

Analysis and Visualisation of Research Trends in Community Medicine and COVID 19: A General Review

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Abstract: *Community medicines is a branch of medicine dealing with health issues of the community as a whole. The bibliometric analysis had been conducted to understand the active authors, organizations, journals, and countries involved in the research domain of “community medicine and COVID19”. All published articles related to “Community medicine and COVID19” from “Scopus”, were analyzed using the VOS viewer to develop analysis tables and visualization maps. This article had set the objective to consolidate the scientific literature regarding the “Community medicine and COVID19” and also to find out the trends related to the same. The most active journals in this research domain were identified as Disaster Medicine and Public Health Preparedness and The Lancet Infectious Diseases. The most active countries were the United States of America and China. The leading organizations engaged in the research regarding “Community medicine and COVID19” were Harvard Medical School and the University of Washington of the United States of America. The most active authors were Wolf M.S. and Yuen K.-Y.*

Keywords: *Community medicine, Bibliometric analysis, VOS viewer, Health, COVID19*

1. INTRODUCTION

The branch of medicine dealing with health care issues of the community as a whole is being called as community medicine, it is often considered as preventive and social medicine (PSM). This branch of knowledge focuses on families, workplaces and community as a whole, other than individual patients. Community medicine is multi-disciplinary in nature and focuses on community health, community nutrition, Community psychiatry, epidemiology, primary health care programmes, monitoring and evaluation of health programmes, biostatistics, community work-life balance, community-based trials, etc. Coronavirus disease 19 (COVID19) is a pandemic and caused by SARS COV2. The super spreading nature makes COVID19 very dangerous, even though the mortality rate of COVID19 is comparatively lower with Severe Acute Respiratory Syndrome (SARS) and the Middle East Respiratory Syndrome Coronavirus (MERS). COVID19 is creating serious health consequences among people having comorbidities. Community medicines have an important role during the pandemic as the signs for an effective vaccine are still far away.

Community medicine plays a significant role during the period of pandemics like COVID 19. Research in community medicine is essential to prevent present and future threats to humanity. A clear and deep understanding of literature regarding “Community medicine” by realizing the leading authors, journals, research institutes, and countries will be helpful for better understanding and research on this research domain. The first section is the introduction, followed by the discussion of the methodology by which the research was conducted. The third section deals with results. The fourth section deals with the discussion and conclusion.

1.1 Research Objectives

- a) To consolidate the literature regarding the “community medicine and COVID19”
- b) To find out the trends related to research in the “community medicine and COVID19”

The following research questions are framed for conducting bibliometric analysis systematically.

1.2 Research Questions

- a) Who are the active researchers working on the “community medicine and COVID19”?
- b) Which are the main organizations and countries working on “community medicine and COVID19”?
- c) Which are the main journals related to “community medicine and COVID19”?

2. RESEARCH METHODOLOGY

This bibliometric analysis had drawn resources only from the Scopus, which is having coverage of more than 69million records. For the article selection, the Boolean used was TITLE (“community medicine and COVID19”) on 28/12/2020. All the tables in this paper were created by using Microsoft Excel and VOS Viewer. Grammarly was used for spelling and grammar checks. Mendeley was used for article review and citation. This paper had been inspired by bibliometric analysis in its presentation style, analysis, and methodology from the works.¹⁻⁵

3. RESULTS AND DISCUSSION

3.1 Results

This first round of search produced an outcome of 348 documents, in eight languages, out of which 324 documents were in English. The classification of document categories is shown in Figure 1. For improving the quality of the analysis, we had selected only the peer-reviewed articles and all other documents had not been considered. Thus after using filters “Article” and “English” the second round search produced an outcome of 209 English articles (both open access and others) and had been used to conduct bibliometric analysis and visualization using VOS Viewer.

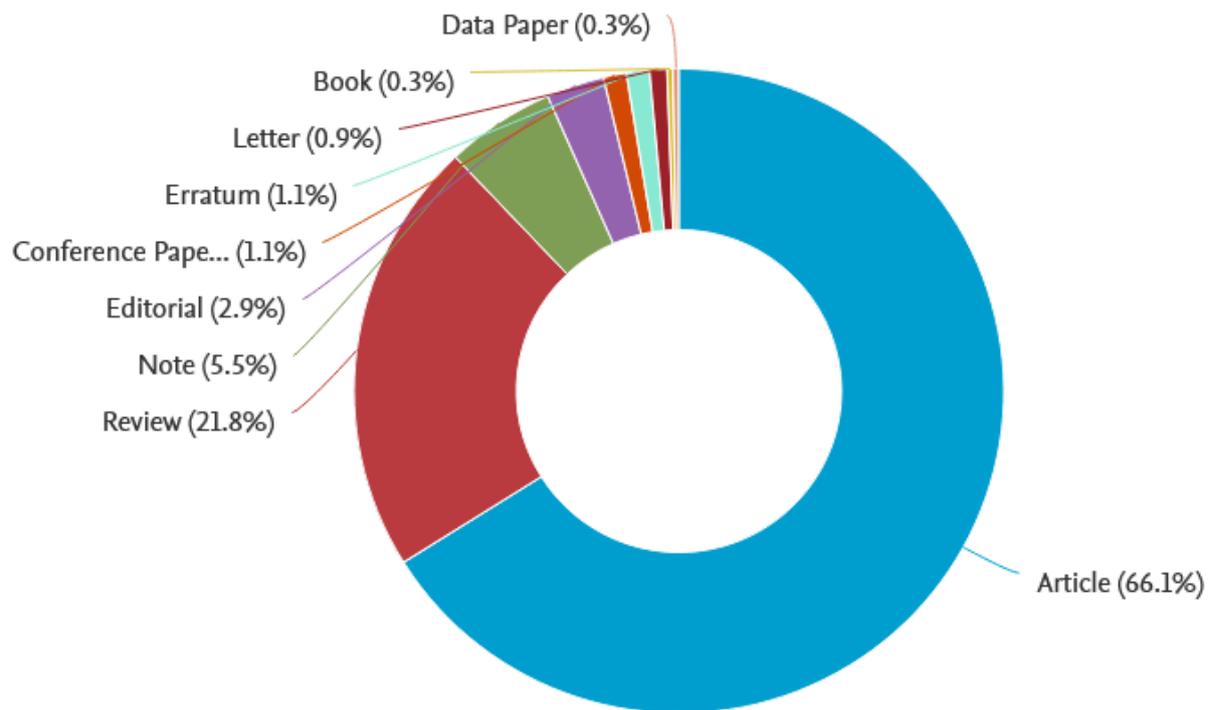


Figure 1: Classification of the documents on “community medicine and COVID19”, Source: www.scopus.com

3.1 Who are the leading authors on “Community medicine and COVID19”?

Co-authorship analysis and citation analysis had been used to spot out the leading authors on “community medicine and COVID19”. The results of co-authorship analysis and citation analysis using VoS viewer are shown in figure 2 and figure 3 respectively.

For a better presentation of the co-authorship analysis and citation analysis, the parameters used were the minimum number of documents of an author as two and the minimum number of citations of authors as one. This combination plotted the map of 31 authors, in 10 clusters.

The network visualization map of co-authorship analysis plotted in Figure 2, points out the major researchers with their strong co-authorship linkages and clusters involved.

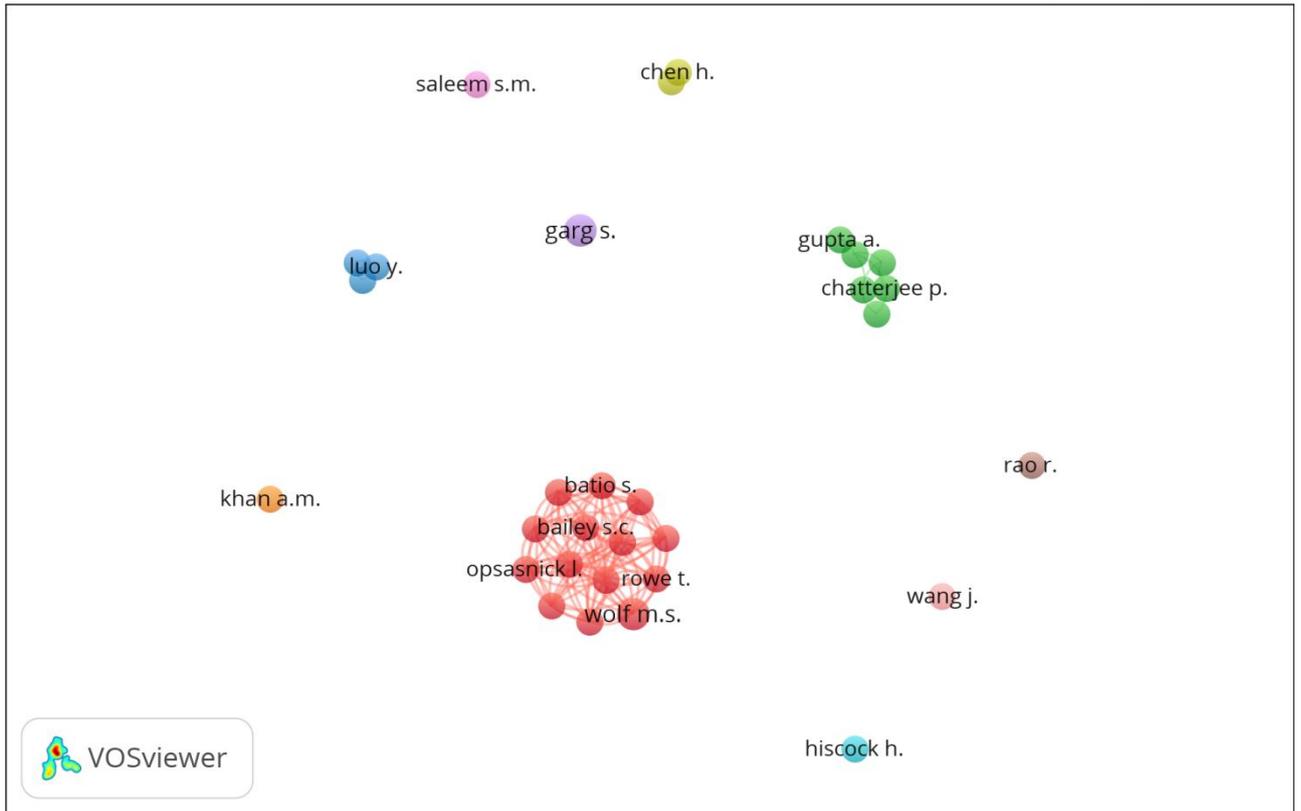


Figure 2: Co-authorship analysis on basis of authors

The network visualization map of citation analysis plotted in Figure 3, points out the major researchers with high citations and clusters involved.

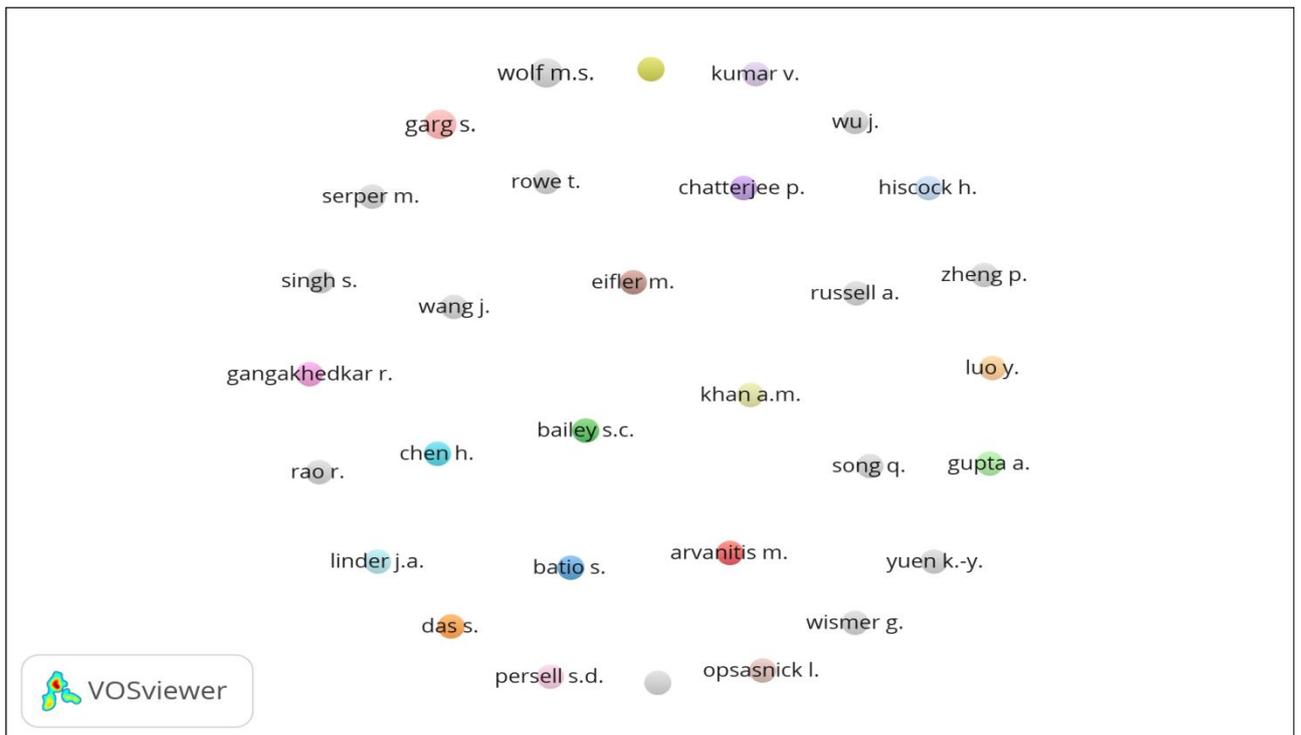


Figure 3: Citation analysis based on authors.

The highlights of top authors had been shown in table 1, by pointing out leading authors in the parameters of documents, citations, average citations, and co-authorship links.

Table 1: Highlights of most active authors

Description	Authors	Documents	Citations	Link strength
Author with the highest publication and co-authorship links	Wolf M.S.	3	62	42
An author with the highest citation	Yuen K.-Y.	2	749	32

In Co-occurrence analysis, we had used all keyword analyses, by keeping the minimum number of occurrences of a keyword as 15. This combination plotted the map of 27 thresholds, in three clusters. The overlay visualization of co-occurrence analysis of keywords has been shown in Figure 4.

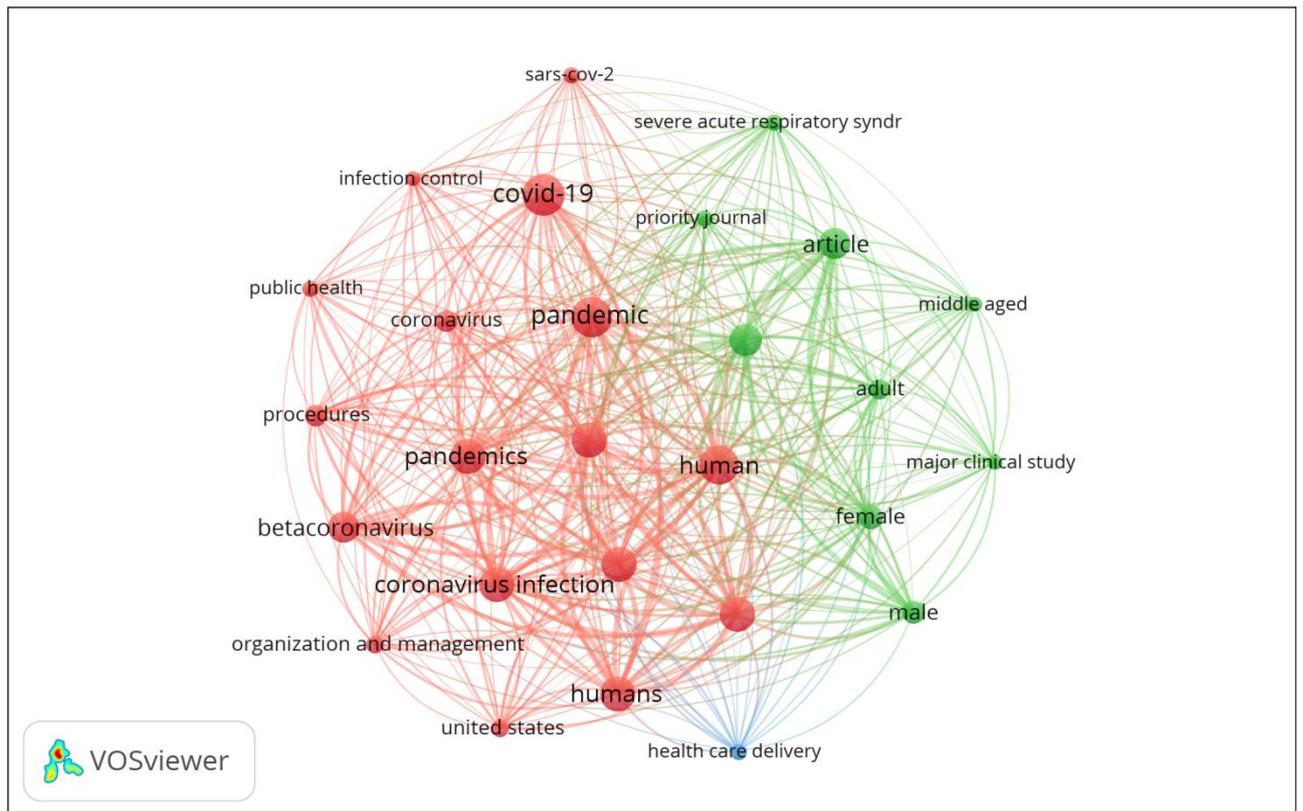


Figure 4: Co-occurrence analysis on basis of all keywords

3.2 Which are the top organizations and countries researching on “Community medicine and COVID19”?

The most leading organizations engaged in research on “community medicine and COVID19” had been found out by the citation analysis, the parameters used are the minimum number of documents of an organization as one and the minimum number of citations of organizations as one. This combination plotted the map of 437 organizations, in 101 clusters.

The top research organization in the research regarding “community medicine” with the highest number of publications and citations is shown in table 2.

Table 2: Highlights of the most active organization

Organizations	Country	Documents	Citations	Average Citations per document
Harvard Medical School	United States of America	8	19	2.38
University of Washington	United States of America	6	11	1.8.3

Co-authorship analysis and citation analysis of the countries engaged in the research on “community medicine and COVID19” had been shown in Figure 5 and Figure 6. For a better presentation of the analysis, the parameters used were the minimum number of documents of an author as three and the minimum number of citations of authors as one. This combination plotted the map of 27 countries, six clusters. The network visualization map of co-authorship analysis plotted in Figure 5 and citation analysis in Figure 6, points out the main countries with their strong co-authorship linkages and citations.

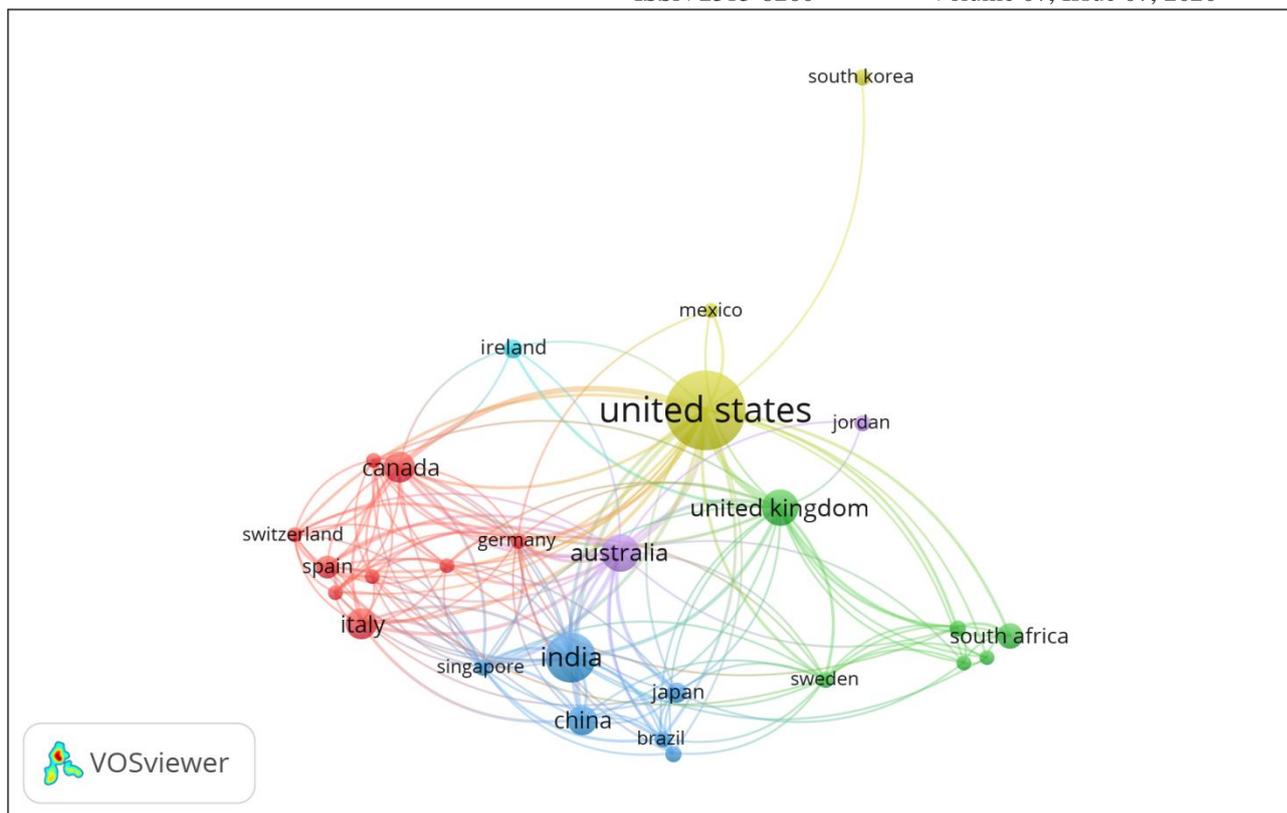


Figure 5: Co-authorship analysis on basis of countries

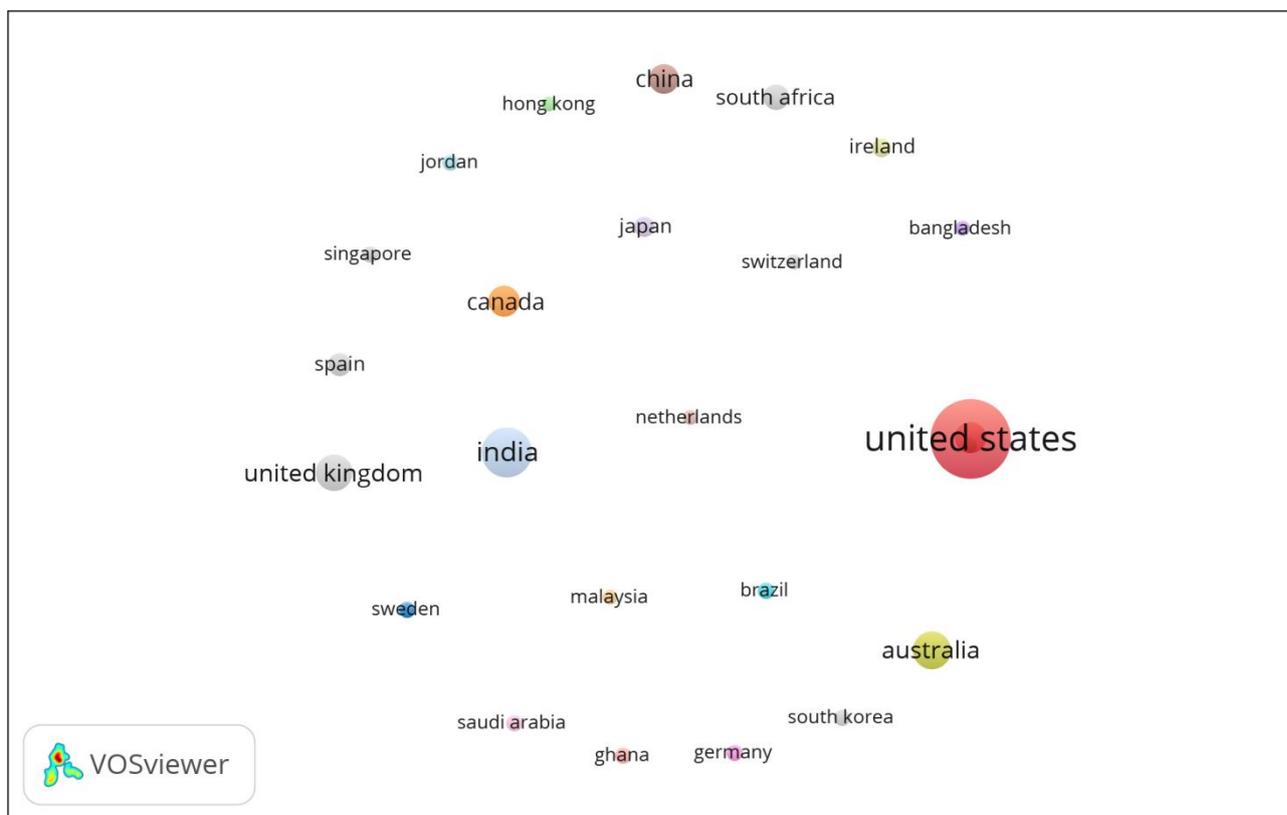


Figure 6: Citation analysis on basis of countries

The highlights of leading countries of the research domain had been shown in table 3, by pointing out leading countries in the parameters of documents, citations, average citations, and co-authorship links.

Table 3: Highlights of Active Countries

Description	Country	Documents	Citations	Average citations per documents	Link strength
The country with the highest publication and co-authorship links	United States of America	84	237	2.821429	78
The country with the highest citation and average citation	China	12	1386	115.5	27

3.3 Which are the leading journals on “Community medicine and COVID19”?

Link analysis and citation analysis were used to identify the most active journal in this research domain. We have taken the parameters of the minimum number of documents of a journal as one and the minimum number of citations of a journal as two for the link analysis and citation analysis. Highlights of the most active and relevant journals related to the “Community medicine and COVID19” are shown in table 4. Table 4 shows the journal activity of this research domain through parameters of publication volume, citations, and co-authorship linkages. The citation analysis of top journals relating to “Community medicine and COVID19” had been shown in Figure 7.

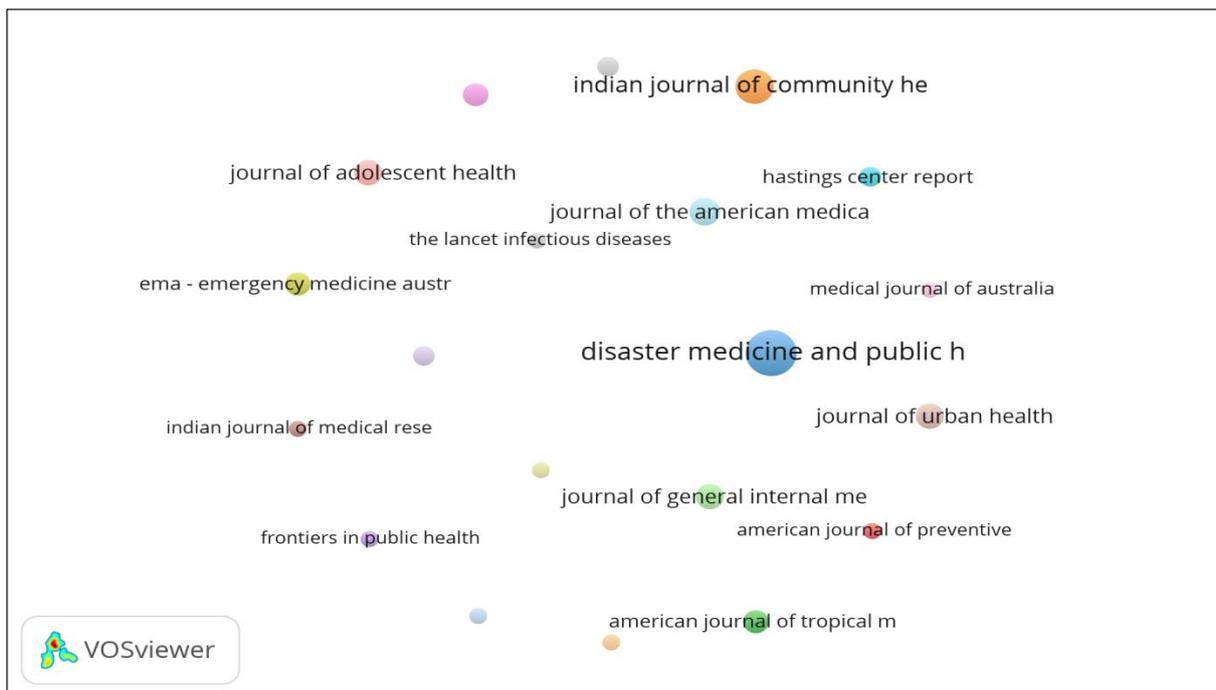


Figure 7: A citation analysis of top Journals

Table 4: Analysis of journal activity

Description	Journal details	Documents	Citations	Average citations per documents	Link strength
Journal with the highest publications	Disaster Medicine and Public Health Preparedness	16	44	2.75	0
Journal with the highest citation and average citation	The Lancet Infectious Diseases	2	1095	547.5	0

4. Discussion and Conclusion

Community medicine during COVID19 is an interesting research domain and the most active journals are Disaster Medicine and Public Health Preparedness with the highest publications and The Lancet Infectious Diseases is the journal with the highest citations and average citations. The most active countries were the United States of America with the highest publication and co-authorship and China with the highest citation and average citations. The leading organizations engaged in the research regarding “Community medicine and COVID19” were Harvard Medical School and the University of Washington of the United States of America. The most active authors who had made valuable contributions related to “Community medicine and COVID19” were Wolf M.S. with the highest number of publications and co-authorship links; and Yuen K.-Y. with the highest number of citations. This research domain offers a new avenue for researchers regarding future research. From the above discussion regarding the bibliometric patterns in the research regarding the “community medicine and COVID19”, this research had observed a gradual increase in research interest regarding the “Community medicine and COVID19” from the starting of 2020 and the momentum is going on positively. This points out the relevance and potential of this research domain.

References

1. Van Eck, N.J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538.
2. Krauskopf, E. (2018). A bibliometric analysis of the Journal of Infection and Public Health: 2008–2016. *Journal of Infection and Public Health*, 11(2), 224-229
3. Martínez-López, F.J., Merigó, J.M., Valenzuela-Fernández, L., & Nicolás, C. (2018). Fifty years of the European Journal of Marketing: A bibliometric analysis. *European Journal of Marketing*, 52(1/2), 439-468
4. Yu, D., Wang, W., Zhang, W., & Zhang, S. (2018). A bibliometric analysis of research on multiple criteria decision making. *Current Science*, 114(4), 747-758.

5. Sweileh, W.M., Al-Jabi, S.W., Zyoud, S.H., Sawalha, A.F., & Abu-Taha, A.S. (2018). Global research output in antimicrobial resistance among uropathogens: A bibliometric analysis (2002–2016). *Journal of Global Antimicrobial Resistance*, *13*, 104-114.