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Mapping the Scholarship on Mental Health during COVID-19 Pandemic: A Scientometric View

Abstract: Mental health has been a major concern worldwide even before the emergence of novel coronavirus. The evolving nature of the virus and the fatality rate has increased the psychological distress among people across all age groups. This study is an attempt to explore the research productivity on mental health research during COVID-19 pandemic to combat the disease by means of enhancing awareness and preventive measures as some countries are going through the second wave of the viral attack. The research contribution on mental health during the ongoing COVID-19 pandemic appears to be slow in pace not going with the need of the time. During the study period 1st January 2020 to 5th November 2020, only 1690 scholarly documents were published with average number of articles per author less than one. United States emerged as the most prolific country in the research on 'Mental Health' followed by China and U.K. Most of the scholarly output were predominantly in English language and most of the universities were in the forefront in conducting research on mental health. Many researchers got funding encouragement from multiple agencies for their research on mental health stimulating collaborative research trend with Canadian Institutes of Health Research being the top funder. Most of the research publications got concentrated in only few top ranked journals in the field of mental health. These findings reinforce the need to increase the research on mental health.

Keywords: Mental Health, COVID-19 pandemic, Scientometric study, Web of Science

Introduction

In a holistic way, there are four key dimensions of human wellbeing: physical, emotional, financial and social. The current COVID-19 pandemic has destroyed the basic fabric of these four dimensions and caused a greater disruption. Overall mental health has been profoundly impacted during present COVID 19 pandemic. Mental health related issues got a greater attention during pandemic time leading to more focused outlook in understanding about mental health and related concerns. Globally, an estimated 264 million people suffer from depression, one of the leading causes of disability, with many of these people also suffering from symptoms of anxiety. A recent WHO-led study estimates that depression and anxiety disorders cost the global economy US\$ 1 trillion each year in lost productivity. (Organization(WHO), 2019). Even the World Economic Forum has emphasized steps to be taken to create a mentally healthy workplace for promoting better mental health of workforce of any organization. At a global policy level, WHO's Global Plan of Action on Worker's Health (2008-2017) and Mental Health Action Plan (2013-2030) (World Health Organisation, 2013) outlines relevant principles, objectives and implementation strategies to promote good mental health in the workplace.

The coronavirus disease 2019 (COVID-19) pandemic is having a profound effect on all aspects of society, including mental health and physical health. (Holmes & O'Connor, 2020). There is an urgent need for conducting research to address how mental health consequences can be mitigated under pandemic conditions. It is also the need of the hour to address the impact of repeated impact of media in terms of health messaging during COVID-19. Studies pertaining to finding ,analysing, evaluating and redressal mechanism could be channelized to address the psychological, social, and neuroscientific aspects of the pandemic is the need of the hour. Rising to this challenge will require integration across disciplines and sectors, and should be

done together with people with lived experience. The pandemic is likely to cause and exacerbate mental health issues, both in employees with underlying conditions and in those who have never previously thought about their mental health.

The lockdown curfews, self-isolation, social distancing and quarantine have affected the overall physical, mental, spiritual and social wellbeing of everyone during the COVID-19 pandemic. COVID-19 has created fear, anxiety and uncertainty in the world which needs to be addressed immediately. The economic recessions have put significant financial pressure on many families, which might increase unhealthy conflict, family breakdown, abuse, depression and domestic violence. The psychological impacts of the COVID-19 lockdown might be a challenge for an indefinite time, hence it is necessary to emphasize and address coping strategies, mental health interventions and awareness using the available resources. To deal with the current pandemic and future health emergencies, the government should be equipped with adequate health logistics, technologies and skilled manpower, and needs to develop its capacity in health financing to foresee future opportunities and challenges. (Poudel & Subedi, 2020)

The COVID-19 pandemic and mitigation efforts carry a mental health toll among health care workers, individuals infected and the general population. At present, however, little information is available to assess the psychological effects of responses to COVID-19 in the immediate to short term.

Countries across the world are implementing measures to fight COVID-19, and their efforts will be enhanced by understanding the psychological effects of the pandemic, lockdowns, and social distancing (Van Bavel et al., 2020). Various researches on the topic of mental health and its varied aspects aims to provide rapid and reliable high quality data on the immediate effects of the pandemic, and lockdown efforts, on social attitudes and health and wellbeing. In addition to theoretical and scientific implications, these results will provide useful information to governments to devise and adapt policies to manage COVID-19, and useful information to people across the world who are collectively facing this challenge. Scientometric studies can contribute in a big way in analyzing the dataset on the research done on this particular topic of mental health.

Scientometric dimensions expands the horizon of the wider understanding of the different aspects of a topic in terms of thorough understanding of the contribution, impact, distribution, and various other aspects of the research output. Mental health as a very relevant topic in today's pandemic time a scientometric study will definitely unfold immediate risk to people's mental and physical health and social relationships and will help the authorities to address it.

Review of Literature

The immediate effects of a nationwide lockdown because of the contagiousness and deadliness of COVID-19 and to halt its epidemic effect were investigated by comparing matched samples of New Zealanders assessed before (Nprelockdown 1,003) and during the first 18 days of lockdown (Nlockdown 1,003). On examining two categories, the study found that people in the pandemic/lockdown group reported higher trust in science, politicians, and police, higher levels of patriotism, and higher rates of mental distress compared to people in the pre-lockdown pre-pandemic group. Results were confirmed in within-subjects analyses. The study highlights social connectedness, resilience, and vulnerability in the face of adversity

and has applied implications for how countries face this global challenge. (Chris G. Sibley, 2020)

The COVID-19 health crisis has strongly affecting the mental health of the general population. In particular, the pandemic may be producing psychological distress and collateral concerns for parents in lockdown, due to unstable financial circumstances, school closures, and suspended educational services for children. It was found that increased family-based interventions during the emergency are urgently needed to forestall psychopathological trajectories and prevent the exacerbation of vulnerable conditions. (Lilybeth Fontanesi, 2020)

The issues and ramifications of the rapid spread of the coronavirus disease (COVID-19) in India were studied. It was found that nationwide lockdown resulted in a majority of people facing a myriad of hardships, with mental health crisis being the most prominent one. An array of mental health issues in people that included a sense of uncertainty, anxiety, depression, sleep disturbances, panic attacks, and loneliness were the major concerns. (Naved Iqbal, 2020)

In Nigeria lockdown was implemented on March 23. The unanticipated disruptions of scholarly or professional advancement for the 94% of university students, who are not currently learning, increased the burden of mental illness among these students and predispose them to social vices. Many negative effects like poverty, lack of trust in the government, ignorance, denial and misplaced religious zealotry increased to a new high during this period. Many fear-induced behavioural changes as preventive measure were observed among the Nigerians. Many hardships and respective measures by government as well as people of the country was the order of the day during these difficult times Efforts are being made to develop telehealth services, but most rural residents could not benefit from them. (JohnBosco Chika Chukwuorji, 2020)

Since March 2020, Italy has been in lockdown due to COVID-19, and individuals have missed all kinds of networking opportunities. Already in the 1st weeks of March, Italian cities' silence was broken by singing. The use of singing as a coping strategy as well as to improve the sense of cohesion is evident. Greater attention should be paid to the development of social cohesion and to social support in terms of social networks and the development of social capital. (Elisabetta Corvo, 2020)

The coronavirus outbreak in India resulted in emphasizes on various policies adopted by the government of India to face the coronavirus crisis. It brings into perspective what financial strides the economy is going through, the mental health of the citizens, and the current situation of health care in the country. Many such studies reflected the learnings from COVID-19, the role of defined governmental policies, and support in surviving such an unforeseen situation. (Saha, 2020)

Many countries including Nepal were in the forefront in going for some forms of lockdown, encouraging people to implement social distancing so as to reduce interactions between people which could eventually reduce the possibilities of new infection; however, it has affected the overall physical, mental, social and spiritual health of the people. While many countries were supporting their citizens with sophisticated health safety-nets and various relief funds, some developing countries faced unique challenges with vulnerable populations

and limited resources to respond to the pandemic affecting socioeconomic, mental health and other aspects in Nepalese society. (Kritika Poudel, 2020)

Italy was the first European country that entered a nationwide lockdown during the COVID-19 pandemic. Since quarantine it was found that lockdown impacted mental health with the prevalence of depressive symptoms, anxiety symptoms and sleeping disturbances in the Italian population during lockdown. The factors that might influence such outcomes were explored. It was found that increasing age, an absence of work-related troubles and being married or being a cohabitant reduced such a probability of mental health issues to a big extent. (Maria Rosaria Gualano, 2020)

In Italy, lockdown due to COVID-19 health emergency started on March 10 and partially ended on May 3rd, 2020. There was a significant increase of psychological distress and symptoms of mental illness, and worsening of quality of sleep in the general population. The impact of lockdown was greater in students than in workers, and in females than in males. Concerning the psycho-emotional aspects, about one-third of our sample showed depressive or anxious symptoms. The results of the study provided support for the implementation of some interventions for well-being in pandemic condition. (Sara Marelli, 2020)

Covid-19 has caused significant distress around the globe. Apart from the evident physical symptoms in infected cases, it has caused serious damage to public mental health. India, like other countries, implemented a nationwide lockdown to contain and curb the transmission of the virus. A research is an attempt to explore psychological distress among people residing in India during the lockdown was done. The results indicated that people who do not have enough supplies to sustain the lockdown were most affected and was found to be negatively correlated with stress, anxiety, and depression. These studies consolidated the need for Policymakers and other authorities to take the assistance of mental health professionals to help overcome psychological issues related to Covid-19. (Usama Rehmann, 2020)

In order to understand the impact of Covid-19 on mental health well-being, Chinese researchers have conducted several studies. However, no consistent results were obtained. Therefore, a meta-analysis was conducted. Embase, PubMed, and Web of Science databases were used to find literature from December 2019 to April 2020 related to Covid-19 and mental health. The incidence of anxiety and depression in the population was synthesized and discussed. The results showed that the incidence of anxiety was 25% (95% CI: 0.19–0.32), and the incidence of depression was 28% (95% CI: 0.17–0.38). It was found that as the epidemic is ongoing, it is vital to set up a comprehensive crisis prevention system, with integrating epidemiological monitoring, screening and psychological crisis prevention and interventions. (Xin Ren, 2020)

A study pertaining to Asian Countries found that university students are more vulnerable to mental health ailments especially depression. The study was done with the aim to evaluate international collaboration and funding initiatives for scientific research and its scientific impact in Korea, Japan and China. A comprehensive coverage of dataset ranging from 1992 to 2018 was retrieved from Web of Science and various statistical tests were applied for data analysis. It was found that Korea and Japan lacked scientific output, diversity in research targets, international collaboration, and funding provision, compared to China, but the quality of either China's internationally collaborated or funded articles was contentious. Many suggestions were made to the policymakers in Korea and Japan to raise the importance of

mental health problems in their future policy planning and resource distribution. (Minh-Hoang Nguyen, 2020)

Objectives

The main purpose of the current study is to find out the overall landscape of research on Mental Health via scientometric analyses of the scholarly publication by focusing on the following dimensions:

- Growth characteristics of publications
- Distribution of the contributions among prolific authors.
- Co-authorship and collaboration of countries.
- Identification of productivity of authors, organisations and funding agencies.
- Identification of highly preferred journal and research hotspot in the domain.
- Citation impact of the research output.

Methodology

The data for this study was collected from The Web of Science (WoS) database on 5th November 2020 using the search string "TS=(Covid* and mental health). For Timespan Year to Date was selected. Hence the study is based on the 1690 records published during 1st January 2020 to 5th November 2020. Biblioshiny software was used for the analysis of the data.

Data Analysis and Interpretation

Overall publication performance and growth rate

Table 1 shows the main information about the 1690 documents collected during the study period. In total of 1690 documents, including 862 (51.01%) articles and 117 (6.9%) reviews, were published by 8078 authors. Most of the articles had more than one author with 2496 multi-authored articles and only 26 single-authored research articles. Average author per article was 1.13, average co-authors per article were 3.65, and average number of articles per author was 0.884. This suggests that most authors collaborated with three to four authors. Average number of articles per author is less than one and the number of author appearances (8132) is greater, almost 3 times than the total number of authors (2522), which shows that some authors have multiple publications. A total of 8078 authors contributed to a total of 1690 scholarly documents on mental health during the study span from January 2020 to 5 November 2020. As many as 2605 authors' keywords overlapping with 1515 keywords plus formed the word web of the key terms on mental health. A good collaboration was noticed amongst the authors with a collaboration index of 5.19 and the author per document was in the range of 4.78 showing on an average approximately 5 authors collaboratively contributing one research paper.

Table-1: Main Information about Retrieved Documents

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2020
Sources (Journals, Books, Etc)	551
Documents	1690
Average Years From Publication -	0.00294
Average Citations Per Documents	5.212
Average Citations Per Year Per Doc Information	
References	35258
DOCUMENT TYPES	
Article	862
Article; Early Access	239
Article; Proceedings Paper	2
Correction	4
Editorial Material	194
Editorial Material; Early Access	36
Letter	168
Letter; Early Access	29
Meeting Abstract	7
News Item	8
Review	117
Review; Early Access	24
DOCUMENT CONTENTS	
Keywords Plus (ID)	1515
Author's Keywords (DE)	2605
AUTHORS	
Authors	8078
Author Appearances	9610
Authors Of Single-Authored Documents	143
Authors Of Multi-Authored Documents	7935
AUTHOR COLLABORATION	
Single –Authored Documents	160
Documents Per Author	0.209
Authors Per Document	4.78
Co-Authors Per Documents	5.69
Collaboration Index	5.19

It was found that the word ‘Depression’, ‘Mental Health’ and ‘Stress’ were the top three frequent used word indicating that widespread research and discussion on the influence of COVID-19 pandemic on the mental well-being in totality during 2020 -2021. Table - 2 reflected that out of top 20 frequently used words, the top 10 occurred with a frequency of 90 and above amongst the total 2605 authors keyword used.

Table-3: Top 15 Prolific Authors

Sr.No	Author	No of records
1	Wang Y	13
2	Zhang L	12
3	Neto MLR	11
4	Cheung T	10
5	Mukhtar S	10
6	Xiang YT	10
7	Wang J	8
8	Liu L	8
9	Zhang Y	8
10	Vieta E	7
11	Liu Y	7
12	Liu ZC	7
13	Zhao N	7
14	Greenberg N	7
15	Zhang XY	6

It was found from table no-3 that Wang, Y with a total publication record of 13 was the most prolific author followed by Zang, L with 12 publications and Neto , MLR with 11 publications.

Table-4: Most Relevant /Impactful Author

Sr.No	Name of the Author	h-index	Citation Sum Within H-Core	All Citations	Total No of Articles
1	Wang Y	6	827	832	13
2	Zhao N	5	309	309	7
3	Mukhtar S	5	61	73	10
4	Vieta E	4	28	31	7
5	Liu L	4	28	31	8
6	Liu ZC	4	822	826	7
7	Zhang L	4	232	237	12
8	Xiang YT	4	426	429	10
9	Zhang Y	4	160	162	8
10	Wessely S	4	445	447	5
11	Neto MLR	4	128	136	11
12	Cheung T	4	223	226	10
13	Kang LJ	3	615	615	4
14	Wu Y	3	39	40	5
15	Mkay D	3	54	57	

As evident from Table 4, Wang, Y received highest citation and was most impactful author with h-index 6 during the study period. It was found that the most prolific author as well as most productive author were the same that is Wang, Y., Zhao, N and Mukhtar, S stood 2nd and 3rd respectively in their impact ranking based on citation and h-index. It was found from Table 4 that amongst the top 15 most relevant authors, 9 authors were having h-index of 4. Also few authors with high citation count like Liu, Z .C with 826; Kang, L.J with 615; Wessely, S with 447 citation count .It was found that citation count ranking and the h-index ranking showed marked variation reflecting no direct correlation between citation counts and h-index.

Table-5: Top 15 Country wise productivity

Sr. No	Name of the Country	No of Records
1	USA	728
2	Peoples Republic of China	278
3	UK	233
4	Italy	129
5	Australia	127
6	Canada	111
7	Spain	85
8	India	83
9	Brazil	68
10	Germany	63
11	Pakistan	41
12	Iran	39
13	France	36
14	Japan	32
15	Netherlands	32

Based on Table- 5 it was found that United States stood first in research productivity with major share of 43.08 % of research publications on the topic of Mental Health followed by China and United Kingdom with 278 and 233 research records respectively. Few Asian countries like India (4.91%) and Pakistan (2.43 %) found place in top 15 contributors to research on Mental Health amongst the total 502 contributors across the globe.It was found that research on mental health though during the study period was found to be at slow pace but the research work done shows worldwide distribution with developed countries on the top of the list of most productive country in research output on ‘mental health’.

Table- 6: Language Wise Distribution

Sr.No	Language	No .of Documents
1	English	1658
2	Spanish	13
3	German	12
4	Portuguese	3
5	French	2
6	Croatian	1
7	Italian	1

English was the predominant language in which most of the research output was generated with 98.11 % of total share. Spanish and German language found 2nd and 3rd rank respectively. English being the global language, the research on mental health mostly is in English language leading to more readability and research in that area.

Table- 7: Top 15 Most Productive Organization

Sr.No	Name of the Organization	No of Records
1	Kings College London	53
2	Harvard Medical School	47
3	University Toronto	39
4	Huazhong Univ Sci & Technology	35
5	Monash University	27
6	Wuhan University	26
7	University of Oxford	25
8	Shanghai Jiao Tong University	24
9	University of Melbourne	24
10	University College London	23
11	Columbia University	21
12	Sapienza University Rome	19
13	Hong Kong Polytech University	18
14	New York University	18
15	Southern Med University	17

Table-7 shows top 15 most productive organizations contributing to scholarly publications out of total 2960 organizations. Kings College, London was the top contributor with 53 publications followed by 47 by Harvard Medical School and 39 by University of Toronto. It was evident from Table -7 that out of top 15 contributors to the scholarly output on mental health 12 universities found their place. However the top of the list was occupied Kings College, London indicating the involvement of few colleges in quality research productivity on mental health.

Table-8- Top 15 Preferred Journal for publication

Sr.No	Name of the Journal	No of Records
1	Psychological Trauma-Theory Research Practice and Policy	100
2	International Journal of Environmental Research and Public Health	72
3	Psychiatry Research	60
4	Frontiers In Psychology	40
5	Frontiers In Psychiatry	37
6	International Journal of Social Psychiatry	34
7	Asian Journal of Psychiatry	33
8	Journal of Affective Disorders	31
9	Lancet Psychiatry	25
10	Brain Behavior And Immunity	25
11	Plos One	22
12	Psychiatria Danubina	21
13	International Journal of Mental Health and Addiction	16
14	Bmj-British Medical Journal	16
15	Australasian Psychiatry	16

Most preferred journals were studied and analysed in Table No-8 .It was found from the table that Psychological Trauma-Theory Research Practice And Policy was the most preferred journal for research publication (n=100) followed by International Journal Of Environmental Research And Public Health(n=72) and Psychiatry Research journal stood third in rank with 60 publications. Table No- 8 clearly showed top 15 preferred journals with more than 10 publications exclusively on 'Mental Health' and 'Psychiatry'.

Table-9: Distribution of Projects Funding

Sr. No	No. of Funding Agencies	Total No. of Projects Funded
1	1075	1
2	51	2
3	15	3
4	4	4
5	3	5
6	1	6
7	1	7
Total	1150	

A very encouraging 1150 funding agencies provided financial support to the researches .It was found that amongst 1150, 1075 various agencies funded a single research project followed by 51 agencies supporting 2 projects and around 15 agencies funding 3 projects. It was found that amongst a total of 1150 funding agencies, those contributing to as many as 6 and 7 projects were only one in number.

Table- 10: Top 5 Funding Agencies

Sr.No.	Funding Agencies	No. of Records
1	Canadian Institutes of Health Research Canadian Institutes of Health Research (CIHR)	7
2	Projekt DEAL	6
3	University of Macau	5
4	Brazilian National Council for Scientific and Technological Development (CNPq)National Council for Scientific and Technological Development (CNPq)	5
5	Public Health England	5

It was found from Table- 10 that Canadian Institute of Health Research (CIHR) was the top funder agency for 7 research projects followed by Projekt DEAL with 6 and University of Macau with funding to 5 research projects respectively.

Discussion

Mental Health was found to be burning topic during the COVID-19 time with total 1690 scholarly output during the study period from January 2020 to November 2020. It was found that keywords namely Depression, Stress, Anxiety were the most frequently used word in the researches. United States was the most prolific country in the research on 'Mental Health'. The author Wang, Y was the most prolific as well as most impactful author. It was found that USA accounted for considerably higher number of scholarly output on Mental Health followed by China and U.K. Thus developed countries were in the forefront in research work on the topic of mental health. During the study period it was found that English emerged as the preferred language for research writing on Mental Health. Most of the Universities were among the top 15 organization contributing to the research output. Psychological Trauma-Theory Research Practice and Policy was found to be the preferred destination for publishing the research findings and proliferating the research findings to others. Research funding statistics reflected the growing importance of the study on the topic of mental health and the proactive interest of various leading organizations in encouraging research on it. During this study period it was found that a single organization facilitated funding support for around 7 projects at a time. Overall a very encouraging research phenomena was noticed on the topic of mental health and especially during COVID-19 time and this study indicated inclination towards the research on mental health and related issue in the wake of the COVID-19 pandemic. Overall research on mental health is gearing up and getting more attention across the globe because mental health related issues are amongst the few core concerns in the COVID-19 pandemic time.

Conclusion

Mental health acquires a great quantum of focus in the COVID-19 pandemic time. Many active research were carried out across the globe on the topic of Mental Health and its significance increases manifold because of the consequences of COVID-19 pandemic on the mental wellbeing of everyone. This scientometric study assumes great importance to explore the

frontiers in the area of mental health .This scientometric study establishes the direct relationship between the COVID-19 pandemic and its aftereffect on the mental health of all. This study necessitates the urgent need to explore Mental Health related issues, concerns and related ways to evolve a system to deal with them.

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