal V. Blaming the peer reviewer: don't shoot the messenger!! *Indian J Rheumatol* 2020;15(3):162-4.

31. Ahmed S, Mohini . Building trust in journals and in peer review: need of the hour during the COVID-19 pandemic. *Rheumatol Int* 2021;41(2):501-2.
    PUBMED | CROSSREF