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## **Effect of COVID 19 on mental health: A bibliometric analysis using Scopus database**

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### **Abstract**

**Purpose:** Coronavirus disease has impacted socio-economic network across the globe. Loss of employment and job, and physical distancing has caused grave physical and psychological distress too among people in general and conditions relating to mental health including uncertainty, stress, anxiety, frustration, and depression. The current study has been undertaken to extensively examine current research about the effect of COVID-19 on to mental health of general population.

**Design/methodology/approach:** This study has employed a bibliometric analysis of the research work collected from the Scopus database. The sample included 1,676 documents. The analysis includes descriptive variables including the count of publications per year, country, author affiliation, keywords and active institutions, graphical network analysis and thematic analysis.

**Findings:** This analysis has shown that initially the focus of research was on understanding of COVID 19 and its causes, examination of virus and its medical treatment which later shifted to examining its effect on mental well-being of people with different demographics. Concepts that have got more attention in this research area are mental health, psychology, human, pandemic and female. Trending topic analysis based on authors' keywords confirms these findings. The findings further revealed that effect of covid-19 on mental health is closely associated with the socio-demographic variables of the people.

**Research limitations/implications:** The sample has been drawn from Scopus database only. It provides base for undertaking structured literature review based on shortlisted papers on different dimensions of effect of COVID on mental health such as analysing coping strategies adopted by people and effect of initiatives taken by government to ease economic burden on people and restore their mental peace. In future research work can be undertaken in this direction.

**Keywords:** Anxiety, COVID-19, depression, mental health, psychological impact, stress

### **1. Introduction**

COVID 19 outbreak severely affected functioning of the global economy. As fear started setting in among people, country heads took all measures to save their people. Since the COVID virus was highly contagious in nature, many other steps were initiated by the governments to curtail the spread of infection like quarantine on detection of infection, restriction of social gatherings and celebrations, restrictions on travelling and many more. One such measure was global lockdown. It changed the way people worked in all spheres be it business, education, or communication. People were confined to their houses. All of this caused the feeling of loneliness, fear and anxiety among them resulting in depression and mental destruction. According to UN report<sup>[1]</sup>, physical distancing led to closing of businesses and offices resulting in wide spread unemployment for many. Various research studies such as Gardener and Moallem (2015)<sup>[4]</sup>; Ricci- Cabello *et al.* (2020)<sup>[17]</sup> and Wu *et al.* (2009)<sup>[24]</sup> have empirically tested that loss of occupation and income, physical distancing due to fear of contacting the disease, grief of loss of loved ones and financial burden took its toll on the mental conditions of people at large. Kim (2006)<sup>[9]</sup> in his research has indicated that job insecurity and unemployment is directly correlated to depression. Ma *et al.* (2016)<sup>[13]</sup> and Leigh-Hunt *et al.* (2017)<sup>[10]</sup> have also shown positive association between financial strain, social isolation and suicidal behaviour. Similar results were revealed by Liu *et al.* (2012)<sup>[12]</sup>; Jeong *et al.* (2016)<sup>[8]</sup>; and Wen *et al.* (2020)<sup>[23]</sup>. COVID 19 resulted in deep rooted financial and social impacts. People from all walks of life suffered major health problems specially regarding mental conditions such as grief, trauma, feeling of loneliness, depression and in many cases suicidal tendencies increased (James, Wardle and Adams (2019)<sup>[7]</sup>; González-Sanguino (2020)<sup>[5]</sup>; Li and Wang (2020)<sup>[11]</sup>; and Palgi *et al.* (2020)<sup>[15]</sup>. Situation was equally dismal in India too.

<sup>1</sup> U. N. News. "COVID-19: impact could cause equivalent of 195 million job losses", says ILO chief. U.N. News (2020). Available at: <https://news.un.org/en/story/2020/04/1061322>.

According to a report in the Hindu <sup>[2]</sup>, a 24x7 mental health helpline number received approximately 45000 calls in just 2 months. 52% of them came from anxiety, 22% out of seclusion, 11% due to depression, 5% sleeping difficulties and 4% due to worsening of existing mental issues. According to WHO reports <sup>[3]</sup> on "Violence against women", it depicts that women constituting approximately 30% of the female population across the world had to face domestic violence or violence in any other form during the initial period of the pandemic. According to researches, approximately 7.62 crore cases of anxiety related disorders and 5.32 crore major depression related disorders were reported during the pandemic in the year 2020, which is about 26% and 28% increase in respective disorders. India is reported to have approximately 35% increase in mental disorders during the pandemic. So, it becomes necessary to study and make analysis of major problems faced by the general population and the means and measures adopted by them to cope up with these difficulties faced. Therefore, there is a need to study mental health issues resulting from COVID 19 in depth to equip ourselves to address such a situation in the future.

This study aims to extract, analyse and report research documents on the area of "effect of COVID 19 on mental health". It examines the number of publications by year and by subject of effect of COVID 19 on the selected topic. It also aims to scrutinize the role of institutions in the advancement of the research on the stated topic. The study also attempts to provide insights into the research work done in this area so far and guide researchers about the scope of future work. This study seeks to answer the following research questions:

#### RQ1

What is the bibliometric profile of the database in the area like number of publications by year and by subject area?

#### RQ2

Who are the most influential authors, journals, institutes and countries in this area of research?

#### RQ3

What is the co-citation network and bibliographic coupling among the authors?

#### RQ4

Which key areas have been investigated by researchers at present to identify areas which need attention of researchers?

Table 1 provides the details of the main variables selected to answer these research questions

## 2. Conceptual Framework

The conceptual framework of the study is theoretical as well as graphical.

## 3. Research Design: Materials and Methods

### 3.1 Data Collection

The current study has utilised Scopus database for collection of data as it is widely recognised and most frequently used data base for this type of analysis. The study utilised the key string "consequences" OR "impact" OR "effect" AND of "COVID 19" on AND "mental health" OR "Psychological health" OR "Mental Balance" OR "Mental well Being" OR "Mental Sanity" OR "mental illness" OR "Mental soundness" using title-abstract-key words search option. The query resulted in 17,538 results. Considering such a large set of papers, the search was restricted to title search only. It resulted in 1,812 papers. Taking inclusion criteria of papers in English language and papers finally published, the search resulted in 1,676 research papers. These papers were ultimately explored and analysed through suitable tools. The details of the data selection process are given in Table 2.

### 3.2 Analysis Methods

The data has been analysed bibliometrically using MS Excel, Scopus analysis tools, VosViewer and biblioshiny embedded in R Software. According to Yu *et al.* (2019) <sup>[25]</sup> and Choudhri *et al.*, 2015 <sup>[3]</sup>, bibliometric analysis is used to examine current research trends and the current fields of research interest. Bibliometric is used to evaluate academic productivity and to assess the current research situation and parameters for future studies (Pu *et al.*, 2016; Iftikhar *et al.*, 2019; Wang *et al.*, 2020) <sup>[16, 6, 22]</sup>. Bibliometric analysis was first used by Garfield in the mid-20th century to review multiple subjects. Descriptive analysis of the data has been performed using MS Excel and Scopus analytical tools. For analysing co-citation network, key words analysis, co-occurrences and bibliographic coupling, VosViewer and biblioshiny software has been used. Van Eck and Waltman (2010) <sup>[19]</sup> in their study of suitable software for bibliometric mapping based on survey found VosViewer to be highly useful.

### 3.3 Sample Composition: Main Information about Data

Main information about the data set is given in Table 3.

## 4. Research Findings and Discussion

The analysis has been executed from three angles.

### 4.1 Statistical Analysis

The statistical analysis has been done using Scopus analysis tools and Biblioshiny embedded in R software. It includes eight categories namely documents by source, documents by year, documents by subject area, documents by type, documents by country, documents by author, documents by affiliation and documents by top funding agencies. The findings are given below.

#### 4.1.1. Documents by Year

Ahmi and Muhammad (2019) <sup>[2]</sup> stressed that number of documents published in each year is a good indicator of research productivity. Hence, trends of research publications have been examined on the basis of number of research documents published in each year. Documents published during the period of analysis are shown in Figure 3. It shows that the research publications are having an upward trend with 275 publications in 2020, the year just after the COVID outbreak, increasing to 545 and 674 in coming years 2021, and 2022. The year 2023 has 182 publications till date.

<sup>2</sup> 2020 <https://www.thehindu.com/profile/author/aditya-anand-2744/>

<sup>3</sup> <https://www.who.int/news-room/feature-stories/detail/the-impact-of-covid-19-on-mental-health-cannot-be-made-light-of>

**Table 1:** Main variables selected to answer the research questions

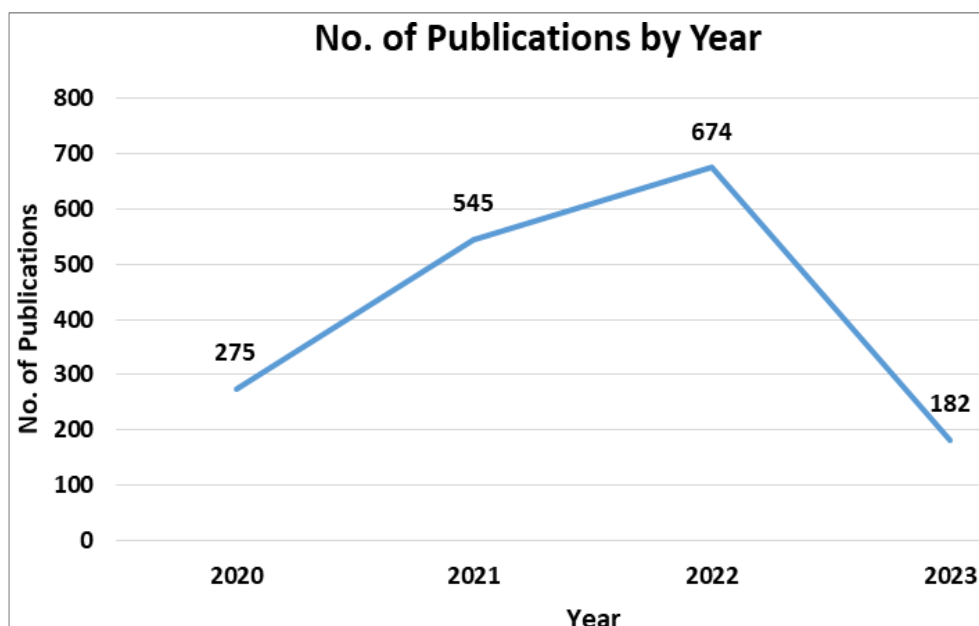
Research Questions	Type of Analysis and Tools used	Main Variables Studied
RQ1: Bibliometric profile of the database	Statistical Analysis (MS Excel and Scopus Analysis)	Year wise trend of publication, Classification of present research work on the basis of type of documents, its sources, and subject area Distribution of available research work on the basis of authors, countries, funding sponsorship, and top institutes active in publications
RQ2: The most influential authors, journals, and institutes	Descriptive Analysis (MS Excel and Scopus Analysis)	Co-authorship Analysis Citation analysis Co-citation analysis and Key word Analysis
RQ3: The co-citation network and bibliographic coupling	Network Analysis (VOSviewer)	Bibliographic Coupling Analysis Co-citation analysis
RQ4: Key areas investigated by researchers at present and areas which needs attention	Theme based Analysis (Biblioshiny)	Three field plot analysis, Thematic map analysis, and Trending topics analysis

**Table 2:** Research Data

TITLE-ABS-KEY ("consequences" OR "impact" OR "effect" AND of "COVID 19" on AND "mental health" OR "Psychological health" OR "Mental Balance" OR "Mental well Being" OR "Mental Sanity" OR " mental illness" OR " Mental soundness")	17,538
TITLE ("consequences" OR "impact" OR "effect" AND of "COVID 19" on AND "mental health" OR "Psychological health" OR "Mental Balance" OR "Mental well Being" OR "Mental Sanity" OR " mental illness" OR " Mental soundness")	6076
TITLE ("consequences" OR "impact" OR "effect" AND of "COVID 19" on AND "mental health" OR "Psychological health" OR "Mental Balance" OR "Mental well Being" OR "Mental Sanity" OR " mental illness" OR " Mental soundness")AND (LIMIT-TO (TYPE, "art"))	1,812
TITLE ("consequences" OR "impact" OR "effect" AND of "COVID 19" on AND "mental health" OR "Psychological health" OR "Mental Balance" OR "Mental well Being" OR "Mental Sanity" OR " mental illness" OR " Mental soundness") AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (LANGUAGE, "English"))	1,676

**Table 3:** Main Information about the Data

Timespan	2020:2023
Sources (Journals, Books, etc.)	783
Documents	1676
Annual Growth Rate %	-12.85
Document Average Age	1.54
Average citations per doc	29.47
References	62209
Keywords Plus (ID)	3799
Author's Keywords (DE)	2455
Authors	9921
Authors of single-authored docs	98
Single-authored docs	103
Co-Authors per Doc	6.9
International co-authorships %	26.25



**Fig 1:** Number of Publications Each Year Source: www.scopus.com, accessed on 17 February 2023

**4.1.2. Documents by Source in Each Year**

Figure 2 shows the trends in publication for the top 5 sources for each of the year under consideration. International journal of environment research and publichealth has maximum publications as compared to other sources. In general the number of publications for these sources are increasing though there is decline in number of publication in Frontiers.

This may be contributed to the primary fact that main cause of the mental health issues during COVID 19 is social exclusions and in such cases, psychological therapy works better as compared to medication. During 2023, the publication are few. However it is because of the reason that just a quarter of the year has passed till the time of the data collection.

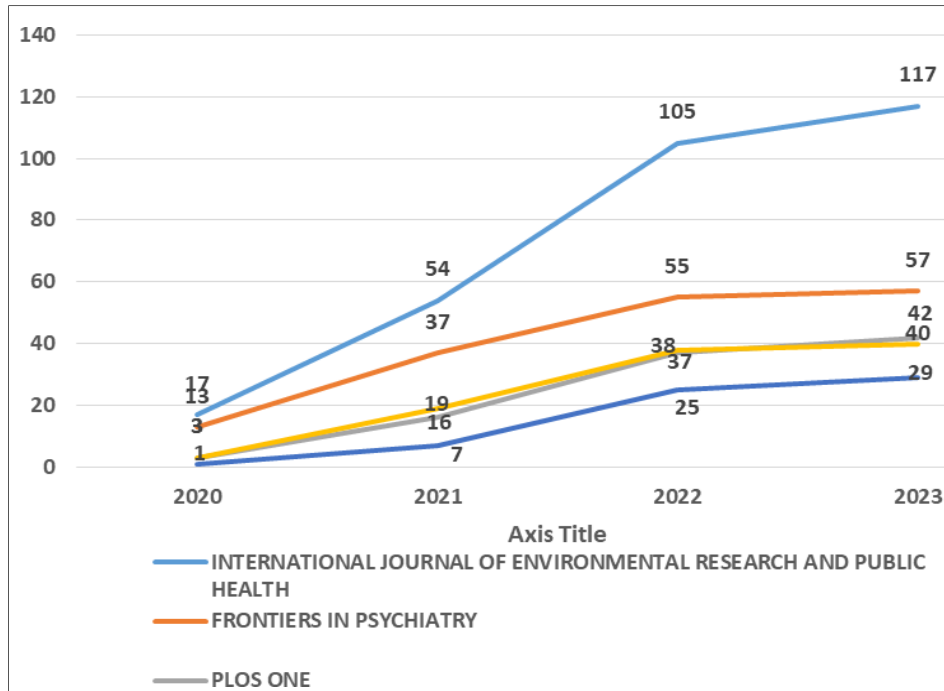


Fig 2: Publications per Year by Source, Source www.scopus.com, accessed on 17 February 2023

**3. Documents by Subject Area**

Figure 3 displays research work conducted in various subject areas in percentage form. Initially the complete focus of treatment of COVID 19 was on medicines and hence majority of the published work is coming from

medicine field. As time passed, people started facing psychological issues due to lockdown and social isolation. consequently, research work in the field of social sciences and psychology picked up.

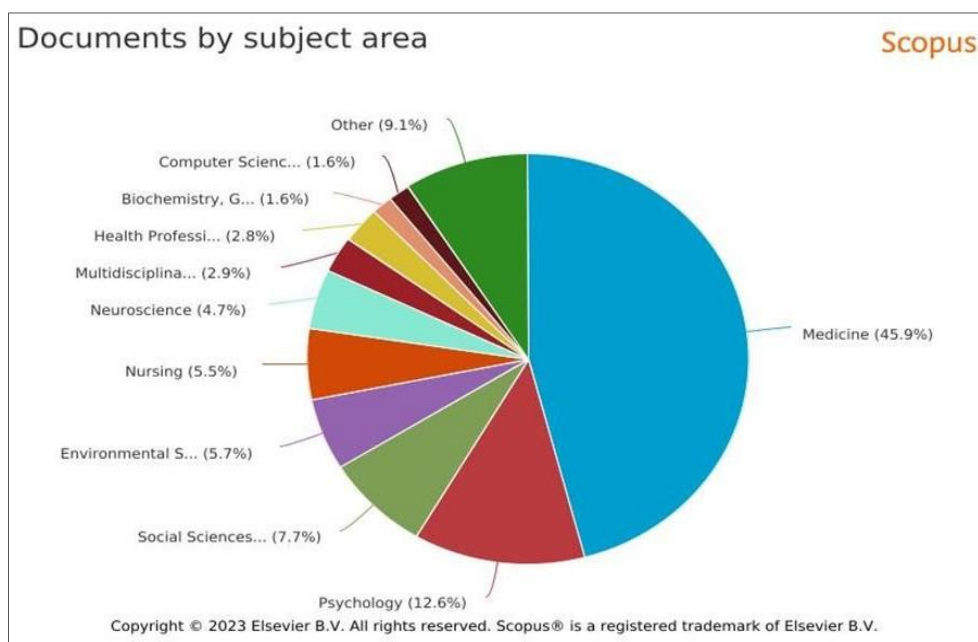


Fig 3: Documents by Subject Area, Source www.scopus.com, accessed on 17 February 2023

#### 4. Documents by Type

The categories of document type are given in Figure 4. The analysis shows that major proportion of the work

(76%) is in form of research articles. It indicates that the most of academic work selected for analysis is coming from empirical and verifiable research.

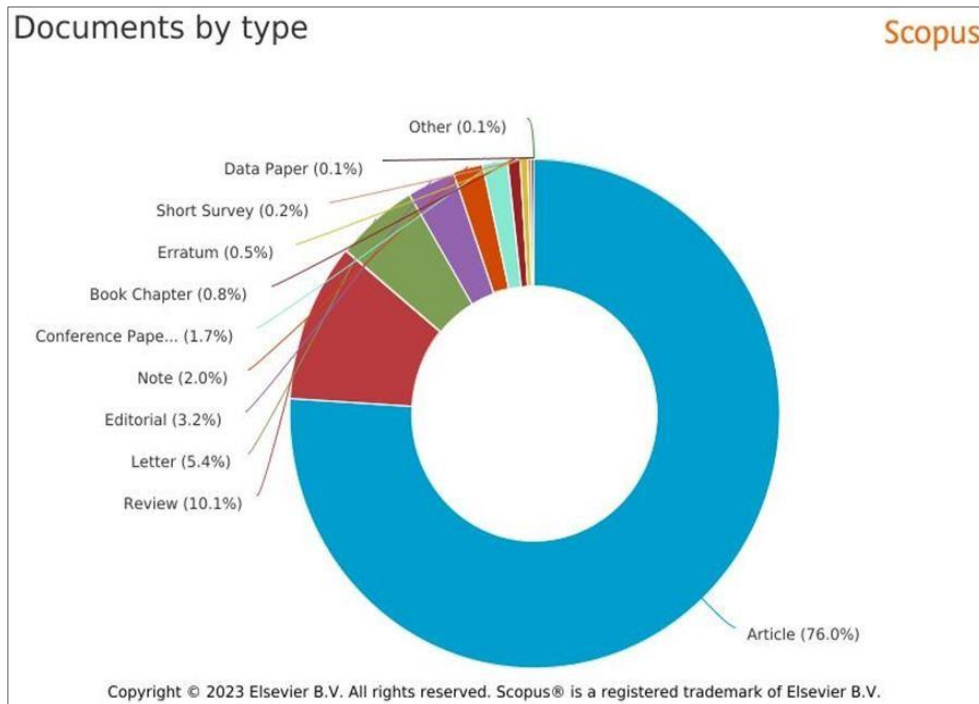


Fig 4: Documents by Type, Source [www.scopus.com](http://www.scopus.com), accessed on 17 March 2023

#### 5. Documents by Country

The data has been analysed on the basis of publications of each country. Figure 5 displays top 10 countries actively working in this research area. It shows that US has the

maximum publications (400) followed by UK and China. India closely follows them at fourth position with 250 publications.

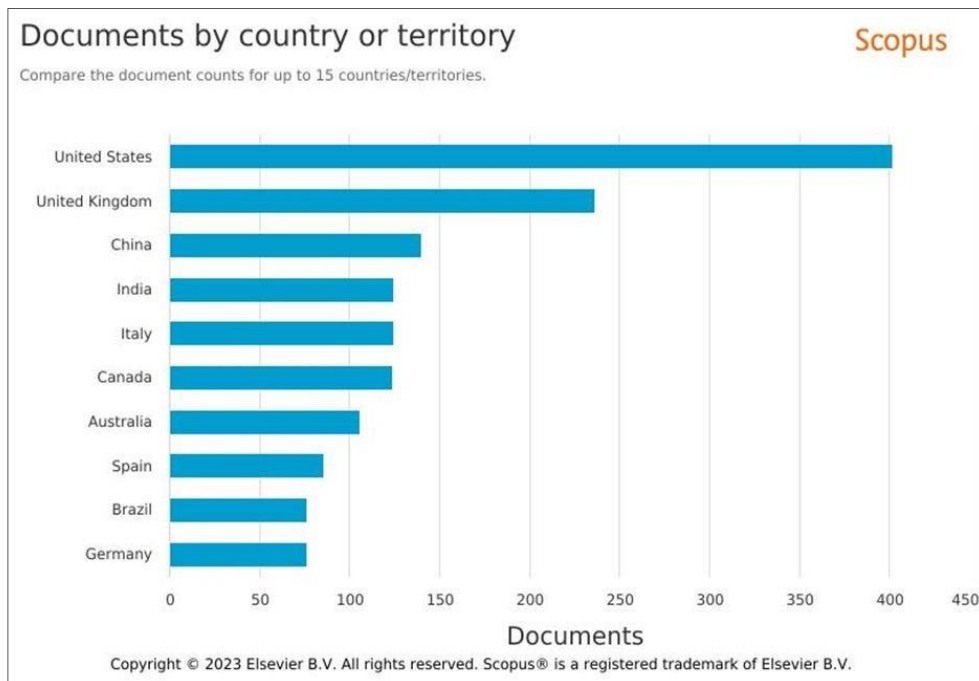
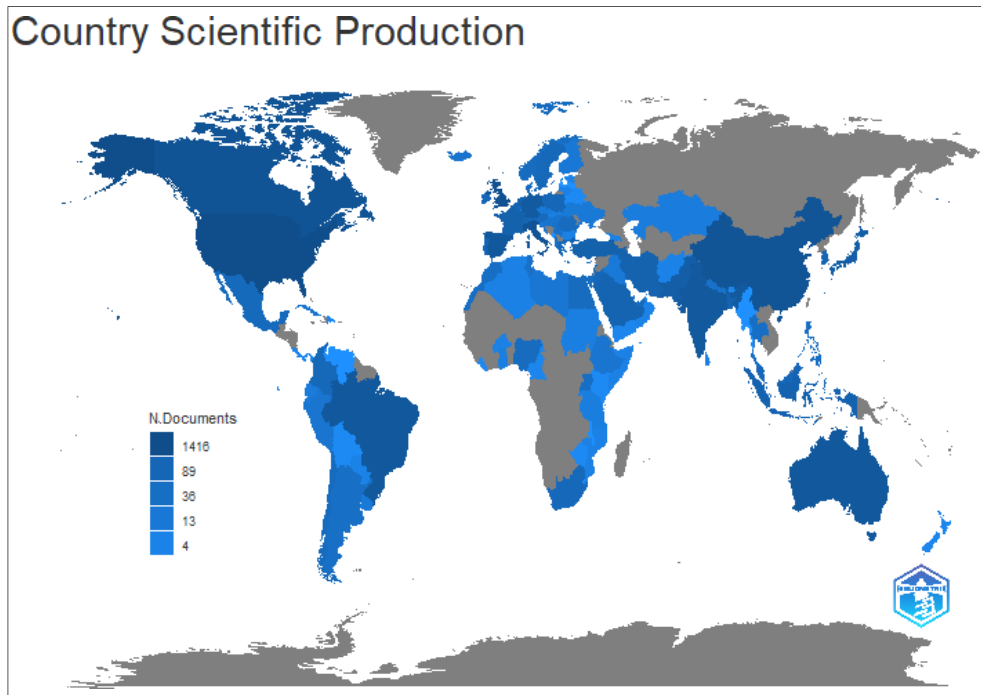


Fig 5: Documents by Country, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

In addition, contribution of the countries is analysed across the globe. Figure 6 shows country wise scientific production on the effect of COVID 19 on mental health. In this figure,

countries are colour coded with dark colour representing countries having maximum production moving to lighter shades representing countries with lesser contributions in this area.

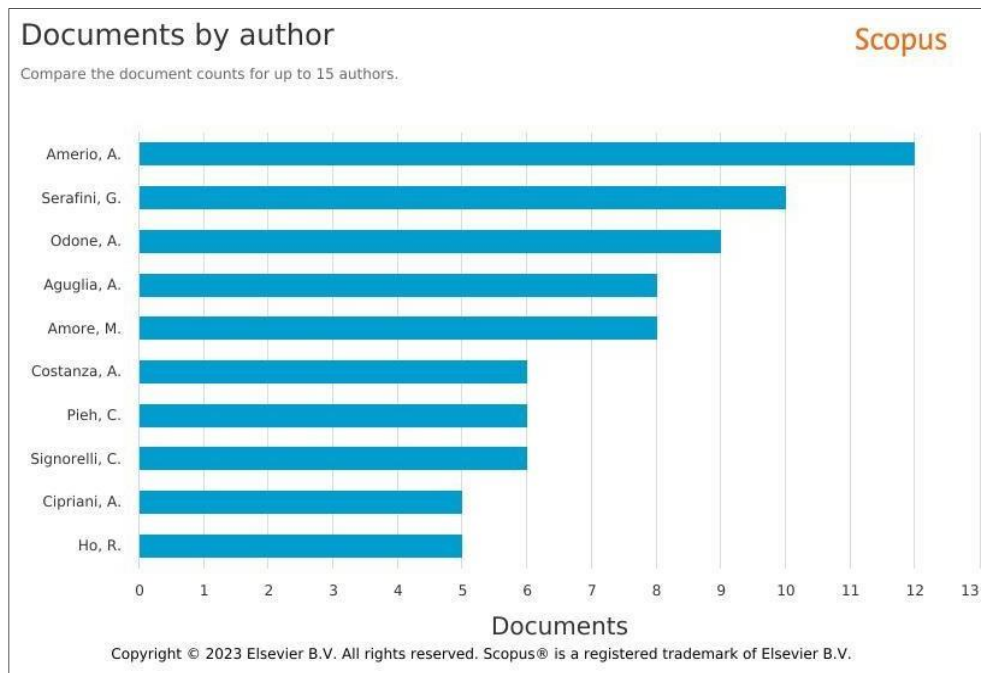


**Fig 6:** Country wise scientific production across the Globe, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**6. Documents by Author**

Analysis shown in Figure 7 indicates that the most active researcher in this subject area is Amerio with 12

publications followed by Serafini (10 publications) and Odone (9 Publications). Majority of the authors have 4-5 publications.

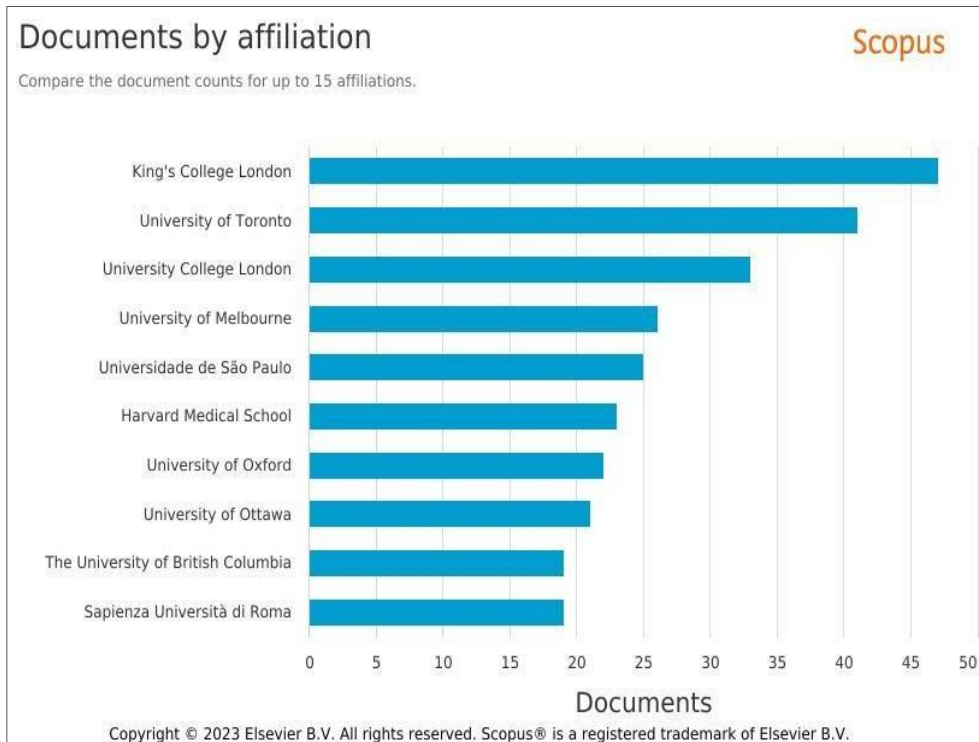


**Fig 7:** Most Active Authors in this area, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**7. Documents by Affiliation**

Figure 8 shows the top 10 institutes leading the publications. It is found that King’s college, London tops the list with 47

publications followed by University of Toronto with 41 publications. Average publications for each of the affiliated institute is coming out to be 9.

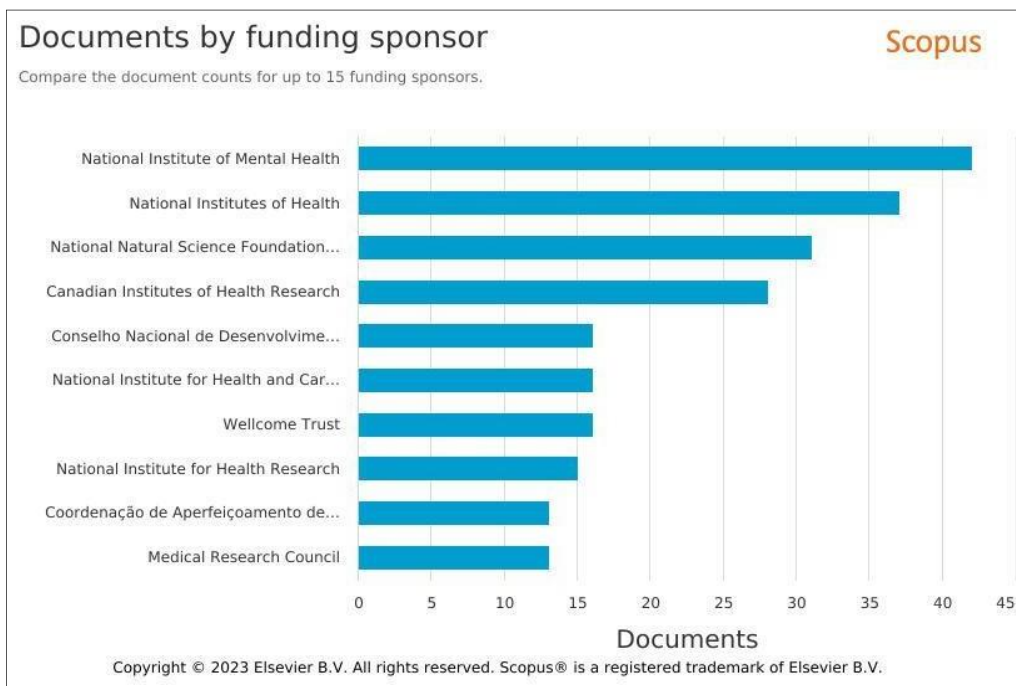


**Fig 8:** Top 10 Countries engaged in Research on Effect of COVID 19 on Mental Health, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**8. Documents by Top Funding Agencies**

According to Aagaard *et al.* (2021) <sup>[1]</sup> and Morillo and Alvarez-Bornstein (2018) <sup>[14]</sup>, it holds significant importance to examine the funding or sponsorship associated with research work as it gives credibility to the research work. Nearly 40% of the selected research publications are found

to be funded by various institutes. Top 10 funding institutes have been represented in Figure 9. The analysis shows that National Institute of Mental Health has funded 42 researches with national institute of health coming close with funding of 37 researches in this subject area.



**Fig 9:** Top 10 Funding Sponsors, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**4.2 Network Analysis**

Four parameters have been chosen for the network analysis namely co-authorship analysis, keywords analysis, citation analysis and bibliographic coupling analysis. The details are given in following sub-sections.

**4.3.1 Co-authorship Analysis: Authors, organizations, country**

Co-authorship analysis has been performed with three main parameters namely authors, organisations and countries.

**(i) Co-authorship Analysis - Authors**

For this analysis, documents with more than 10 authors are excluded. Minimum 2 documents per author are taken as a threshold. Out of 1656 authors, 23 authors meet the threshold. Pieh C. *et al.* has maximum 524 citations

followed by Gualano with 435 citations and Dawel *et al.* with 162 citations. Next, the authors' connections with other researchers have been assessed in terms of link strength. However, no such relationship among authors is seen (figure 10).



**Fig 10:** Co-authorship Analysis - Authors, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(ii) Co-authorship Analysis - Organisations**

Co-authorship of organisations has been analysed taking number of documents of each organisation to be at least 3. Out of total 6016 organisations, 41 meet the criteria. The total strength of co-authorship link has been computed for these 41 organisations. “IRCCS ospedale policlinico san Martino, Genoa, Italy” has the highest link strength of 18 with 832

832 citations. Next in line is “department of neuroscience, rehabilitation, ophthalmology genetics, maternal and child health” with link strength of 17. “Department of Psychiatry, University of Toronto, Canada” has link strength of 7 with 2496 citations. Figure 11 shows the largest set of 8 organisations. There are two clusters. First one consists of 6 organisations and the other one has 2 organisations.



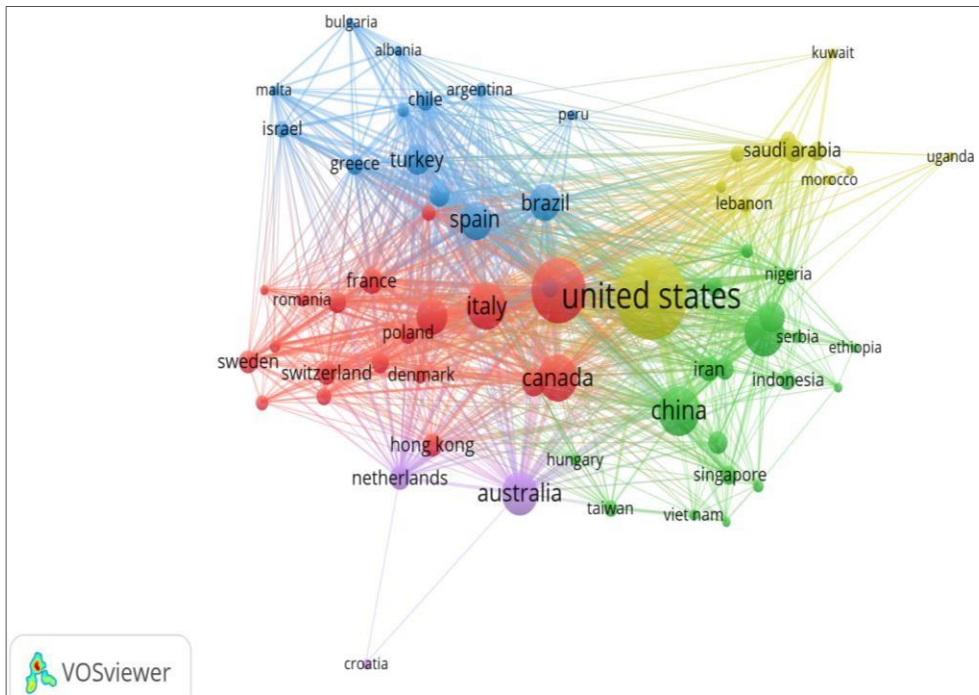
**Fig 11:** Co-authorship Analysis - Organisations, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(iii) Co-authorship Analysis - Countries**

Co-authorship has also been examined based on countries. Taking minimum 5 documents in a country, 67 countries out of 188 countries met the threshold. US with

397 documents has the highest link strength of 428 with 12,897 citations. UK with 234 documents and 8088 citations comes close with link strength of 372. Country wise network is presented in Figure 12.





**Fig 12:** Co-authorship Analysis - Countries, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

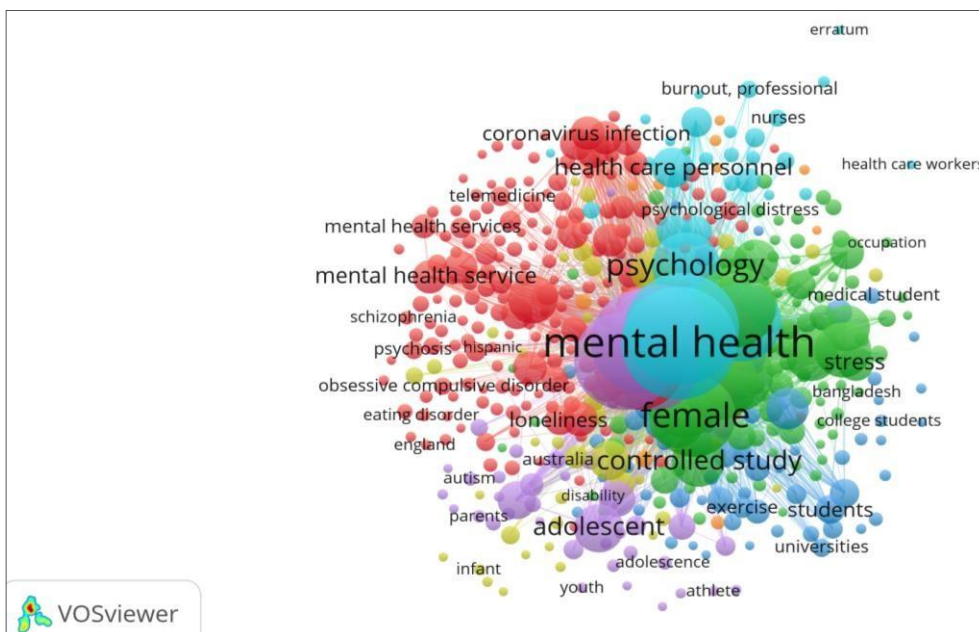
A close examination of co-authorship analysis based on countries reveals five clusters in all. First cluster consists of 19 countries mainly from Europe including France, Germany, Austria, Poland, Italy, UK etc. Second cluster consists of 19 countries from Asia region like Japan, Nepal, India, Taiwan, China etc. Cluster 3 of 14 includes Latin American countries which are Argentina, Brazil, Mexico, Peru, Chile etc. Cluster 4 is of 12 countries mainly from US, UAE and other Muslim countries including Iraq, Kuwait, Saudi Arabia, UAE and Jordan, Cluster 5 consists of Australia, Croatia, and Netherlands.

**4.3.2 Network Analysis of Co-occurrence of keywords**

For this purpose three units of analysis have been taken namely all keywords, author keywords, and index keywords. The analysis has been done using VOSviewer software.

**(i) Analysis of Co-occurrence of All keywords**

By ensuring a minimum of 10 occurrences, 495 keywords were chosen out of a total of 5546. The total strength of co-occurrence links with other keywords was calculated for each of these selected keywords. The ones with the strongest total link strength were selected.

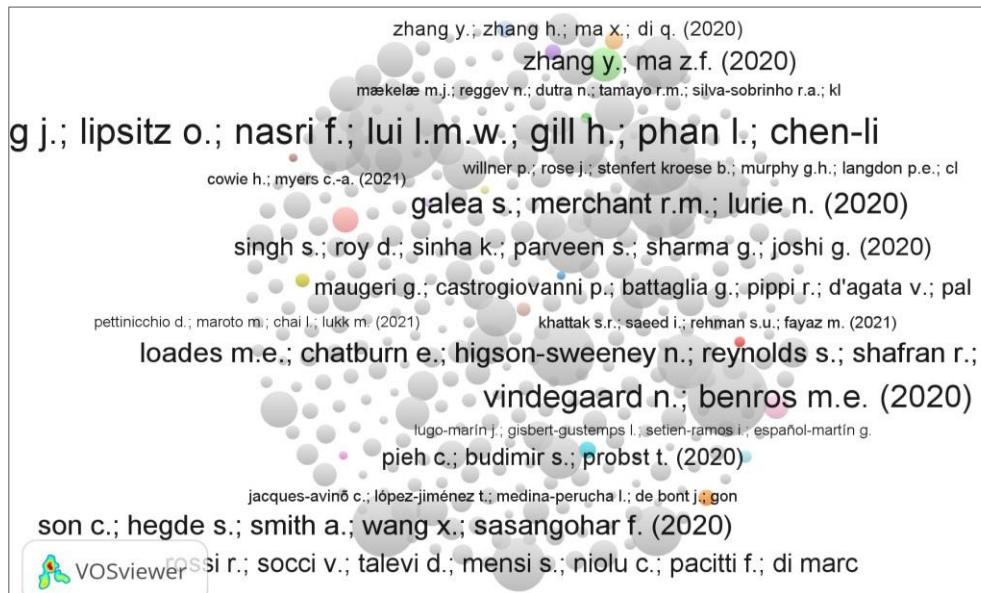


**Fig 13:** Analysis of Co-occurrence of All keywords, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

Figure 13 shows that top most keywords are mental health, psychology, human, pandemic and female. Human has total link strength of 27,395 with 1189 occurrences whereas

mental health has link strength of 26,598 with 1,379 occurrences. Least used keywords satisfaction with life scale, hand sanitizer, partner violence, and internet based



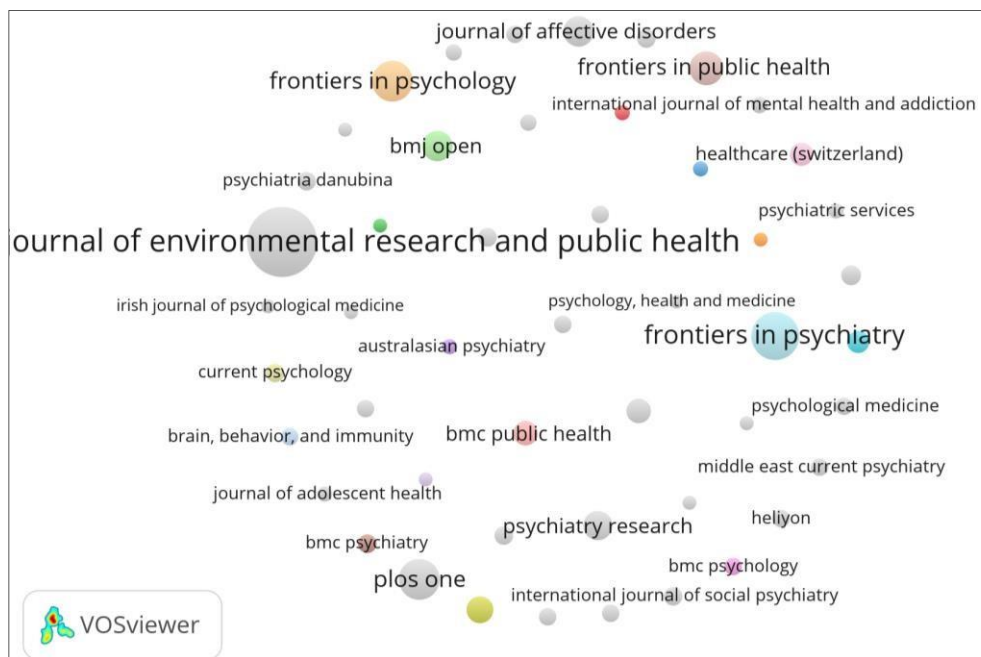


**Fig 16:** Citation Analysis of Documents

**(ii) Citation Analysis of Sources**

For this analysis, minimum 5 citations per document is taken as a threshold. 49 sources out of a total of 783 sources met the threshold. Journal of environment research and

public health has the highest citations of 4073 followed by Frontiers in psychiatry with 2784 and Plos One with 1849 citations. Largest set of connected items is 44 which is shown in figure 17 below.



**Fig 17:** Citation Analysis of Sources, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(iii) Citation Analysis of Authors**

Taking minimum 2 documents for an author with 50 minimum citations as a threshold, 23 authors out of a total of 1656 authors met the threshold. Pieh C. has the highest

citations of 524 followed by Gualano *et al.* and Dawel *et al.* with 435 and 162 citations. However, none of the authors are found to be connected to each other.

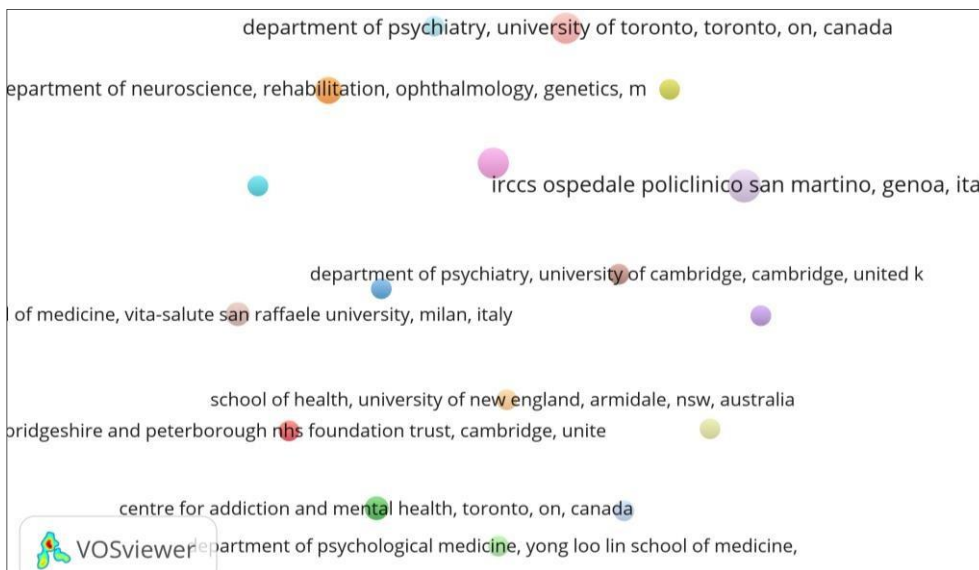


**Fig 18:** Citation Analysis by Authors, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(iv) Citation Analysis of Organisations**

Considering minimum 4 documents of an organisation as a threshold, 17 organisations out of a total of 6016 organisations met the threshold. Department of psychiatry,

University of Toronto, Canada has the highest citations of 2496 followed by IRCCS Ospedale polliclinico San Martino, Italy with 832 citations. However, none of the organisations are found to be connected to each other.

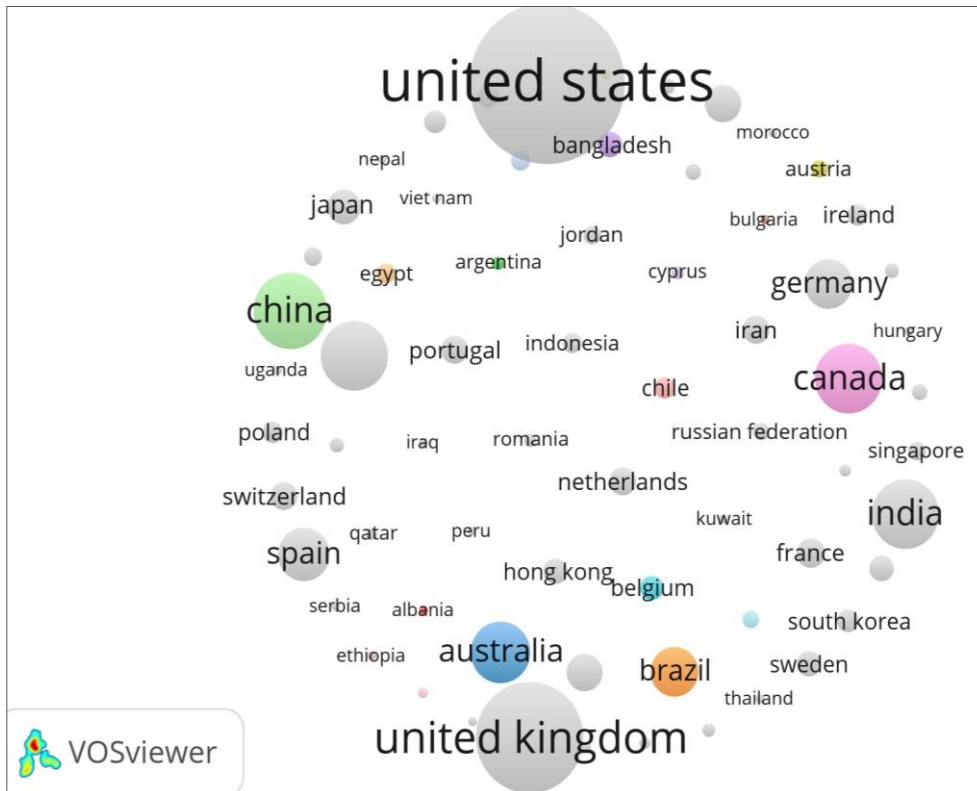


**Fig 19:** Citations by Organizations, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(v) Citation Analysis of Countries**

Taking minimum 5 documents of a country as a threshold, 67 countries out of a total of 188 countries met the threshold. Canada has the highest citations of 5, 326

followed by China and with 4,982 and 3,482 citations. However, interconnections among countries is not seen in the analysis.



**Fig 20:** Citation analysis of country, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**4.3.4 Network Analysis of Bibliographic Coupling**

Five parameters have been chosen for this analysis.

**(i) Bibliographic Coupling of Documents**

For this analysis, a total of 20 citations per document has been taken as a threshold. 349 documents out of the total of

1676 documents met the threshold. Gonzalez-Sanguino has maximum 811 citations followed by Moreno *et al.* with 796 citations and Gualano *et al.* (2020) [26] with 423 citations. Largest network of bibliographic couplings consisted of 284 documents. The network graph is shown in figure 21.

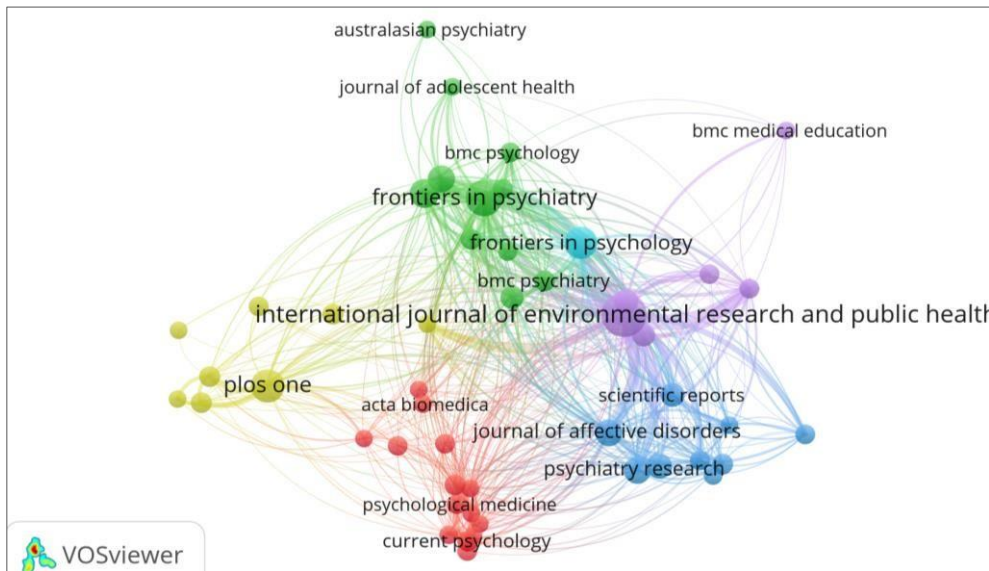


**Fig 21:** Bibliographic coupling of documents, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(ii) Bibliographic Coupling of Sources**

Taking minimum 5 citations per source, 49 out of 783 total sources met the threshold. “International journal of environmental research” published maximum 117 documents

with 4073 citations, followed by Frontiers in Psychology with 57 documents and 1849 citations and Frontiers in psychiatry with 40 documents and 552 citations. The network graph is shown in Figure 22.

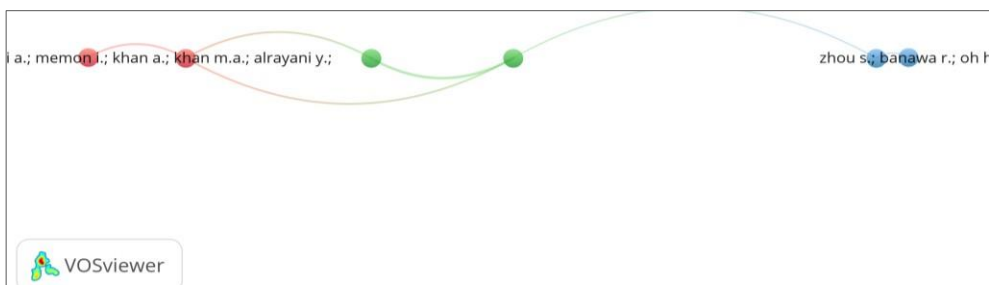


**Fig 22:** Bibliographic coupling of Sources, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(iii) Bibliographic Coupling of Authors**

Taking minimum 2 documents and 5 citations per author, 15 out of 1,659 authors met the threshold. Pieh C. had

maximum 524 citations followed by Gualano with 436 citations and Dawel *et al.* with 162 citations. Largest set of connected items is 6 as shown in Figure 23.

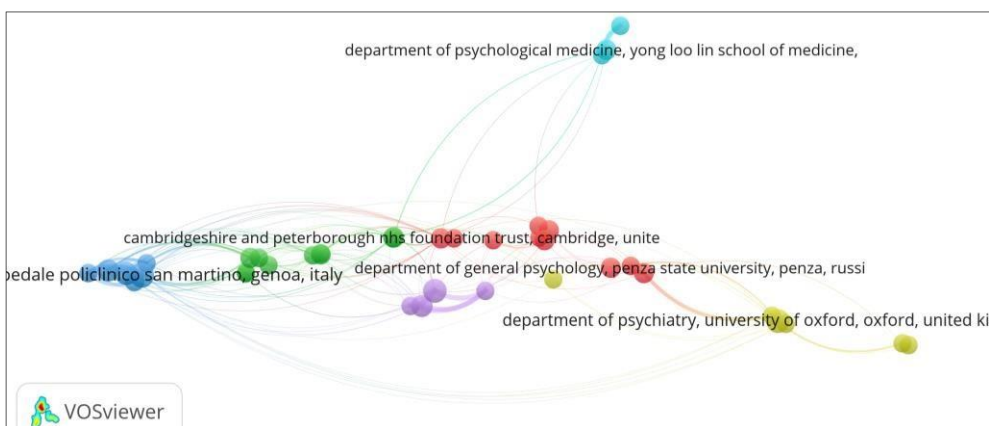


**Fig 23:** Bibliographic coupling of Authors, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(iv) Bibliographic Coupling of Organisations**

Taking minimum 3 documents per organisation, 41 out of the total 6,016 organisations met the threshold. Figure 24 shows that Department of Psychiatry (University of

Toronto), IRCCS (Italy) and Department of Psychological medicine (China) are the topmost organisations with highest citations of 2,496, 832, and 396 respectively.

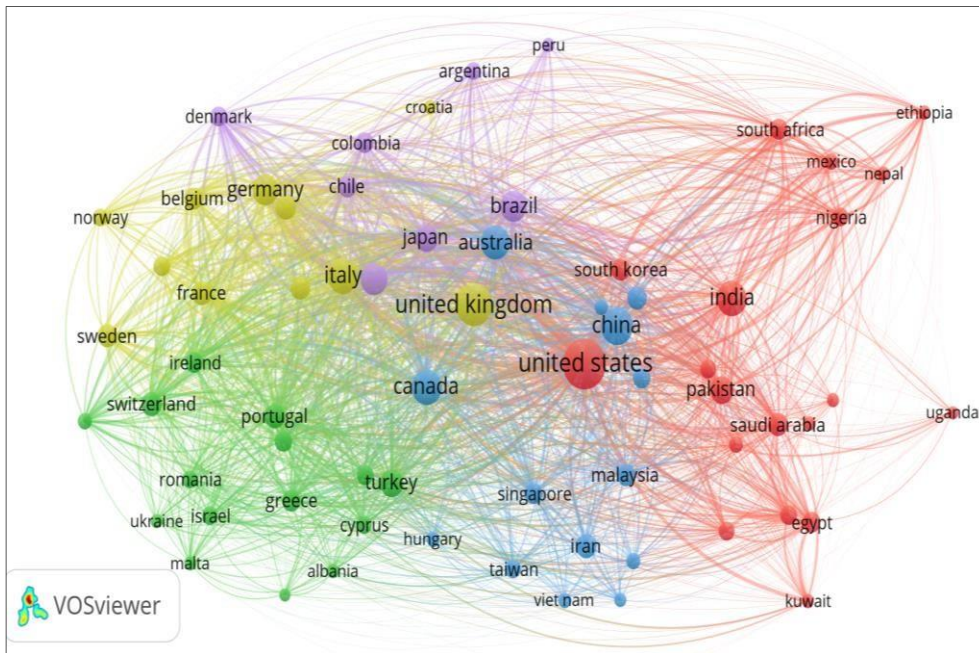


**Fig 24:** Bibliographic coupling of Authors, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(v) Bibliographic Coupling of Countries**

Minimum 5 documents per country is taken as selection

criteria. 67 out of 188 meet the threshold. US, UK, Italy, Canada and China have highest bibliographic coupling.



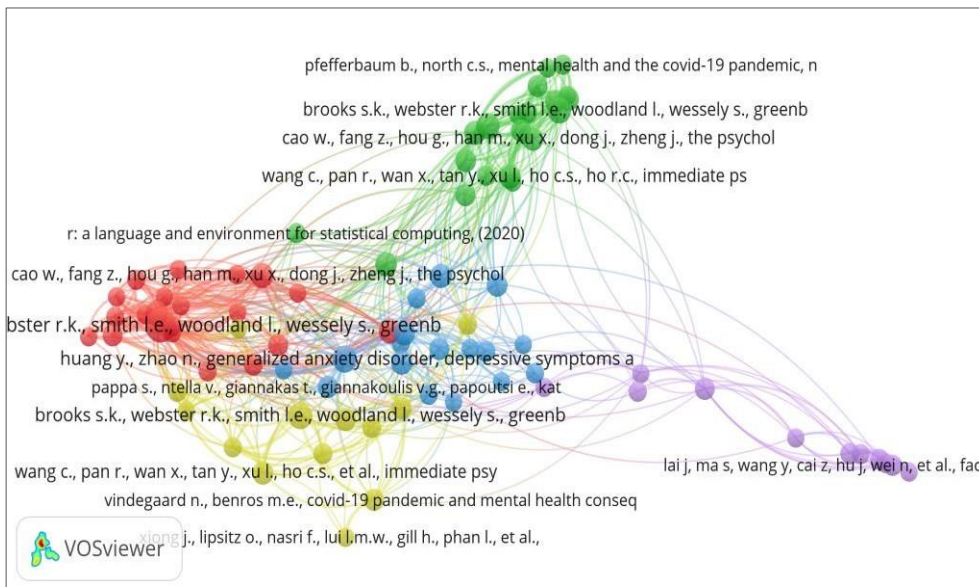
**Fig 25:** Bibliographic coupling of Countries, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**4.3.5 Co-citation Analysis**

**(i) Co-citation Analysis of Cited References**

Minimum 10 citations per documents has been taken as selection criteria for the analysis. 82 out of 61,733 cited

references met the threshold. Top three documents are by Brooks *et al.* (2020) <sup>[27]</sup> and Wang *et al.* (2020) <sup>[22]</sup> with highest co-citations of 65, 31, and 24.

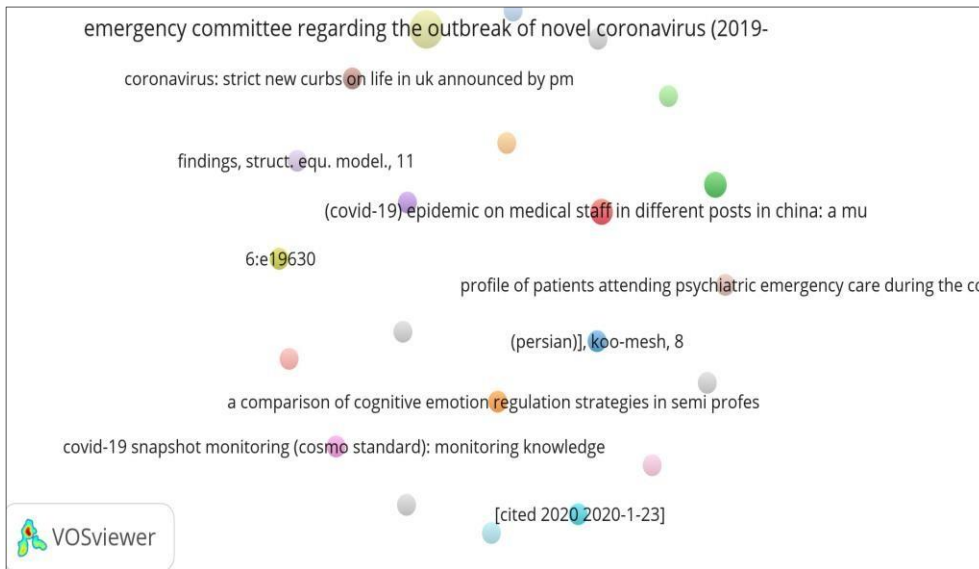


**Fig 26:** Co-citation Analysis of Cited References, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(ii) Co-citation Analysis of Cited sources**

Taking minimum 2 citations for each source as selection criteria, 22 sources met the threshold. The co-citation

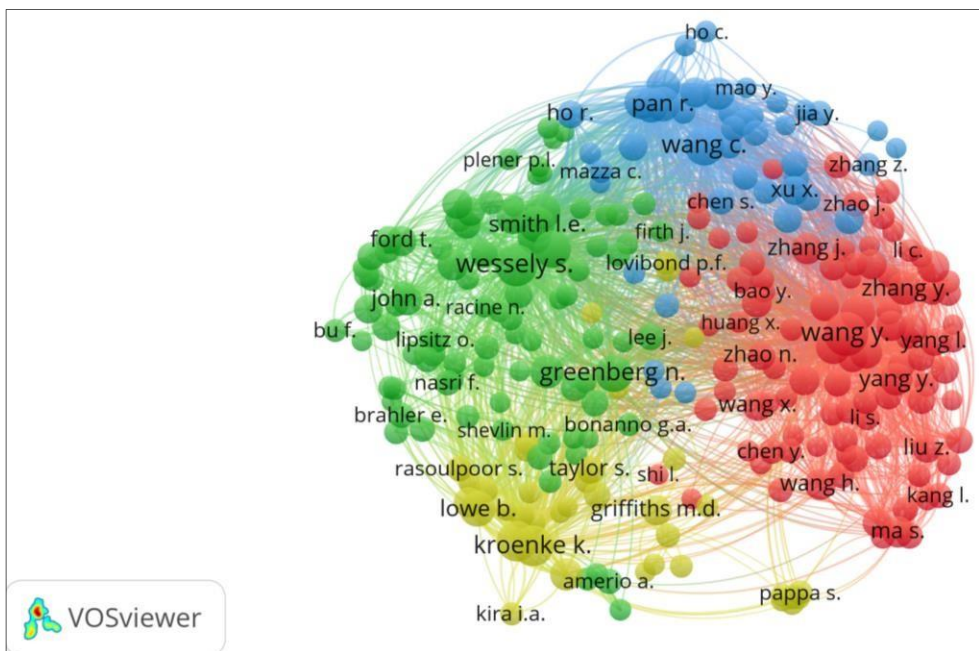
network of cited sources is shown in figure 27. However no interconnections are found.



**Fig 27:** Co-citation Analysis of Cited sources, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**(iii) Co-citation Analysis of Cited authors**  
Considering minimum 50 citations for each author, 270 out

of 94,077 meet the threshold. Figure 28 shows that Wang Y. Wessely and Wang C have highest co-citations.



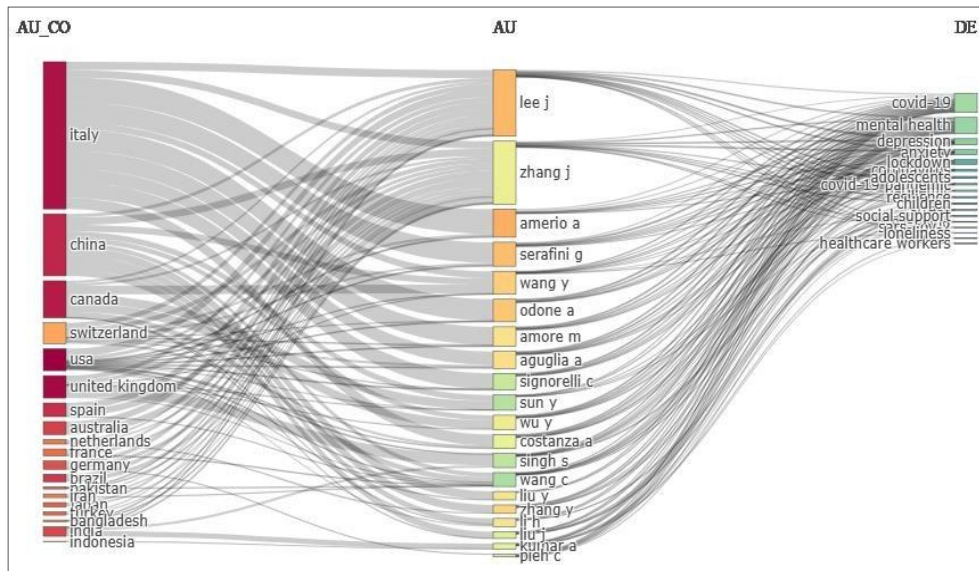
**Fig 28:** Co-citation Analysis of Cited References, Source [www.scopus.com](http://www.scopus.com), accessed on 17 February 2023

**4.3.6 Analysis of Research on Effect of COVID 19 on Mental Health:** Overall research on effect of COVID 19 on mental health has been examined from three angles.

field plot analysis help in analysing the dataset from three parameters namely author countries, authors and key words. Figure 29 shows that main contributing countries on the subject are Italy and China on the main key words COVID 19, mental health, depression, anxiety, and lockdown.

**(i) Three Field Plot Analysis (Sanky Diagram):** Three



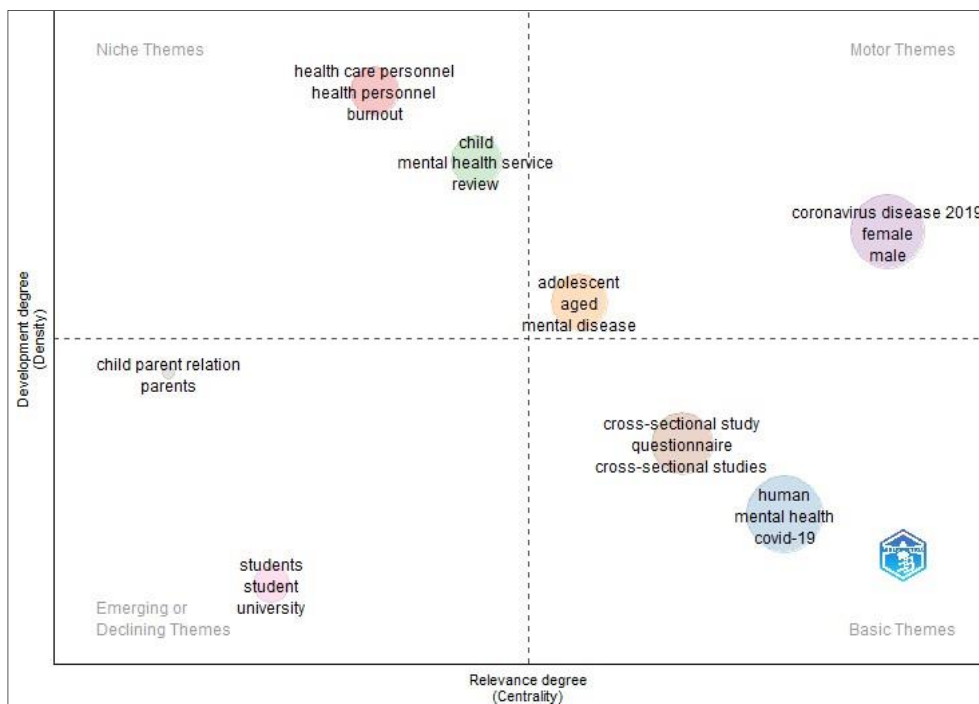


**Fig 29:** Sanky Diagram- Three Field Plot

**(ii) Thematic Map and Thematic Evolution Analysis**  
**Thematic Map Analysis**

Thematic map shows the themes that have been examined to a greater extent by the researchers and topics which require attention of the researchers. The thematic map analysis given in Figure 30 shows that effect of COVID 19

on male/female and aged people has been explored a lot by researchers. In contrast, impact of COVID 19 on children, children parent relation and university students has not got much attention. In future, research work in this direction can be undertaken.

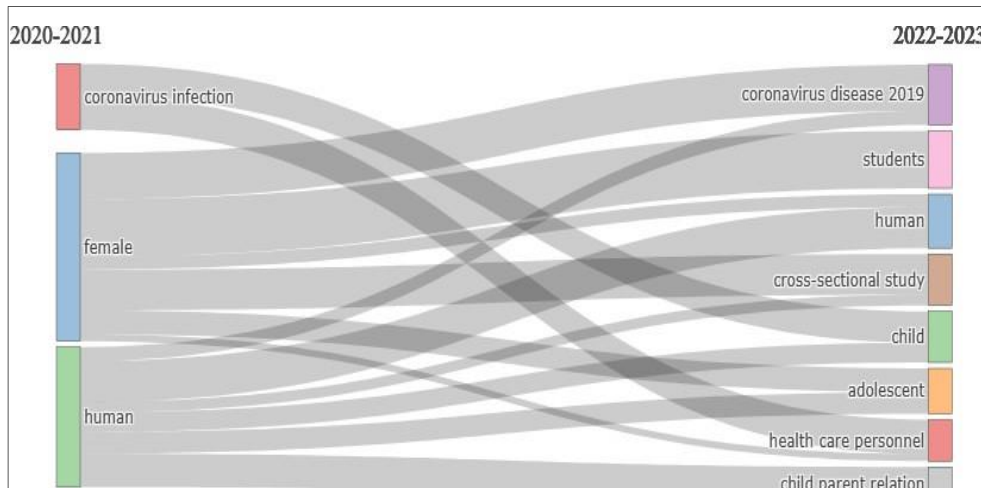


**Fig 30:** Thematic Map

**Thematic Evolution Analysis**

Considering the research work done in this field, examining the evolution of themes over time would be intriguing. To facilitate this analysis, the entire research duration has been divided into two segments: 2020-21 and 2022-23. The analysis given in Figure reveals that initially

the research was about the disease and its effects on human in general and women. However, at the later stage, researchers started investigating impact of the pandemic through cross sectional analysis. Focus was shifted to analysing relation between of covid-19 and mental health of students, children, adolescents and health care professionals.

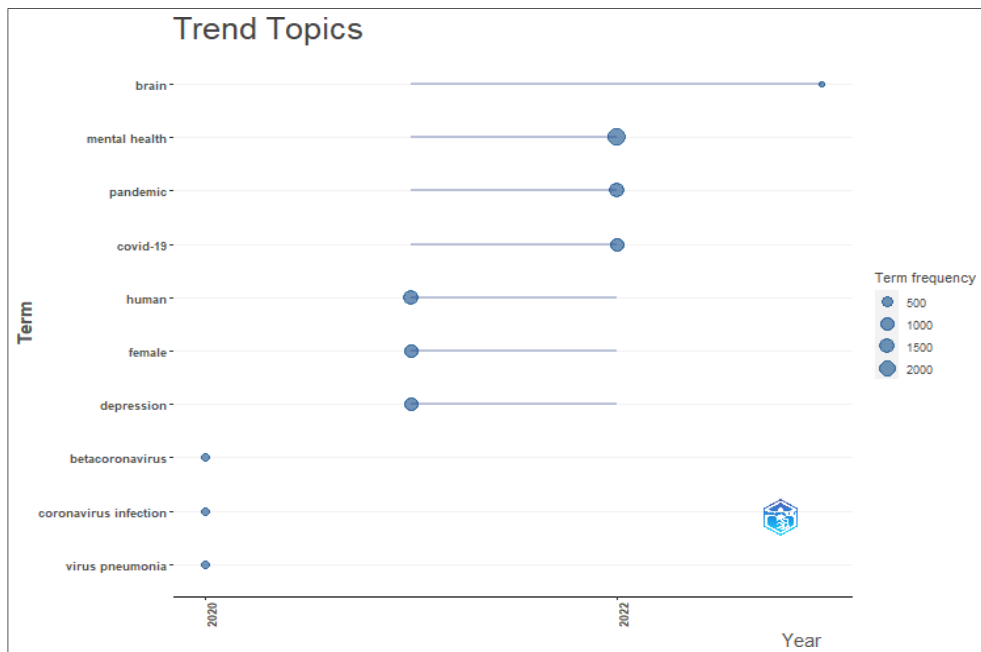


**Fig 31:** Thematic Evolution Analysis

**(iii) Trending Topics Analysis**

Trending topics relating to the subject area has been analysed based on author’s keywords from the sample set of research papers. Figure 32 shows that at the onset of the disease,

researchers started understanding the virus as it was a new disease. Later on the focus of researchers shifted to its effects due to lockdown like mental health, depression, effect on brain.



**Fig 32:** Trending Topics Analysis

**5. Summary and Conclusions**

The present work is about identifying and examining the academic and research work of the world in the field of effect of COVID 19 on mental health. Attempt has been made to offer an extensive overview of the published work research in this field. For achieving the aim of the present study, research papers have selected from Scopus database using search string “impact of COVID 19 on mental health”. The search is further refined on the basis of given inclusion and exclusion criteria. Finally 1,672 published papers have been selected for the analysis.

The analysis has revealed that research work in this area is continuously increasing. Researchers are continuously working to identify effects of COVID 19 on mental health through general and cross sectional studies. Most of the published papers (76%) are research articles indicating empirical research. Nearly 50% of the work falls within the field of area followed by psychology and social sciences.

Top 3 sources of published work are International journal of environment research and public health, Frontiers in Psychiatry and Plos One. Top 3 Countries most actively engaged in the research in this area are US, UK and China. Amerio topped the list of most active author with 12 publications followed by Serafini (10 publications) and Odone (9 Publications). King’s college, London, University of Toronto and University College, London are the leading institutes working in this area. Nearly 40% of the selected research papers have funding / sponsorship. The analysis shows that “National Institute of Mental Health” has funded 42 researches with “National Institute of Health” coming close with funding of 37 researches in this subject area.

The examination of published work reveals that not much collaborative work is being done. Very few institutes are doing collaborative research work. In respect of co-authorship analysis based on countries, the findings have

revealed that the UK, the USA, China, and Australia are the top countries regarding research and collaborations with other countries. The findings show that majorly authors in this area of research are from developed countries when compared with developing countries. This shows a research gap on this topic in developing countries. Most important key words used are mental health, psychology, human, pandemic and female. The least utilised keyword in the network is life scale, hand sanitizer, partner violence, and internet based interventions. Sanky diagram also confirms the findings. Highly cited sources include “International Journal of environmental research” with maximum 117 documents with 4073 citations, followed by Frontiers in Psychology with 57 documents and 1849 citations and Frontiers in psychiatry with 40 documents and 552 citations.

An examination of the subtopics in this area that have gained maximum attention of the researchers reveals that a lot of work has been done on analysing effect of COVID 19 on male/female and aged people. However, effect of COVID 19 on children, children parent relation and university students has not got much attention. Therefore, research work in this direction should be undertaken in future.

The present work is essentially exploratory in nature. It provides base for undertaking structured literature review based on shortlisted papers on different dimensions of impact of COVID on mental condition such as analysing coping strategies adopted by people and effect of initiatives taken by government to ease economic burden on people and restore their mental peace. In fact it is very important to the research in this direction to make economies more resilient and stable.

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