

Global Research Evidence on COVID19- and Anxiety: A Bibliometric Analysis

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Abstract

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Background: The global outbreak of the COVID-19 pandemic and its impact on the overall health and well-being brought fear, anxiety, worry, and mental health issues. Thus, a bibliometric analysis of COVID-19 and anxiety-related publications was performed to examine the current research trends and prospects to support policymakers, funding agencies, and researchers to safeguard the global population from post-COVID-19 psychological impact.

Methods: We used the Web of Science Core Collection (WoSCC) to search relevant documents in the early stage of the outbreak up to date (October 21, 2021). Mesh heading terms were used to extract the relevant keywords indexed in medical databases: HistCite, R software, and VOSviewer.Var1.6.6 were adopted as bibliometric analysis tools.

Results: A bibliometric analysis was employed to examine 796 COVID-19-anxiety-related documents on WoSCC. Approximately 7,478 citations, average citations per document 0, and h_index 39 were recorded. The publications cover 3858 authors, 166 journals, 71 countries. The finding shows that Chen Lei from Shanghai Jiao Tong University, School of Medicine, Shanghai, China was the most influential author. The International Journal of Environmental Research and Public Health was the most active. Turkey and the USA are the most productive countries for COVID-19–Anxiety-related publications.

Conclusion: The study suggested that more studies should be conducted to address anxiety among developing countries. The network analysis and keyword visualization allowed verification of the current significant research focus and provided a paradigm for future research in the COVID-19 and Anxiety research.

Keywords: COVID-19; Anxiety; A Bibliometric Analysis; VOSviewer



Introduction

The emergence of the COVID-19, which quickly escalated into a global health threat[1,2], has proven to have adverse and significant implications for individuals, not just in terms of physical health but also in terms of mental health[3]. The COVID-19 global crisis triggered distress, anxiety, and fear among the general population. Governments suggested using social distancing schemes, along with self-isolation, to slow the virus's spread[4]. Subsequently, the effect of self-isolation and quarantine aroused an enormous experience of anxiety, frustration, distress, and fatigue[5]. Several findings and research on psychological issues during the COVID-19 pandemic revealed that diagnosed population groups had various mental trauma, including emotional distress, depression, stress, dizziness, insomnia, attention-deficit/hyperactivity, and post-traumatic stress symptoms[6–9].

The anxiety may result in traumatic experiences from the pandemic's severity, and the fear of death may adversely impact mental health. Thus, depressive and anxiety symptoms in various age groups presented controversies, as evidenced by the number of studies explored during the outbreak[10]. However, during the COVID-19 pandemic, healthcare workers' psychological issues were mainly investigated[11]. As the COVID-19 experience is a global problem, exploring the universal research coverage on the psychological implication is vital to support intervention for the most impacted.

The examination of recent evidence of the psychological experience of the global population identified depression symptoms like insomnia, anxiety, and other mental and physical health anomalies [12–15]. The possible explanation of these psychological problems could have been linked to “hypochondriac concerns” (concern about being infected) and the fear that the epidemic would be challenging to handle. The pandemic and its eventual impact on people's health and well-being come with fear, anxiety, worry, and under these circumstances, many people die dread and despair every day [16].

In scope, a bibliometrics analysis as an emerging field of information science[17–21] was conducted to examine research output on anxiety. The analytical tools provide insights into research activity on COVID-19 and Anxiety by identifying the progress of publications and an issue that is a growing threat to public health due to the COVID-19 outbreak. The current study is the first bibliometric study conducted on COVID-19 and Anxiety after over one year of the current pandemic. The study focuses on scientific research community information on funding agencies on COVID-19 Anxiety research, top authors, the collaboration between authors, institutions, countries/regions, and identity, which documents are the most influential publication. The COVID-19 public health crisis has necessitated assessing the global mental health consequences evidenced in anxiety-related symptoms displayed globally. The global mental health challenges can be intervened by exploring research discuss on COVID-19 and anxiety. Therefore, this current research offers additional support in supporting post-COVID-19 intervention to eradicate anxiety and other related vulnerabilities globally.

Methods

Search strategy:

As other studies have adopted bibliometric methods to explore the research landscape on Oncology, Ebola, vaccine safety, and Covid 19 pandemic on mental health [20,22–24], this study used Web of Science Core Collection (WoSCC), which greatly facilitate the

acquisition of research information, and with covered wide areas of research to explore COVID-19 and Anxiety related publications for analysis.

To ensure the comprehensiveness of literature published during the year defined, we use Boolean operators' words "AND", "OR", "NOT" to combine keywords in advance search. The document retrieval was restricted to the terms and keywords obtained in Mesh Describer Data 2021(<https://meshb.nlm.nih.gov/>) to search for relevant keywords on Covid 19 and Anxiety on Timespan=2019-2021. Following the terms:

TI=(2019 Novel Coronavirus Disease) or (2019 Novel Coronavirus Infection) or (2019nCoV Disease) OR (2019-nCoV Infection) or (COVID-19 Pandemic) or (COVID-19 Pandemics) or (COVID-19 Virus Disease) or (Covid-19 Virus Infection) or (Covid19) or (COVID19) or (Coronavirus Disease 2019) or (Coronavirus Disease-19) or (SARS Coronavirus 2 Infection) or (SARS-CoV-2 Infection) and (Anxiety) or (Anxiousness) or (Hypervigilance) or (Nervousness) or (Social anxiety) or (anxiety disorder) or (Angst) or (social Phobia) or (Anti-anxiety agents). For documents Indexes in Web of Science Core Collection =Science Citation Index Expanded (SCI-Expanded), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index- Science (CPCI-S), Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH), Emerging Sources Citation Index (ESCI), Current Chemical Reactions (CCR-Expanded), Index Chemicus (IC), within Timespan=2019-2021, with (data set updated: 2021-10-19). Only English publications were included, and other languages such as (Spanish, Turkish, German, France, Italian, Polish, and Portuguese) are excluded.

Finally, 796 documents were identified during 2020 to 2021 and reviewed by three researchers (TYA, MH, and THM) based on the title to ensure consistency, avoid publication bias, and data accuracy included in the data our analysis. Ethical approval was not needed for this study and the data obtained from public databases. All bibliometric analysis including research title, number of citations, the annual trend of citations, journals, and Journal impact factors, year of publication, country of origin, institute, Web of sciences research category, author's, keywords analysis, were directly extracted and saved as Plain Text format for purposes of the final examination. The impact factor (IF) and SCImago Journal Rank (SJR) for 2020.

Data Analysis and Visualization

Data were analyzed using GraphPad Prism 5.0 software. Bibliometric analysis software includes HistCite[25], Bibliometrix, an R package[26], and VOSviewer.Var1.6.6 for constructing and visualizing and bibliometric networks between the documents Characteristics [27].

Results

Characteristics of the study

The search strategy found 796 documents, an average of 9 citations per document. Among the published documents, 540 (67.84) were original research papers, 80 (10.05) were Articles with early access, 30 (3.77) were review articles, and 45 (5.65) were letters (Table 1).

Table 1. Basic Characteristics on the metadata (n=796) after exclusion

Description	Results	Description	Results
Timespan	2020:2021	Meeting abstract	7.91))63
Sources (Journals, Books, etc)	409	Review; early access	3 (0.38)
Documents	796	Article; data paper	3 (0.38)
H_index	39	Document contents	
Sum of times cited	7,478	Keywords Plus (ID) ^a	737
Without self-citations	6,668	Author's Keywords (DE) ^b	1216
Average years from publication	0.303	Authors	
Average citations per document	9.00	Authors	3858
Average citations per year per doc	5.912	Author Appearances	4407
References	18374	Authors of Single-authored_documents	31
Document types, n (%)		Authors of Multi-authored_documents	3827
Article	540 (67.84)	Authors Collaboration	
Review	30 (3.77)	Single-Authored documents	31
Article; early access	80 (10.05)	Documents per Author	0.206
Correction	10 (1.26)	Authors per Document	4.85
Editorial material	22 (2.76)	Co-Authors per Documents	5.54
Letter	45 (5.65)	Collaboration Index (CI) ^c	5

^a: Frequency distribution of keywords associated with the document by WoSCC; ^b: Frequency distribution of the authors' keywords'; ^c: The scientific collaboration on the social process by which two or more researchers work together to produce new scientific knowledge

The top 10 prolific author analysis

The most prolific authors on COVID-19 and Anxiety were identified. Table 2 shows the top 10 authors ranked based on the number of publications (NP), h_index, and Total citations (TC) are reported. The most prolific one is Chen Lei from Shanghai Jiao Tong University, School of Medical, Shanghai, Peoples R China, with five articles, followed by Chen, Yi-Lung from Asia University Taiwan, Dept Healthcare Adm, Taichung, Taiwan with five articles.

Table 2. Top 10 most cited authors on COVID-19 and Anxiety research

SCR	Element	Affiliations	h_index	TC	NP	PY_start
1	Chen Lei	Shanghai Jiao Tong University, Sch Med, Shanghai, Peoples R. China	3	151	5	2020
2	Chen, Yi-Lung	Asia University Taiwan, Dept Healthcare Adm Taichung, Taiwan	2	146	5	2020
3	Mark Shevlin	Evidence-Based Practice Unit, University College London and Anna Freud National Centre for Children and Families, London, UK	3	216	5	2020

4	Xiuping Yang	Ningbo Women a Children's Hospital, Ningbo, Zhejiang, China	4	171	5	2020
5	Zhou Yongjie	Shenzhen Kangning Hosp, Shenzhen, Peoples R China	2	14	5	2020
6	Vincent Israel Opoku Agyapong	University of Alberta, Faculty Med & Dent, Edmonton, AB, Canada	3	88	4	2020
7	Bentall, Richard P.	University of Sheffield, Sheffield, England	3	192	4	2020
8	Seockhoon Chung	University of Ulsan, Dept Psychiat, Asan Medical Ctr, Coll Med, Seoul, South Korea	2	10	4	2020
9	Duo Li	Department of Social Psychology, Nankai University, Tianjin, China	2	31	4	2020
10	Hrabok Marianne	University of Alberta, Faculty Medical & Dental, Dmonton, AB, Canada	3	88	4	2020

SCR : Standard competition ranking; TC: Total citations; NP: Number of publications

Top 10 most cited paper

The top 25 cited papers are presented in Table 3. The citations range was 73 to 736 times based on the WoSCCe and ranged between 77 to 753 times in all other databases. Out of 25 highly cited papers, 21 of them received enough citations to be placed in the top 1% of the academic field of Neuroscience & Behavior based on a highly cited threshold for the field and publication year. Only seven documents are hot cited articles based on the published in the past two years and received enough citations in May/June 2021 to place it in the top 0.1% of papers in the academic field of Neuroscience & Behavior. As shown in table 3, among the 25 articles, the top-cited paper was published by Pappa, S; et al. in "brain behavior and immunity" under the title "Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis" with cited over 700 times.

Table 3. Top 25 most cited paper

R	Authors	Article Title	Source Title	TC*	TC**	Open Access	HC	HP
1	Pappa S., et al.	Prevalence of depression, Anxiety, and Insomnia among Healthcare workers during the COVID-19 pandemic: A Systematic Review and Meta-analysis	Brain behavior and Immunity	736	753	Green Published		
2	Salari N., et al.	Prevalence of stress, anxiety, depression among the General population during the COVID-19 pandemic: A systematic review and meta-analysis	Globalization and health	472	480	Green Published, Gold		
3	Shanafelt T., et al.	Understanding and Addressing Sources of Anxiety Among Health Care Professionals During the COVID-19 Pandemic	JAMA-Journal of the American Medical Association	460	470	Bronze	N	N
4	Roy D., et al.	Study of knowledge, attitude, Anxiety & Perceived Mental Healthcare needs in Indian Population during COVID-19 Pandemic	Asian Journal of Psychiatry	453	468	Green Published		
5	Ozdin S, Ozdin SB.	Levels and Predictors of Anxiety, Depression and Health Anxiety during COVID-19 Pandemic in Turkish Society: The importance of Gender	International Journal of Social Psychiatry	274	284	Hybrid, Green Published		
6	Liu CH., et al.	Factors associated with Depression, Anxiety, and PTSD Symptomatology during the COVID-19 pandemic: Clinical Implications for US Young adult Mental Health	Psychiatry Research	178	185	Green Published, Bronze		N
7	Wu YT., et al.	Perinatal Depressive and Anxiety Symptoms of Pregnant Women during the Coronavirus disease 2019 Outbreak in China	American Journal of Obstetrics and Gynecology	137	143	Hybrid, Green Published		N
8	Elbay RY, et al.	Depression, Anxiety, Stress levels of Physicians and as Sociated factors in Covid-19 pandemics	Psychiatry Research	125	128	Green Published		N
9	Lebel C., et al.	Elevated depression and anxiety symptoms among pregnant individuals during the COVID-19 pandemic	Journal of Affective Disorders	118	119	Green Published		
10	Jungmann SM, Witthoft M.	Health anxiety, Cyberchondria, and Coping in the Current COVID-19 pandemic: Which factors are related to Coronavirus Anxiety?	Journal of Anxiety Disorders	114	116	Green Published		N
11	Solomou I, Constantinidou, F	Prevalence and Predictors of Anxiety and Depression Symptoms during the COVID-19 Pandemic and Compliance with Precautionary Measures: Age and Sex Matter	International Journal of Environmental Research and Public Health	115	115	Green Published, Gold		N
12	Bauerle A., et al.	Increased generalized anxiety, depression, and distress during the COVID-19 Pandemic: A cross-sectional study in Germany	Journal of Public Health	109	112	Green Published, Bronze		
13	Shevlin M., et al.	Anxiety, depression, traumatic stress and COVID-19-related anxiety in the UK general Population during the COVID-19 pandemic	Bipsych Open	108	108	Green Published,		
14	Barzilay R., et al.	Resilience, COVID-19-related Stress, Anxiety and Depression during the pandemic in a large Population Enriched for Healthcare Providers	Translational Psychiatry	103	104	Gold Green Published		N

15	Durankus F, Aksu E.	Effects of the COVID-19 pandemic on Anxiety and Depressive Symptoms in Pregnant Women: A preliminary Study	Journal of maternal-Fetal & Neonatal Medicine	103	103	Bronze		N
16	Luceno-Moreno L., et al.	Symptoms of Posttraumatic Stress, Anxiety, Depression, Levels of Resilience and Burnout in Spanish Health Personnel during the COVID-19 Pandemic	International Journal of Environmental Research and Public Health	95	97	Gold Green Published		N
17	Islam MA., et al.	Depression and Anxiety among University Students during the COVID-19 pandemic in Bangladesh: A web-based Cross-sectional survey	PLoS One	91	91	Gold, Green Published		N
18	Petzold MB., et al.	Risk, Resilience, Psychological Distress, and anxiety at the Beginning of the COVID-19 pandemic in Germany	Brain and Behavior	85	87	Green Published, Gold		N
19	Fullana MA., et al.	Coping Behaviors Associated with Decreased Anxiety and Depressive Symptoms during the COVID-19 pandemic and lockdown	Journal of Affective Disorders	84	86	Green Published	N	N
20	Palgi Y., et al.	The loneliness Pandemic: Loneliness and other Concomitants of Depression, Anxiety and their Comorbidity during the COVID-19 outbreak	Journal of Affective disorders	85	85	Green Published	N	N
21	Savitsky., et al.	Anxiety and Coping Strategies Among Nursing Students during the Covid-19 pandemic	Nurse Education in Practice	79	81	Green Published		N
22	Twenge JM, Joiner TE.	US Census Bureau-assessed Prevalence of Anxiety and Depressive Symptoms in 2019 and during the 2020 COVID-19 Pandemic	Depression and Anxiety	80	80	Bronze, Green Published		N
23	Corbett GA., et al.	Health Anxiety AND Behavioural Changes of Pregnant Women During the COVID-19 Pandemic	European Journal of Obstetrics & Gynecology and Reproductive Biology	80	80	Green Published, Bronze	N	N
24	Hyland P., et al.	Anxiety and depression in the Republic of Ireland During the COVID-19 pandemic	Acta Psychiatrica Scandinavica	79	79	Green Submitted, Bronze		N
25	Cenat JM., et al.	Prevalence of Symptoms of Depression, Anxiety, Insomnia, Post-traumatic stress disorder, and Psychological Distress among Populations Affected by the COVID-19 Pandemic: A Systematic Review and Meta-analysis	Psychiatry Research	73	77	Green Published		

R: Rank based on WoSCC database; *: Times Cited, WoS Core; **: Times Cited, All Databases; Highly cited paper: As of May/June 2021, this highly cited paper received enough citations to be placed in the top 1% of the academic field of Neuroscience & Behavior based on a highly cited threshold for the field and publication year; Hot paper: This hot paper was published in the past two years and received enough citations in May/June 2021 to be placed in the top 0.1% of papers in the academic field of Neuroscience & Behavior; HP: Hot Paper; HC: Highly Cited: N:

Top 10 most cited journals

A total of 409 journals contributed to publishing articles on COVID-19 and Anxiety. The top active journals with h_index, total citations, and their journal impact factors (IF) and research domain were identified. The International Journal of Environmental Research and Public Health was the most prolific publisher and accounted for 26 articles, followed by Frontiers in Psychology and Journal of affective disorders, Perspectives in psychiatric care, and Frontiers in psychiatry with more than ten articles for each journal. Based on the Total Citations Score, we found that Psychiatry Research and Journal of Affective Disorders and International Journal of Environmental Research and Public Health were obtained over 400 citations (Table 4).

Table 4. Top 10 most cited journals on COVID-19 and Anxiety research

SCR	Journals (n=409)	h_index	TC	NP	IF-2020	Research Domain
1	International Journal of Environmental Research and Public Health	11	479	26	3.39	Environmental Sciences & Ecology Public, Environmental & Occupational Health
2	Frontiers in Psychology	4	56	14	3.004	Psychology
3	Journal of Affective Disorders	8	436	14	4.839	Neurosciences & Neurology Psychiatry
4	Perspectives in Psychiatric Care	4	41	12	2.431	Health Care Sciences & Services Medical Informatics General & Internal Medicine
5	Frontiers in Psychiatry	5	91	11	4.157	Psychiatry
6	PIOS One	5	148	9	3.24	Science & Technology - Other Topics
7	Psychiatry Research	6	498	8	3.222	Psychiatry
8	BMC Psychiatry	3	36	6	3.63	Psychiatry
9	Journal of Psychiatric Research	4	83	6	4.791	Psychiatry
10	Journal of Clinical Medicine	2	9	5	4.241	General & Internal Medicine

RCR: Standard Competition Ranking; NP: Number of papers, TC: Total citations, IF: Impact factor (2020).

Top 10 countries contributed countries

Table 5 shows the top 10 countries based on the geographical distribution of publication account in COVID-19 and Anxiety concerning the total publications, an average of citation per year (AAC), single country publications, multiple country publications (MCP) in the field. Turkey is the top country globally contributing to COVID-19 and anxiety research.

Table 5. Top 10 countries contributed to COVID-19 and Anxiety research

R	Country (n=71)	Articles	Freq	SCP	MCP	MCP_Ratio	TC	AAC
1	Turkey	109	0.146	108	1	0.00917	802	7.358
2	USA	97	0.130	84	13	0.13402	1241	12.794
3	China	91	0.122	63	28	0.30769	399	4.385
4	Iran	30	0.040	24	6	0.20000	586	19.533
5	India	29	0.038	27	2	0.06897	525	18.103
6	Italy	28	0.037	23	5	0.17857	94	3.357

7	Spain	26	0.034	12	14	0.53846	299	11.500
8	Canada	25	0.033	15	10	0.40000	373	14.920
9	Poland	25	0.033	16	9	0.36000	129	5.160
10	United Kingdom	22	0.029	12	10	0.45455	899	40.864

R: Standard Competition Ranking; NP: Number of papers; TC: Total Citations; AAC: Average Article Citations; SCP: Single Country Publication (intra-country collaboration); MCP: Multiple Country Publications (inter-country collaboration).

Inter-state relationship

Figure 1 represents the partnership in the number of countries and regions joining Covid 19 and anxiety research globally. The analysis described the cooperation between the two countries with relatively close shows with different line colors. The linked line between two nodes implies collaboration between the two countries, and the width of the line represents the collaboration frequency during the study period.

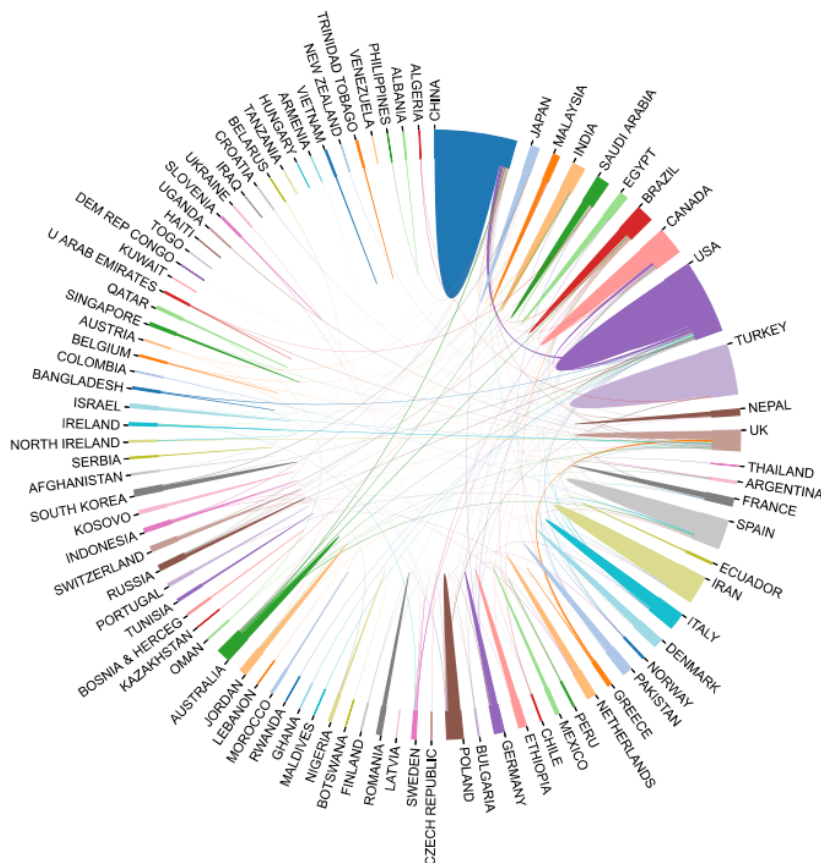


Figure 1. Inter_State relationship between countries on COVID-19 and Anxiety research output

Web of Science category and research area

The top 10 cited documents based on the WoS categories and research areas were discussed in Table 6. During the study period, we found that more than half of the papers were published in Psychiatry (n=230) articles, followed by Public Environmental Occupational Health (n=128) articles and Medicine General Internal (n=83) articles. United States Department of Health Human Services top funding agency reported with 27 articles.

Table 6. Top 10 Web of Science categories on funding organizations Enhanced research on COVID-19 and Anxiety

SCR	WoS Categories (n=62)	NP	(%)	Funding Organizations	NP	(%)
1	Psychiatry	230	28.89	United States Department of Health Human Services	27	3.39
2	Public Environmental Occupational Health	128	16.08	National Institutes of Health (NIH), USA	26	3.26
3	Medicine General Internal	83	10.42	National Natural Science Foundation of China	17	2.13
4	Clinical Neurology	57	7.16	European Commission	14	1.75
5	Psychology Multidisciplinary	56	7.03	Coordenacao de Aperfeicoamento de pessoal de Nivel Superior Capes	6	0.75
6	Environmental Sciences	46	5.77	Ministry of Education Culture Sports Science and Technology Japan MEXT	6	0.75
7	Psychology Clinical	41	5.15	NIH National Institute of Mental Health NIMH	6	0.75
8	Nursing	39	4.89	Alberta Cancer Foundation	5	0.62
9	Neurosciences	31	3.89	Alberta Children's Hospital Foundation	5	0.62
10	Health Care Sciences Services	27	3.392	Calgary Health Trust	5	0.62

R: Standard Competition Ranking; NP: Number of papers

Research keywords and analysis

WorldCloud of Keyword analysis is shown in Figure 2. The size indicates the frequency count of a keyword. From the investigation, the research topics have become more diverse where our study reported that most frequent keywords include “mental-health” (130), “Outbreak” (88), “stress” (83), “depression” (76), “impact” (76), “prevalence” (73), “psychological impact” (62), “symptoms” (61) “health” (59) “disorder” (58), the keyword plus occurrences, shows a dramatic increase in COVID-19 and Anxiety throughout the research output (Figure 2. A). In addition, the analysis of change in the number of Keywords over the years in Covid 19 and Anxiety presented in (figure 2. B).



Figure 2. A. WorldClude of Keyword Analysis

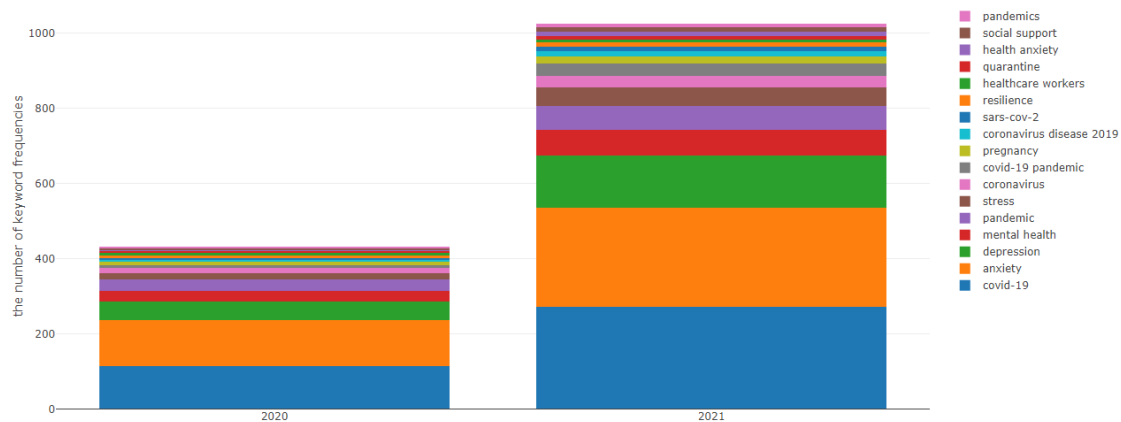


Figure 2. B. Change in the number of Keywords over the years

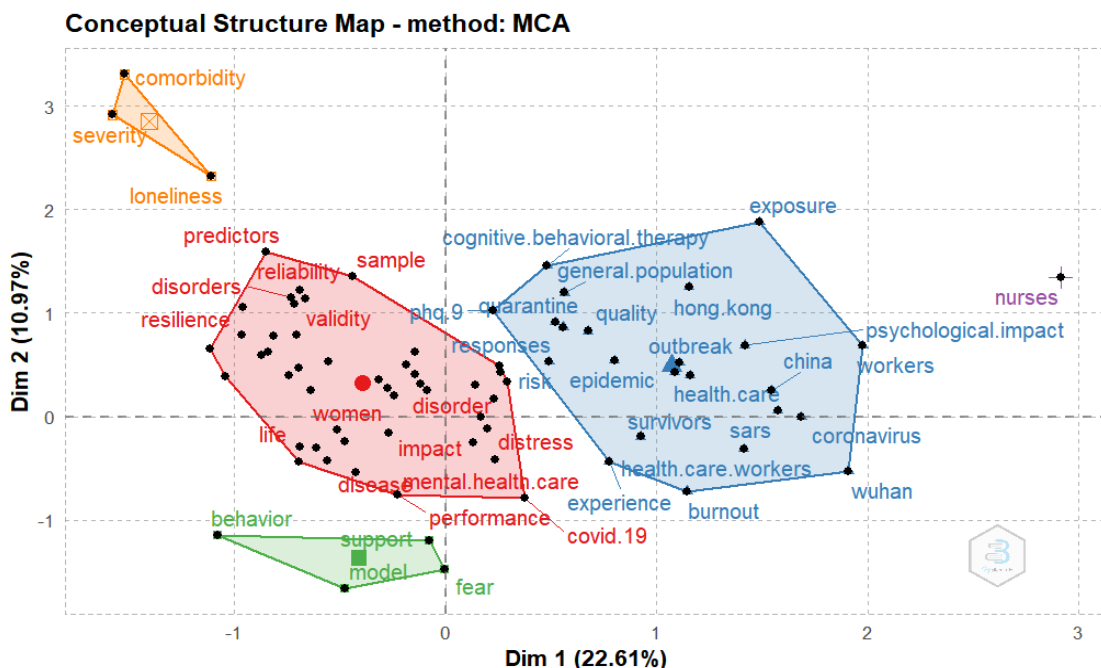


Figure 3. Conceptual structure analysis, using Factorial analysis: Multiple Correspondence Analysis terms according to the factorial analysis of 75 most Keywords plus distributed into five clusters.

Conceptual structure analysis

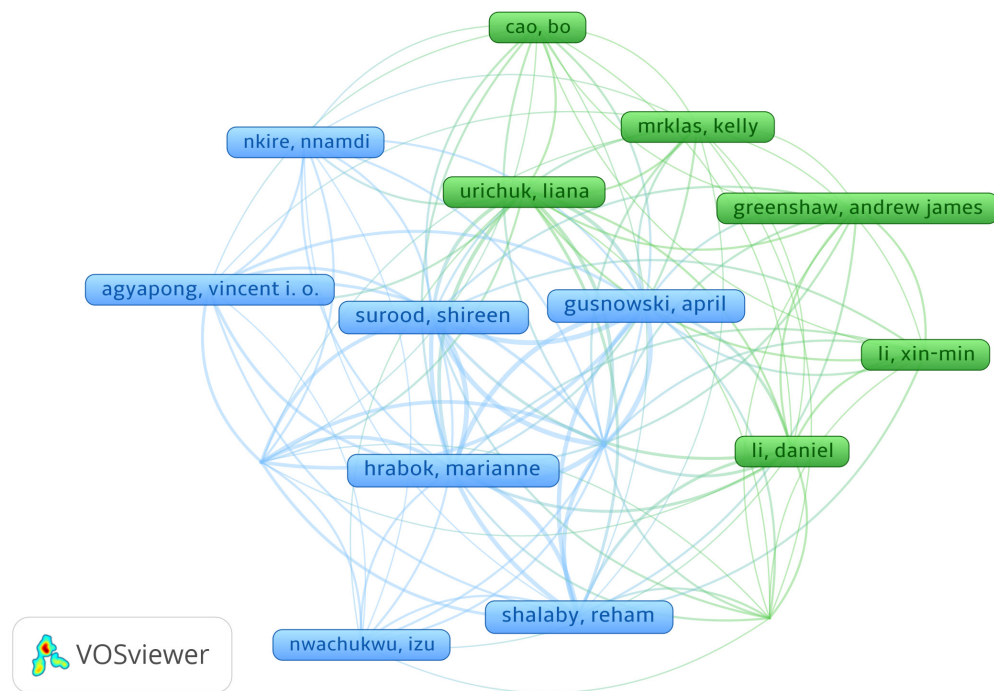
The analyses of 75 Keywords analysis are distributed into five different clusters with different colors (red, blue, violet, green, and Orange) that express common concepts of research on COVID-19 and Anxiety besides the analysis capture article contents with greater depth and variety that provide an essential part of the research topic associated with the COVID-19 and Anxiety (Figure 3).

Network analysis

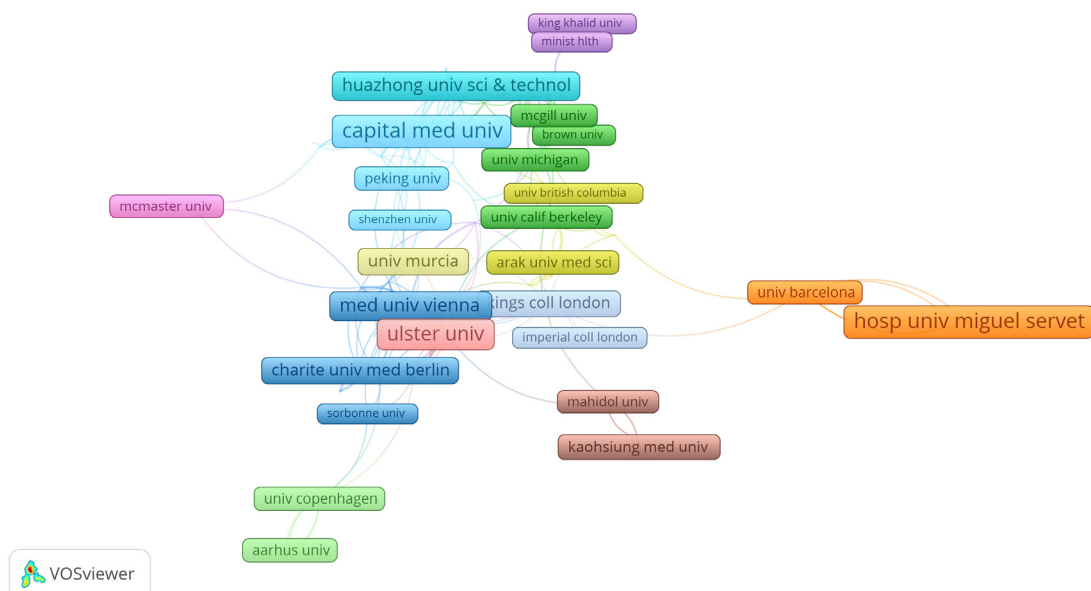
Network visualization maps of research themes of co-authors were conducted with a minimum of 2 documents per author, resulting in 293 authors who met the threshold.

Authors within the same color cluster are co-cited together and are visualized into two groups with links (L=105) and Total Link Strength (TLS=247), among others (Figure 4. a).

The visualization map of countries' research themes contributed in COVID-19 and Anxiety with a minimum of 3 documents per organization, which resulted in 160 countries, and only 12 countries were included in the network analysis and arranged into the 13 clusters with (L=277) and (TLS=382) among reported countries (Figure 4. b).



(Figure 4. a).



(Figure 4. b)

Figure 4. Network visualization map of research themes through mapping of Coauthorship analysis by the unit of author's and organizations based on the Links (L) and total length strength (TLS).

Discussion

This study presents a bibliometric study focusing on research output on COVID-19 related anxiety. The current research examined the global research output on COVID-19 related anxiety to aggregate psychological vulnerabilities and ensued research during the COVID-19 pandemic. The accumulation of recent evidence on anxiety prevalence due to the COVID-19 pandemic may help researchers and global policymakers deal with the post-pandemic effect on the worldwide population. Here, the work highlights the most general keywords, productive authors, top-cited articles, publishing journals, funding agencies, most contributing countries, and association of correlates on factors determining citations of a research article on Anxiety from COVID-19. Based on the study search terms, the result attests to the volume of psychological vulnerability emanating from the current pandemic and the associated aggravators of psychological stress.

The search produced a significant research volume between 2010-2021 with about 796 publications. In combination, about 3858 authors contributed to COVID-19 related anxieties research. However, the most cited publication was a systematic review and meta-analysis focusing on the prevalence of depression, anxiety, and insomnia among healthcare workers. Most of the topmost cited articles concentrate on general healthcare workers, pregnant women, gender determinants of anxiety. This evidence on the volume of publication accentuates the most vulnerable groups to anxiety during the COVID-19 pandemic. Other studies have shown that epidemics and pandemics are likely to adversely affect global mental health [27]. The healthcare practitioners at the front line are essential to combat the virus's spread and take care of sick patients. Similarly, pregnant women experienced more anxiety vulnerability given their unique circumstances.

The authors from Iran, the USA, Canada, China, and Ireland were cited among the top contributing authors based on total citations. Authors from Canada primarily focused on the disorder and prevalence of psychological vulnerabilities along with acute respiratory syndromes. The research volume in these domains collaborates with a bibliometric study of the first eight of COVID-19 research as anxiety was the second top-themed keyword [5] and social science research with mental research [28]. Likewise, the top most-cited journal on COVID-19 and Anxiety was the International Journal of Environmental Research and Public Health, with a cumulation of 479 citations.

The funding agencies and organizations for research centering on COVID-19 and Anxiety were mainly nested in the United States, Canada, United Kingdom, and Asia. The National Institute of Health (NIH) and the United States Departments of Health and Human Services funded significant research on Anxiety and COVID-19. The top contributing country on COVID-19 related Anxiety was Turkey, closely followed by the United States and China represented on the Web of Science. This evidence is similar to the number of global research contributions on COVID-19 [29–33] for China and the United States. It is essential to portray Iran as one of the most contributing countries towards anxiety research during the COVID-19 pandemic.

Given that China and United States have significant country representation contributing to COVID-19 and anxiety research, there was a substantial collaboration among them based on the network model representation. However, the United States has more

cooperation with other countries than China. Also, given the volume of research output emanating from China, the evidence of low collaboration with other countries needs encouragement to foster international cooperation on research.

Comprehensively, the keyword analysis gives a pictorial representation of the most general terms in COVID-19 and anxiety-related publications. Some of the most prevalent keywords were “psychological impact,” “Outbreak,” “Mental-Health,” “Depression,” “Stress,” “Disorder,” “Prevalence,” and “validity.” These pieces of evidence exposed some of the “psychological impacts” that came along with the “outbreak” of the COVID-19 pandemic, most especially among the most vulnerable groups such as the “healthcare workers,” pregnant women, and “adolescents.” More importantly, working long hours, dealing with COVID-19 patients, and other psychological impacts they had to cope with cannot be stressed enough among the health workers. Also, the keyword “acute respiratory syndrome revealed that there is substantial evidence of its association with Anxiety among COVID-19 patients. Despite the enormous prevalence of psychological Impact of COVID-19, researchers were all out to implement validated tools to measure various indices of anxiety associated with COVID-19.

The evidence in the current bibliometric analysis shows the level of anxiety vulnerability that the global population has been exposed to during the COVID-19 pandemic and researchers’ concerted effort to address the growing problem associated with the pandemic. However, since the COVID-19 pandemic is a global incidence, the bulk of the evidence in the current research shows the extent of low research recognition and input from Africa in the form of authorship, collaboration, and funding. Thus, it presents a worrisome policy implication as this evidence portrays Africa left behind in the psychological impact of the COVID-19 pandemic. Specifically, the healthcare workers, pregnant women, and other vulnerable groups in African countries are equally impacted and require extensive investigation to identify their situation’s peculiarity. There is a need to encourage global collaboration among countries to solve the covid-19 anxiety-related problem. These collaborations will open up diversity understanding of the psychological impact of the pandemic. The funding sources were highly restricted within the developed countries. The nonrepresentation of developing countries in research funding further exposes the fragility of scientific contributions emanating from the region, especially sub-Saharan Africa. Therefore, African governments should put a strategy to facilitate fund availability to encourage research in Africa.

Research Limitations

A substantial limitation needs to be considered when interpreting the findings from this bibliometric analysis. The database search was limited to the Web of Science (WoS) of Source Citation Index – Expanded (SCIE) and Social Science Citation Index (SSCI); hence it may not have taken other databases such as Medline, Scopus, Google Scholar, and other foreign databases into consideration. Also, all publications analyzed were publications in English. All interpretations in this current study are based on the bibliometric analysis result; therefore, future research must consider using other databases such as Scopus, PubMed, and Google scholar to follow up on the trend and research productivity on COVID-19 and Anxiety.

The finding of the current bibliometric analysis corresponds very well with findings of a systematic review and meta-analysis that used anxiety and COVID-19 As keywords to search papers indexed by MEDLINE/PubMed, The Cochrane, Embase, Lilacs, Scielo,

Psycoinfo, and Pepsic databases up to April 2020. There were sixteen studies with a total of 25,779 individuals from eight nations. The pooled prevalence of anxiety symptoms was 46% (95% CI 33.9-58.2%). We emphasize that anxiety intervention methods are highly recommended. In addition, the research finding will support policy formulation, health practitioners, and researchers to continue their effort to combat the post-psychological impact of the COVID-19 pandemic.

Conclusion

This study is the first bibliometric analysis focusing on COVID-19 and Anxiety, thus giving a scope analysis in specifics the psychological implication of the pandemic on vulnerable groups-identified. With this, bibliometric investigations provided a robust analysis of research coverage, top contributors and funders, and national representation focusing on COVID-19 and Anxiety research output. Evidence from this study will enable scholars to become more aware of the research hotspots, journals, country of origin, research collaboration, most productive and active authors on COVID-19-anxiety related publications to identify research gaps to be filled in future research.

Declaration of Interest Statement

We wish to confirm that there are no known conflicts of interest associated with this publication. There has been no significant financial support or funding for this work that could have influenced its outcome.

Authors' contributions

MSMH, TYA, THM, HHM, MC.C, and IHM contributed to the study design, and implementation. THM and ATY data and results analysis. MSMH, HHM, IHM, HJ for writing, and editing of the manuscript. The authors have read and approved the manuscript

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أدلة بحثية عالمية على جائحة كوفيد-19 والقلق: تحليل بيبليوغرافي

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المستخلص

الخلفية: أدى تفشي وباء جائحة كورونا العالمي وتأثيره على الصحة العامة والرفاهية النفسية للناس إلى ظهور مشاكل الخوف والقلق والذعر والصحة العقلية. وبالتالي تم إجراء تحليل البيبليوغرافي لجائحة كورونا والمقالات المتعلقة بالقلق من أجل فهم أفضل لحالة البحث الحالي وأفاقه لدعم صانعي السياسات ووكالات التمويل والباحثين وذلك لحماية سكان العالم من التأثير النفسي بعد جائحة كورونا.

المنهج: استخدمنا قاعدة بيانات Web of Science Core Collection للبحث في قواعد البيانات ذات الصلة وذلك في المرحلة المبكرة من تفشي الوباء حتى تاريخه (21 أكتوبر 2021). تم استخدام مصطلحات عنوان الشبكة لاستخراج الكلمات الرئيسية ذات الصلة بقواعد البيانات الطبية: HistCite, R software, and VOSviewer. وتم اعتماد Var1.6.6 كأدوات تحليل البيبليوغرافي.

النتائج: تم استخدام التحليل البيبليوغرافي لفحص 796 من المستندات والوثائق المتعلقة بالقلق لجائحة كورونا على Web of Science Core Collection. وقد تم تسجيل ما يقرب من 7.478 إقتباساً. ومتوسط الاقتباسات لكل مستند هو صفر و39 لي h_index. وقد غطت المنشورات 3858 مؤلفاً و166 مجلة و71 دولة. وقد أظهرت النتائج أن تشين لي من كلية الطب بجامعة شنغهاي جيا وتونغ وشنغهاي بالصين كان المؤلف الأكثر موثوقية وكانت المجلة الدولية لأبحاث البيئة والصحة العامة هي الأكثر نشاطاً. وأظهرت النتائج أن كلاً من تركيا والولايات المتحدة الأمريكية هما أكثر الدول إنتاجية بالنسبة للمنشورات المتعلقة بالقلق لجائحة كورونا.

الخلاصة: اقترحت الدراسة إجراء المزيد من الدراسات لمعالجة القلق بين البلدان النامية. وقد سمح تحليل الشبكة وتصور الكلمات الرئيسية بالتحقق من الأهمية البحثية للبحث الحالي وقدم البحث الحالي نموذجاً للبحث المستقبلي في أبحاث جائحة كورونا والقلق.

مفاتيح الكلمات: كوفيد - 19، القلق، التحليل البيبليوغرافي، تصور الشبكات البيبليوغرافية.

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