



A Bibliometric Analysis of Literature on Covid-19 and Mental Health

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ABSTRACT

Purpose: The present study analyzed the existing literature related to COVID 19 and Mental Health by using the technique of bibliometric analysis which may serve as guide-map for future researchers and policy makers.

Method: Bibliometric analysis is conducted in the present study by using various techniques like citation analysis, co-citation analysis, co-occurrence of keywords, thematic mapping by using visualization of similarities (VOS) viewer open-source software and R-based bibliometrix.

Results: The study highlighted the most significant journals, authors, co-cited authors, institutions, keywords co-occurrence, and most cited articles in the area of COVID-19 and Mental Health on the basis of bibliometric analysis of 149 studies taken from the database of Scopus for the past three years (2020–first quarter of 2022). Also, authors identified few relevant themes such as Economic Effects of COVID-19, COVID-19 and its Impact on Healthcare workers, COVID-19 and its Impact on Patients and General Population as important emerging key areas for further research.

Conclusion: We have highlighted significant citations, co-citations and keywords co-occurrence to summarize the literature. The present bibliometric study convincingly confirms the effect of COVID 19 pandemic on mental health and provides enough evidence to advocate formulation of strategies to tackle mental health issues.

Keywords: Literature, COVID-19, Scopus, Mental Health, Bibliometric Analysis

INTRODUCTION

On 30th January 2020, the emergency committee related to International Health Regulations (2005) declared the COVID-19 pandemic a Public Health Emergency of International concern.¹ COVID-19 is undoubtedly the largest pandemic of the 21st century which has emerged as a humanitarian and social catastrophe. It has wreaked havoc worldwide paralyzing all aspects of human life. The experience of witnessing the pandemic unfold itself globally has been unique and grotesque. The pandemic has orphaned

many and hardly anyone has remained untouched. It has left economies devastated along with causing social and food network disruptions. Tourism, agriculture, finance and aviation industries are few among the many enterprises that reported decline in both supply and demand aspects of the economy.² The economic downturn and infirmity associated with COVID-19 pandemic has led to mental illness and symptoms related to psychological stress.³ Many adults and children reported mental health problems like sleep disorders, anxiety, distress and depression

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which may be attributed to joblessness, lower incomes, worsening living conditions, fear of contracting the virus etc.^{4,5} The severity and types of problems related to mental health vary among individuals with different social roles and pre-existing health conditions.⁶ During the pandemic, mental health problems including suicides and anxiety increased among populations due to its quick spread which was further worsened by recession, nationwide lockdowns and forced quarantines.^{3,7} Increased number of suicide cases were also observed in India, Pakistan, USA, Italy, Germany, France and Canada.⁸⁻¹⁰ Many studies revealed that healthcare workers, marginalized populations and individuals with prior mental disorders suffered from escalated psychological distress.^{5,6} The United Nations also affirmed that COVID-19 pandemic negatively impacted physical health but it also undeniably increased psychological sufferings.¹¹ Even in case of health care workers, mental stress of handling patients not only reduced their work ability and also affected their clinical competence^{12,13} and these adverse effects were often worse than the direct effects of COVID-19 itself.³ In this context, a thorough review and understanding of COVID -19 related mental health problems is a prerequisite to designing effective public health policy. To fill the existing research gap and to gain greater insight into this public health challenge, the present bibliometric analysis peruses the existing literature related to mental health problems during the pandemic.

LITERATURE REVIEW

Covid-19 and Mental Health:

Various studies have studied the effect of COVID-19 pandemic on mental health. This is the first study which analyses the impact of this deadly pandemic on mental health by using bibliometric technique. Zandifar and Badrfam, observed the impact of uncertainty, seriousness of the disease, unpredictability, social isolation and misinformation on mental morbidity and stress due to COVID-19 pandemic in Iran.¹⁴ The study emphasized on the need of mental health care services at population level. Further, social milieu must be strengthened to reduce the negative psychological effect of the pandemic. Shigemura et al highlighted the adverse mental health and economic impact of the pandemic in Japan and documented the tendency of stockpiling and hoarding of resources among the population.¹⁵ There is a necessity of large-scale population level interventions to tide over this psychological predicament.¹⁶ A similar report found that many western countries have also included psychological assistance for pandemic situations.¹⁷

Lima et al. observed that anxiety was the prominent emotional symptom reported in the pandemic and reiterated the need of proper training of healthcare personnel.¹⁸ Asmundson and Taylor underscored the impact of pandemic on mental health in Canada.^{19,20}

They reported that anxiety worsened due to exaggerated and inaccurate information from media and drew attention to the need of research into its triggers so as to develop population and individual level strategies. Kang et. al. also pointed out the higher risk of mental health problems among healthcare experts during the pandemic.²¹ The main reasons identified were occupational exposure, excessive working hours, loneliness, separation from relatives and physical fatigue.²¹ Liu et al. suggested that mental health experts must work in collaboration with individuals working in intensive care units to reduce the levels of stress and depression.¹² Kang et. al. laid emphasis on the importance of telephone help lines to address the problems related to mental health for healthcare experts.²¹

Due to the COVID-19 pandemic, patients with previous history of mental health problems were at higher risk of developing new types of disorders.²² It was suggested that psychiatrists must be familiar with triage and screening techniques to reduce the risks to patients.²³ Further, there is need for social outreach support programs among migrant workers to minimize the risk of mental health disorders.²⁴ Close networking between specialties from clinical branches and psychiatrists, health workers in the communities and local authorities is required coupled with provision of information related to pandemic, so as to minimize paranoia and panic amongst the masses.²⁵

Bibliometric Technique Overview:

Bibliometrics involves the study of scientometrics and it includes statistical methods to analyse books, articles and other publications for the detection of the trends and evolution within a discipline.^{26,27} It is commonly used to conclude the significant findings from a cluster of bibliographic studies and to observe the global trends it further analyses patterns in the published literature.²⁸⁻³⁰ Bibliometric analysis is of two types. The first category is performance analysis/ evaluative technique, which uses different parameters to analyse the impact of country/university/author citations on the scientific outcome of a topic under study. A significant characteristic of this type of bibliometric analysis is its descriptive character. In performance analysis, citations, number of research publications and h-index are frequently used indicators.³¹ Graphic mapping/ bibliometric mapping of the subject is another category. It depicts the structural and dynamic features of scientific work.^{29,32,33} The linkages between various dimensions of research are explored by scientific mapping and it also identifies structural connections and intellectual exchanges for the topics under study.³⁴ The techniques used in scientific mapping consists of bibliographic contents, analysis of citations, analysis of co-words, analysis of co-authorship and analysis of co-citations. In the recent past, bibliometric techniques have been widely used in all di-

mensions of research aided by the development of software's related to bibliometric analysis like visualization of similarities (VOS) viewer, Gephi, R-based bibliometrix which scans scientific databases like Web of Science and Scopus.³⁵

METHODOLOGY

The present study scrutinized articles from one database i.e., Scopus by searching keywords as "COVID 19" AND "Mental Health". We included only research papers and review articles that were published in journals while book chapters and conference papers were excluded for fear of duplication and also because reliability of material published in journals is higher, as the review process of journal research papers is more rigorous.³⁶⁻³⁸ Also, articles published in English only were retrieved as it is the most commonly used language in scientific literature.³⁹ In addition, most of the published bibliometric studies in the top research journals used a similar process of filtering.⁴⁰⁻⁴² For the time period between 2020 and first quarter of 2022, we extracted 911 articles out of which 762 articles were found to be irrelevant. Thus, a total of 149 articles were included for this study. For bibliographic extraction, the source of database needs to be consistent and of good quality. Web of Science and Scopus are commonly used databases for bibliometric analysis but for the present study the methodology highlighted by De Irió-Rama et al. was followed and Scopus database was used to acquire data, as this database includes more than 21000 journals, is broader as compared to Web of Science, it is easier to retrieve the data from it, its coverage is quite comprehensive along with high-quality standards and its citation database is more detailed in comparison to other databases.^{31,43-46} Visual network and bibliometric analysis was used for mapping the structure of the present study. For bibliometric analysis, VOS viewer 1.6.16 software was used which examines the development trend of a research topic via scientific collaborations, analysis of citations and analysis of keywords. The software also assures strong reliability of statistical data and creates comprehensible graphics of high definition.

RESULTS

Table 1 depicts that 911 journals were extracted from Scopus database by using two keywords ("COVID 19" AND "Mental Health"). Currently accessible online publications related to COVID 19 from 2020 (360 publications), through 2021 (458 publications) till 7th April 2022 (93 publications) is depicted in Figure 1. The cumulative numbers show an upward trend in publications.

Table 2 highlights the sources of publications and the total number of publications over the same time frame. Asian Journal of Psychiatry tops the list with 102 articles followed by Indian Journal of Psychiatry

Table 1: Search tool

TITLE-ABS-KEY ("Covid 19" AND "Mental Health") AND (LIMIT-TO (AFFILCOUNTRY, "India")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j"))	
Criteria	Quantity
Journal	911
Authors	160
Affiliations	160
Countries	India
Total citations	11040

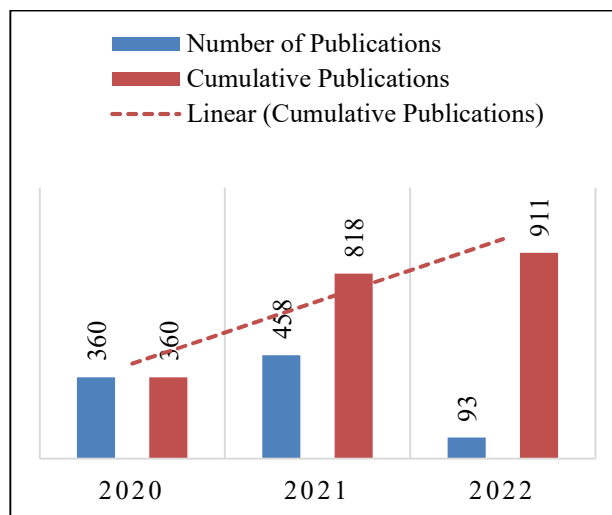


Figure 1 Number of Publications over the year till 07/04/2022

Table 2: Most prominent Journals

Sources	Publications
Asian Journal of Psychiatry	102
Indian Journal of Psychiatry	30
International Journal of Research in Pharmaceutical Sciences	30
Indian Journal of Psychological Medicine	21
Frontiers In Psychiatry	19
Indian Journal of Forensic Medicine and Toxicology	15
Lancet Psychiatry	14
Plos One	13
Journal Of Indian Association for Child and Adolescent Mental Health	12
International Journal of Current Research and Review	11

Table 3: Most influential Authors

Authors	Number of Articles	h-index
Sandeep, G.	24	33
Kar, S.K.	12	18
Sahoo, S.	19	15
Kumar, C.N.	13	15
Manjunatha, N.	13	14
Banerjee, D.	15	13
Ransing, R.	17	12
Mehra, A.	20	12
Shoib, S.	19	9
Ramalho, R.	12	9

Table 4: Most noteworthy Institutions

Institutions	Publications
National Institute of Mental Health and Neuro Sciences	80
All India Institute of Medical Sciences, New Delhi	49
Postgraduate Institute of Medical Education & Research, Chandigarh	45
Manipal Academy of Higher Education	31
DattaMeghe Institute of Medical Sciences Deemed to be University	31
King George's Medical University	26
Saveetha Institute of Medical and Technical Sciences	19
All India Institute of Medical Sciences, Bhubaneswar	19
Jawaharlal Institute of Postgraduate Medical Education and Research	18
All India Institute of Medical Sciences, Rishikesh	17
Saveetha Dental College And Hospitals	16
Universidade do Porto	15
Christ University, Bengaluru	15
Jawaharlal Nehru Medical College, Wardha	15
The University of Auckland	14
JawaharLal Nehru Memorial Hospital	13
JSS Academy of Higher Education & Research	13
All India Institute of Medical Sciences, Jodhpur	13
Enam Medical College and Hospital	12
JSS Medical College & Hospital, Mysuru	12

and International Journal of Research in Pharmaceutical Sciences with 30 publications each.

Most prominent authors have been highlighted as shown in Table 3. The number of articles contributed by these authors between 2022 till date range from 12-24 while their h-index varies from 9-33.

As observed in Table 4, with regard to institutions, National Institute of Mental Health and Neuro Sciences was found to be a significant contributor with 80 research papers followed by All India Institute of Medical Sciences, New Delhi (49) and Postgraduate Institute of Medical Education & Research, Chandigarh (45).

Table 5 highlights the most cited articles (with citations ranging from 88 to 1395). It is worth mentioning that the most cited research paper is found in Asian Journal of Psychiatry Journal. The maximum number of publications related to COVID -19 and mental health were also published in this journal (Table 2).

Intellectual Structure

The intellectual structure involves graphical presentations and co-citation analysis.

Analysis of Co-citations:

Linked structure of cited publications is observed through co-citation analysis.⁶⁶ Two papers are observed as heavily co-cited if they are having a sizable

number of commonly cited references.⁶⁷ If two publications are used as a reference together, it is termed as co-citation analysis.⁶⁸

When these pairs are co cited multiple times, clusters of research begin to form. The mapping of significant research themes is provided by co-citation analysis by looking at the key clusters related to the topic under study. Results of author co-citation analysis are shown in figure 2. Total 42340 authors have been taken on the basis of the examination of the 911 publications. It was further narrowed down to authors with 20 citations for comprehensive analysis that results in 243 publications. Frequently co-cited authors are shown by the larger nodes. Wang Y emerged as the most heavily co-cited author in our analysis with a co-citation score of 196, followed by Wang, C. (147), Wessely, S. (131) and Zhang, I. (130), and as represented by the four highlighted clusters in Figure 2. Figure 3 shows the co-citation analysis with respect to journals. Five clusters have been formed that represent the web of journals that are cited together within each group. Lancet Journal tops the list with the largest number of co-citations. It is represented by the largest node with a co-citation score of 406 which signifies that this journal has been co-cited 406 times by other journals.

Keywords Co-occurrence:

Figure 4 highlights the co-occurrence of keywords. Words such as "COVID 19," "Mental Health," "psychosocial care," "Depression" and "Health Care Personnel" were among the most frequently used terms in the literature review on COVID 19 and Mental Health from 2020 till date. Other prominent keywords included "hospital anxiety," "insomnia," "healthcare workers," "emotion," and "clinical study". These keywords may be helpful for academicians and authors to delve into the evolving literature on mental health.

Evolving literature of COVID 19 and Mental Health

In the review of literature on COVID 19, few other significant themes also emerged. In this particular section, these evolving areas from literature are briefly highlighted.

Economic Effects of COVID 19: During the pandemic, there was surging economic fallout affecting in various sectors like aviation, tourism, finance, agriculture etc.² Resource hoarding and stockpiling was rampant. Unforeseen health expenditures, joblessness, shrinking economy and inflation pushed millions of households into debt and the poor drifted into extreme poverty.¹⁵ Thus, the rapidly evolving pandemic has ruthlessly and ubiquitously stirred the lives of the rich and the poor alike.

COVID 19 and its Impact on Healthcare workers: The raging pandemic led to added anxiety among healthcare workers.¹⁸ Kang et. al. acknowledged that risk of mental health problems was highest among health staff.²¹

Table 5: Top 20 Most Cited Articles

Authors	Title	Journals	Citations
Rajkumar, R.P. (2020)	COVID-19 and mental health: A review of the existing literature ⁴⁷	Asian Journal of Psychiatry	1395
Roy et al. (2020)	Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic ⁴⁸	Asian Journal of Psychiatry	693
Dubey et al. (2020)	Psychosocial impact of COVID-19 ⁷	Diabetes and Metabolic Syndrome: Clinical Research and Reviews	551
Spoorthy, M.S. (2020)	Mental health problems faced by healthcare workers due to the COVID-19 pandemic—A review ⁴⁹	Asian Journal of Psychiatry	414
Singh et al. (2020)	Impact of COVID-19 and lockdown on mental health of children and adolescents: A narrative review with recommendations ⁵⁰	Psychiatry Research	354
Banerjee and Rai (2020)	Social isolation in Covid-19: The impact of loneliness ⁵¹	International Journal of Social Psychiatry	270
Banerjee, D. (2020)	The COVID-19 outbreak: Crucial role the psychiatrists can play ⁵²	Asian Journal of Psychiatry	231
Krishnamoorthy et al. (2020)	Prevalence of psychological morbidities among general population, healthcare workers and COVID-19 patients amidst the COVID-19 pandemic: A systematic review and meta-analysis ⁵³	Psychiatry Research	175
Hossain et al. (2020)	Mental health outcomes of quarantine and isolation for infection prevention: a systematic umbrella review of the global evidence ⁵⁴	Epidemiology and Health	168
Kumar &Nayar (2020)	COVID 19 and its mental health consequences ⁵⁵	Journal of Mental Health	155
Ghosh et al. (2020)	Impact of COVID-19 on children: Special focus on the psychosocial aspect ⁵⁶	Minerva Pediatrica	152
Dsouza et al. (2020)	Aggregated COVID-19 suicide incidences in India: Fear of COVID-19 infection is the prominent causative factor ⁵⁷	Psychiatry Research	143
Pirkis et al. (2021)	Suicide trends in the early months of the COVID-19 pandemic: an interrupted time-series analysis of preliminary data from 21 countries ⁵⁸	The Lancet Psychiatry	128
Rehman et al. (2021)	Depression, Anxiety and Stress Among Indians in Times of Covid-19 Lockdown ⁵⁹	Community Mental Health Journal	120
Saurabh & Ranjan, (2020)	Compliance and Psychological Impact of Quarantine in Children and Adolescents due to Covid-19 Pandemic ⁶⁰	Indian Journal of Pediatrics	113
Barkur et al. (2020)	Sentiment analysis of nationwide lockdown due to COVID 19 outbreak: Evidence from India ⁶¹	Asian Journal of Psychiatry	113
Varshney et al. (2020)	Initial psychological impact of COVID-19 and its correlates in Indian Community: An online (FEEL-COVID) survey ⁶²	PLoS ONE	107
Kola et al. (2021)	COVID-19 mental health impact and responses in low-income and middle-income countries: reimagining global mental health ⁶³	The Lancet Psychiatry	99
Verma& Mishra (2020)	Depression, anxiety, and stress and socio-demographic correlates among general Indian public during COVID-19 ⁶⁴	International Journal of Social Psychiatry	96
Ammar et al. (2021)	Effects of home confinement on mental health and lifestyle behaviours during the COVID-19 outbreak: Insights from the ECLB-COVID19 multicentre study ⁶⁵	Biology of Sport	93

Long working hours, risk of infection, separation from loved ones and social discrimination were among the few notable issues that contributed to mental health issues among them. The pandemic has brought forth the compelling need to provide access to mental well-being and social support services to health workers, apart from fair duration of deployments, insurance coverage and implementation of minimum patient safety, infection prevention and control, and occupational safety standards.

COVID 19 and its Impact on General Population: During the pandemic and in the subsequent waves, mental distress was observed among universally

among all sections of the population. An upsurge in mental health problems is expected as a fallout of the economic recession, the quarantine policies and the resulting domestic violence, and continuing ambiguity about future waves of the pandemic. Unsurprisingly, the pandemic resurfaced the strong alliance between destitution, inequality, and poor mental well-being. These mental health issues were compounded by misinformation from media. The governments were ill-equipped to cope with this surge, because of the shortage of skilled providers, and because of the compartmentalized disease-based models of illness which dominate mental healthcare.

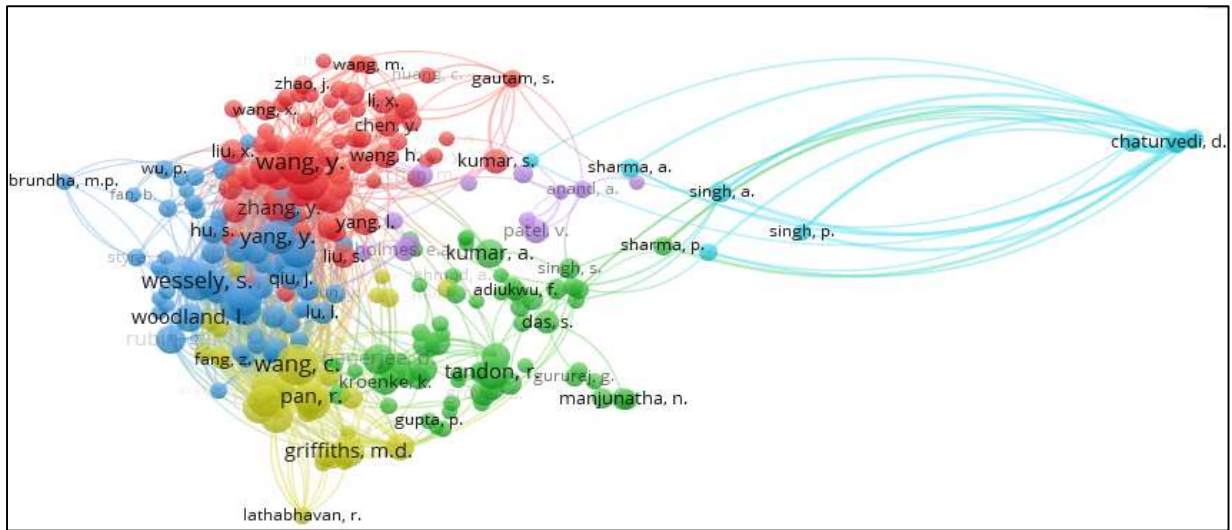


Figure 2 Co-citations of Authors:

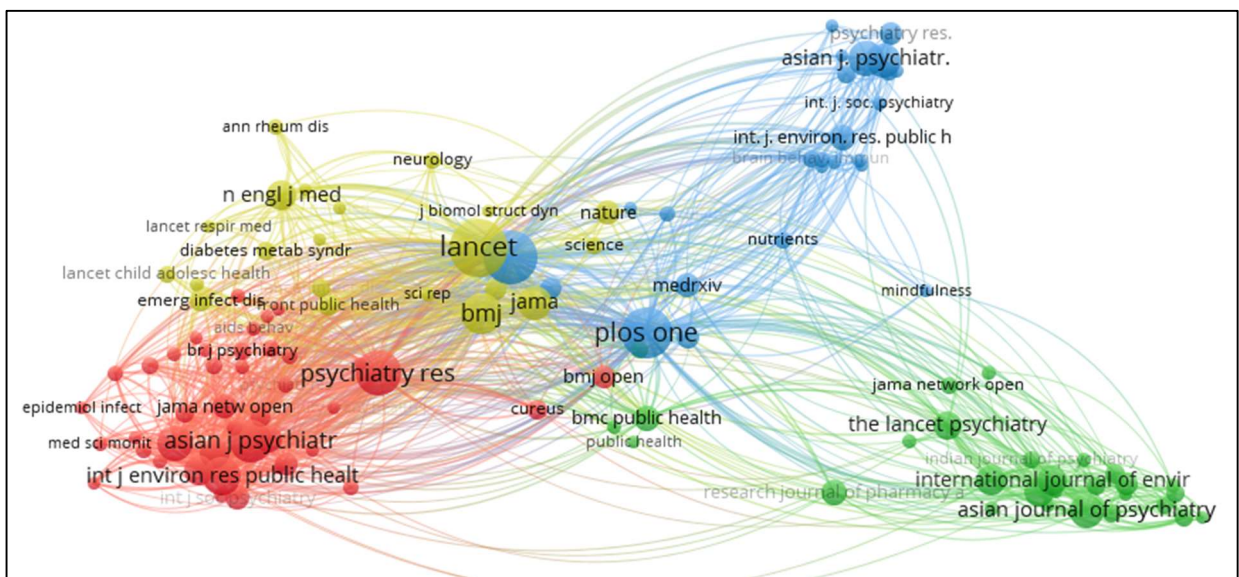


Figure 3 Co-citations Analysis of Journals

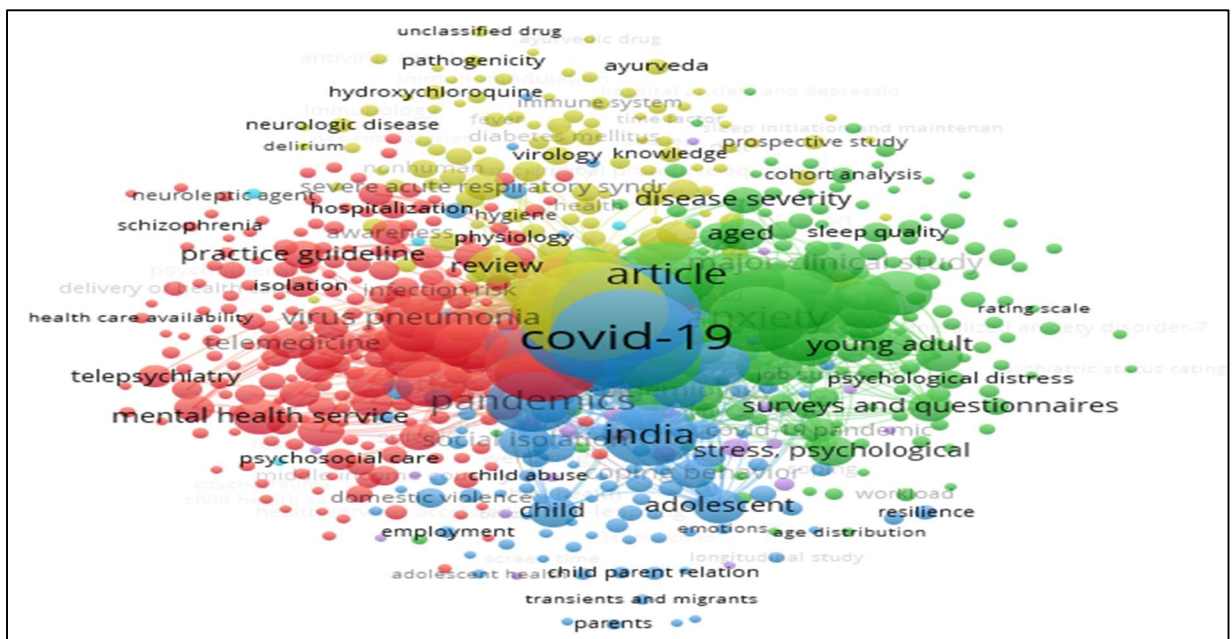


Figure 4 Co-occurrence of keywords

DISCUSSION AND LIMITATIONS

The present study has been conducted to review the literature on COVID 19 and mental health by examining articles from the beginning of the pandemic into the first quarter of 2022. Unlike previous COVID 19 and mental health studies, the present research has used bibliometric analysis that included citation analysis, co-occurrence of keywords and co-citation analysis on 149 articles from 911 journals published from 2020 to 2022(till date). In terms of h-index, Sandeep, G. (2020) followed by Kar, S.K. (2020) top the list. Asian Journal of Psychiatry has contributed the maximum articles related to mental health effects of COVID 19 pandemic. In terms of most prominent institutions, National Institute of Mental Health and Neuro Sciences Bangalore, India emerged as one of the topmost contributing institutions. Furthermore, through concurrence analysis, some of the prominent keywords identified by the authors included COVID 19, mental health, human, depression and health care personnel. These terms point towards key focus areas in the evolving dynamics of COVID 19 pandemic and may facilitate fellow researchers in exploring these domains. Our findings demonstrate that interest regarding pandemic and mental health has been increasing and also showcase the most impactful and important contributions in this field. Our strength lies in the fact that we have presented a detailed overview of the literature on COVID 19 pandemic while only few studies have done this kind of analysis. We must acknowledge certain limitations despite the relevance, quality and breadth of the research. The study's most significant drawback is that single database was used for data collection and analysis. Most bibliometric analysis, in order to prevent duplication, use single database, but many significant articles might have been omitted by excluding other databases, which could have been beneficial to study the topic. The purpose and the context of citation structure could not be identified from the study.

CONCLUSION

Unlike previous COVID 19 and mental health studies, this research has used bibliometric analysis that synthesizes an intellectual and conceptual framework for the topic. For theoretical analysis, we have highlighted significant citations, co-citations and keywords co-occurrence to summarize the literature. This will provide a road map to future researchers to delve deeper into the subject. The present bibliometric study has conclusively demonstrated the effect of COVID 19 pandemic on mental health. The priority of international public health should be to mitigate the harmful effects of COVID 19 on mental well-being and our analysis provides enough evidence to emphasize the compelling need for formulation of strategies to tackle mental health issues.⁶⁹

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