Scientific Landscape of Climate Change Impact on Child Health: A Bibliometric Analysis

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A B S T R A C T

Background: Understanding the relationship between climate change and child health is crucial for making informed decisions and implementing successful treatments. However, the extensive scientific literature on climate change and child health has not undergone a general dynamic quantitative examination. This bibliometric analysis was undertaken to study pertinent literature on climate change impact on child health over a 22-year period (2000–2022).

Methods: change's A five-step PRISMA process was used to extract 1864 peer-reviewed journal articles from the Web of Science Core Collection database. The data was analysed using bibliometric software tools, including VOSviewer, CiteSpace, and Biblioshiny.

Results: The annual publication patterns showed a steady increase in the number of articles published on climate change's impact on child health over the past 22 years. The most well-known climate change impact on child health monitoring articles was identified, as were the most active researchers and top-contributing nations in climate change impact on child health research. The most dependable information sources for academic researchers were further determined using the citation analysis of journals. Finally, science mapping analysis was used to visualize and study the conceptual and intellectual knowledge structures to chart the evolution of the research area related to climate change's impact on child health. Science mapping also identified emerging trends and intriguing research directions.

Conclusions: This bibliometric analysis provides a comprehensive overview of the scientific landscape of climate change's impact on child health research. The findings highlight the growing interest in this field of research, as well as the key players and emerging trends. This study's results can inform future research priorities and develop effective interventions to protect children from the harmful effects of climate change.

Keywords: climate change, child health, environment, Bibliometric analysis, Visualisation, Science mapping, Authorship pattern

A R T I C L E   I N F O

INTRODUCTION

One of the most important worldwide challenges of the twenty-first century is climate change[1], which has far-reaching effects on many facets of human existence[2,3]. The scientific community, policymakers, and public health professionals are paying increased attention to the implications of climate change on child health, one of its many varied repercussions.[2,4,5] Understanding the trends and dimensions of how climate change affects children's health is crucial for making well-informed decisions and implementing successful treatments since children are vulnerable to the negative effects of environmental changes.[6-9]

Numerous studies have examined the complex relationships between climate change and children's health over the last few decades.[10-13] This corpus of literature is expanding because there is a pressing need to understand how this field of study is changing and to pinpoint its significant trends, emerging issues, and knowledge gaps.[14] A bibliometric study, a quantitative evaluation of scientific publications, offers a thorough perspective of the research environment and enables scholars, decision-makers, and stakeholders to pinpoint critical areas that require additional research and intervention.

This article gives a bibliometric study in this context with the goal of comprehensively evaluating the trends and patterns in research on the effects of climate change on children's health. We seek to light on the development of research in this important area by utilising cutting-edge bibliometric methodologies, outlining the major contributors, significant publications, theme clusters, and collaborative networks.[15] This analysis takes a retrospective look at earlier research in addition to insights into new directions and potential research areas for the future.[16]

Through this bibliometric investigation, we aim to comprehend better the body of information about climate change and child health, ultimately assisting in developing evidence-based policies and interventions that protect children's well-being in a changing environment.[17–19] This study intends to direct academics, policymakers, and stakeholders towards a more thorough and holistic approach to resolving the difficulties brought on by the nexus of climate change and child health by emphasising information gaps and outlining the most critical research trends.[20,21]

This paper's remaining sections are organised as follows: The methodology for the bibliometric analysis, including methods for data collection and analysis, is summarised in Section 2. The analysis findings are presented in Section 3, which also highlights significant trends, well-known authors, significant journals, and topic clusters. We explore the results' consequences and provide hints about possible future research topics in Section 4. The essay is concluded in Section 5 by summarising the major lessons learned and highlighting the significance of ongoing research in this important field.

Objectives of the Study

The objective of this research study was to adopt a comprehensive review of climate change's impact on child health approaches by carrying out the activities: 1) Detecting patterns in yearly publication trends for a decade and significant research papers; 2) Analysis of how climate change impacts child health literature is distributed geographically; 3) Recognising notable contributors and prestigious journals within the field of climate change impact on child health; 4) Identification of influential documents in the area of climate change's impact on child health; and 5) Emphasising future research focal points, the progression of climate change impact on child health applications, and emerging patterns.

The present study indicates an extensive review of scientific knowledge associated with climate change's impact on child health disseminated through research publications using bibliographic data obtained through the Web of Science. A critical review will give an insight into the implications of climate change's impact on child health across multiple domains and the best practices enacted in this process. The climate change's associated with child health across the decade has been discussed in the subsequent section. The keywords harvested to obtain metadata include climate change's impact on child health. The database obtained is further refined by excluding review articles. Cleaning or pruning of the data is carried out to enrich the focus on identifying key progress in climate change's impact on child health across multiple disciplines.

METHODOLOGY

The PRISM framework is adopted for analysing and evaluating climate change's impact on child health literature with its associated research output, as shown in Figure 1. Quantitative analysis of Climate Change Impact on Child Health related scholarly publications measures the impact, influence, and relationships between scholarly works and authors. Components of the PRISM approach in the context of climate change's impact on child health bibliometric data include the following stages: Publication analysis of climate change impact on child health, research impact of climate change impact on child health, interconnectedness associated with climate change impact on child health, scientific mapping of climate change impact on child health, and metrics evaluation of climate change impact on child health and meta-analysis.

Publication Analysis of climate change's impact on child health: It involves collecting and analysing bibliographic data from reputed sources such as the Web of Science. It helps to track climate change's impact on child health, publication trends, prolific authors, and the distribution of research output across different domains.
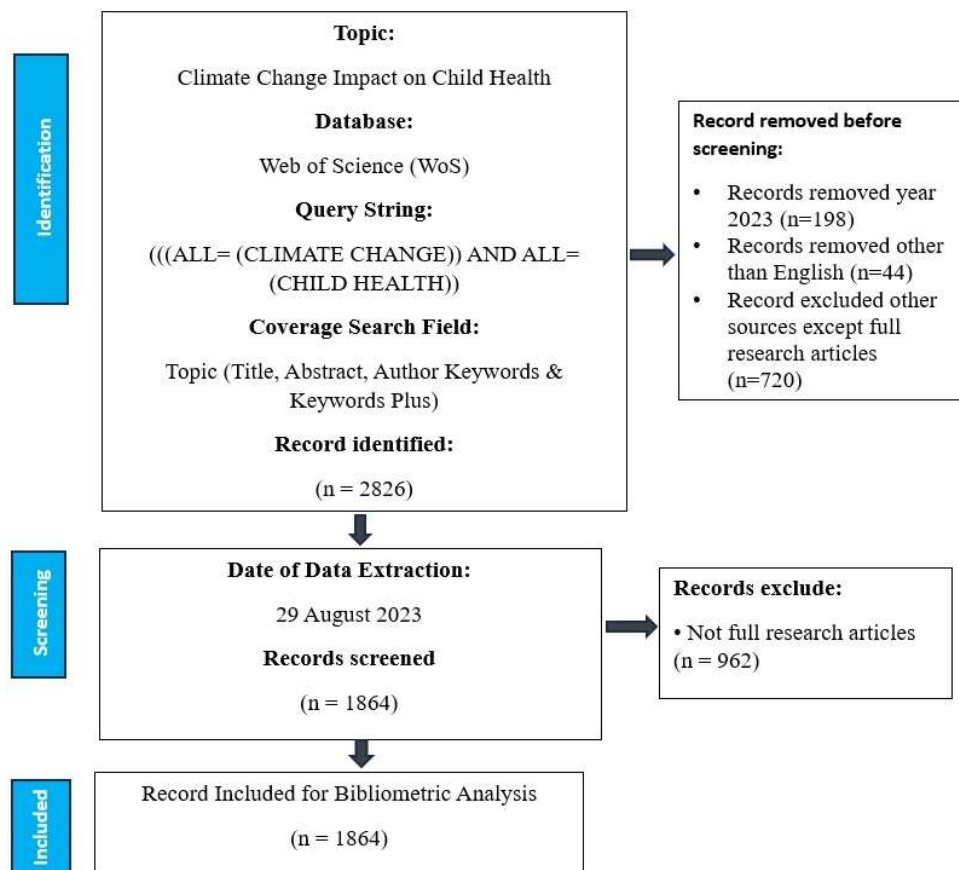
Figure 1: PRISMA Flow diagram

Research Impact of climate change's effects on child health: Evaluation of the impact of scientific results through scholarly works with metrics such as citation counts, h-index, and journal impact factor is focussed. The influence and reach of specific publications and authors associated with climate change's impact on child health by utilising the community is determined here.

Metrics Evaluation of Climate Change's Impact on Child Health and Meta-Analysis: A critical evaluation is carried out to acknowledge the limitations and biases associated with different metrics chosen for climate change's impact on child health, considering factors like self-citations and disciplinary variations across multiple streams.

Utilisation of the LDA model and identification of the optimal K number of topics: A latent Dirichlet Allocation (LDA) approach based on the hierarchical Bayesian model is adopted for our climate change's impact on child health bibliometric study. In principle, LDA involves a series of algorithms specifically crafted to identify and label the subjects based on word patterns and their co-occurrence found within extensive collections of climate change's impact on child health-related text.

Peer-reviewed documents stored in the Web of Science (WoS) database (Clarivate Analytics-Thomson ISI) as of August 18, 2018, were subjected to the systematic searching methodology. The WoS was chosen as the search database engine since it kept track of excellent articles and covered a variety of subjects. ((ALL= (CLIMATE CHANGE)) AND ALL= (CHILD HEALTH)) was the query string utilised in this investigation. The keywords chosen were determined via preliminary screening of the keywords recorded by the WoS database (conducted on August 28, 2023) and decisions based on synonyms of the terms. The topic field code function of the database engine was used to search the query string. The keywords in the title, abstract, author, and keywords produced from the WoS database were identified. To find the pertinent items, this search method used phrase searching ("...."), Boolean operators (AND, OR), and truncation (*) in the query string. Figure 1 displays the PRISMA flow diagram considered for the current study.

RESULTS

Bibliometric analysis: A bibliometric analysis is conducted to understand better the relevance of the selected journal articles on climate change's impact on child health. The bibliometric tools like VOSviewer, CiteSpace, and Biblioshiny are used in this process. These tools make finding connections between academic publications easier, allowing scholars to fully comprehend the underlying networks and patterns in the data. Our study used bibliometric tech-

niques to undertake performance analysis and scientific mapping to achieve desired goals.

Performance Analysis

The core objective of the current research was to identify climate change's impact on child health-related research patterns, thoroughly analyse yearly publication trends for a decade, and identify significant research papers.

Annual Scientific Production: Table 1 displays relevant information from the chosen publications that comprise this study. The data showed that, on average, each paper received 28.18 citations per year, which is an interesting finding. The high level of interest and involvement within the research community demonstrates how much attention academics are paying to the applications of climate change's impact on child health detection in various fields. The relatively high average annual citation rate also reflects the relevance and high quality of current research in this area and the prospective impact of climate change's impact on child health detection in many application domains. The information in the table also reveals a cooperation index of 7.64. This metric evaluates the extent of research collaboration within a certain field. It refers to the typical number of writers per piece in the literature on the convergence of climate change's impact on child health detection in this context. This cooperation score indicates that academics are working in small to medium-sized groups to tackle the complex issues of climate change's impact on child health detection. It could also imply that the subject is multidisciplinary in nature, with researchers coming from various disciplinary backgrounds and specialisations to collaborate on difficult problems.

Annual Publication Trends: The number of yearly articles regarding climate change's impact on child health from 2010 to 2022 is depicted in Table 2. Between 2010 and 2011, the quantity of publications grew gradually. Between 2016 and 2022, it sharply rose at a significantly quicker rate. This development

motivates scientists to continue investigating climate change's impact on child health as a fruitful and well-established study area.

Prolific Authors: Table-2 shows the writers' influence in climate change's impact on child health, its estimation approaches and its application across various fields after considering all of their citations. The productivity indicator Hirsch Index, Maurice G. Kendall's Measure's m-index and Egghe's g-index of the top ten influential writers with their total publication count related to climate change's impact on child health and its total citation count indicate author Bodrud-doza M, has published 15 papers and received 592 citations in the last ten years with the most relevance in terms of publications.

Table 1: Climate change's impact on child health-related principal bibliometric findings

Description	Findings
Main information about data	
Timespan	2000:2022
Sources (Journals, Books, etc.)	750
Documents	1864
Annual Growth Rate %	11.8
Document Average Age	5.1
Average citations per doc	28.18
References	85189
Document contents	
Keywords Plus (ID)	4301
Author's Keywords (DE)	5034
Authors	
Authors	11291
Authors of single-authored docs	162
Authors collaboration	
Single-authored docs	165
Co-Authors per Doc	7.64
International co-authorships %	42.86
Document types	
article	1811
article; book chapter	4
article; data paper	3
article; early access	12
article; proceedings paper	34
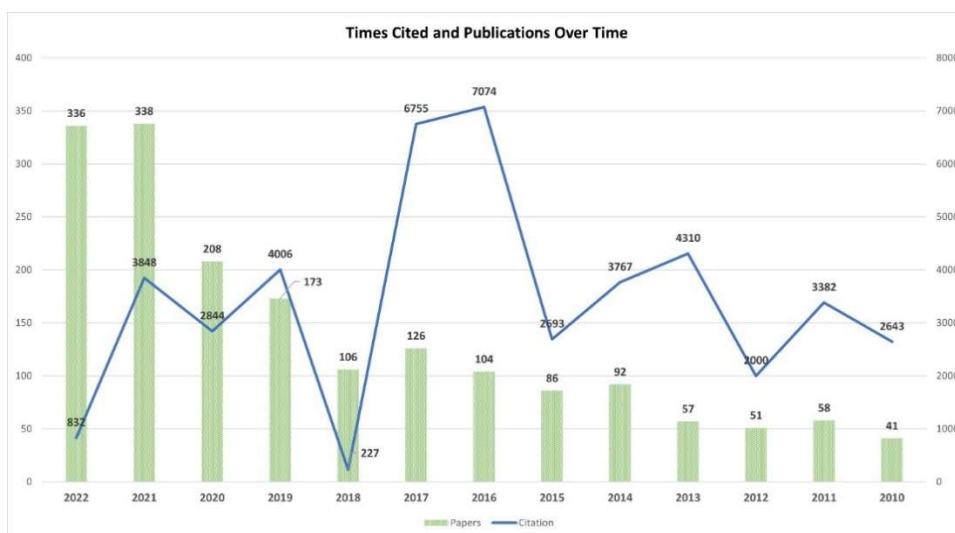
Figure 2: Climate change's impact on child health-related Publication Per Year from 2010 – 2022

Table 2: Top research contributors related to climate change's impact on child health

Authors	NP	TC	h-index	g-index	m-index
Bodrud-doza M	15	592	12	12	1.8
Alam N	13	3,776	11	12	0.833
Huang CR	13	420	9	18	1
Su H	13	574	12	13	1.091
Xu ZW	13	654	12	18	1.273
Liu Y	12	7,252	9	24	1.2
Tong SL	12	546	10	11	0.727
Berrang-ford L	11	735	8	11	0.615
Ebi KL	11	298	7	10	0.353
Bonde JP	10	297	8	9	0.778

NP =Number of Publications, TC= Total Citation

Author Alam N with 13 research findings related to climate change's impact on child health processing among autism-affected infants in the last ten years as 3776 citations with an h-index of 11.

Top contributing journals in climate change's impact on child health: Table 3 depicts the impact of publication titles considering their total citations. The 10 most publication titles are added to their h-index, m-index, g-index, total citations, and number of documents. Environmental Health Perspectives is the journal that has the highest impact factor (10.4) and total number of citations, with 21 papers with 101 Average Citation Per paper (ACP). International Journal of Environmental Research and Public Health is the highest document 89, with 2473 citations. Science of the Total Environment journal has 52 papers with the highest h-index of 23 g-index of 41. PLOS One is a journal with a 1.462 m-index and an impact factor of 2.908.

Most Relevant Affiliations: More frequent affiliations associated with the top 10 researchers working on climate change's impact on child health are shown in Table 4. The University of London, London, England, holds the lead with 120 articles with citations of 14848 and 33 h-index. Following closely, the University of California System in the United States, based in California, claims the second spot with 101 articles. Notably, securing the third position is the London School of Hygiene Tropical Medicine, with 71 articles.

Author Collaboration Analysis: To find the climate change's impact on child health field pioneers and their patterns of cooperation, it is crucial to explore the networks of scientific collaboration between these researchers. Finding prospects for future partnerships with seasoned experts can give them knowledge and funding for young researchers. The VOSViewer software is used to analyse the co-authorship capability of climate change's impact on child health. Each node in Figure 3 represents a different author in the co-authorship network map of the writers. In contrast, the connections connecting them show the relationships of collaboration between scholars, and their thicknesses show the degree of this collaboration they have produced together. While the colour scheme shows the authors' average number of citations per document, the node size variation shows the authors' total number of publications.

Table 3: Journals with climate change's impact on child health -relevant publication

Sources	NP	TC	ACP	h-index	g-index	m-index	Impact Factor
Int. J. Environ. Res. Public Health	89	1148	12.9	18	29	1.286	4.226
Sci. Total Environ.	52	1729	33.25	23	41	1.278	7.289
Sustainability	49	488	9.96	10	20	0.909	3.274
PLOS ONE	46	1298	28.22	19	35	1.462	2.908
Environ. Res.	46	1145	24.89	18	33	0.947	3.645
Environ. Sci. Pollut. Res.	31	403	13.14	10	19	1.25	4.008
Environ. Res. Lett.	25	673	26.92	10	25	1.111	4.587
Global Environ. Change	22	1449	65.86	17	22	1.133	5.615
BMC Public Health	22	467	21.23	12	21	0.706	4.208
Environ. Health Perspect.	21	2121	101	17	21	0.739	10.4

NP =Number of Publications, TC= Total Citation, ACP= Average Citation Per Paper

Table 4: Top Institutions Contributing to climate change's impact on child health-related works

| Affiliations	No. of Publications	Average Publication Per Year	Total Citation	h-index
University of London	120	6.438	14,848	33
University of California System	101	5.418	11,724	30
London School of Hygiene Tropical Medicine	71	3.809	10,946	26
Harvard University	59	3.165	10,690	26
Johns Hopkins University	45	2.414	9,241	20
University of Toronto	43	2.307	8,230	17
University of Queensland	40	2.146	8,888	18
University of Washington	40	2.146	9,573	17
Harvard T H Chan School of Public Health	38	2.039	9,357	19
Universiti Kebangsaan Malaysia	37	1.985	7,710	14
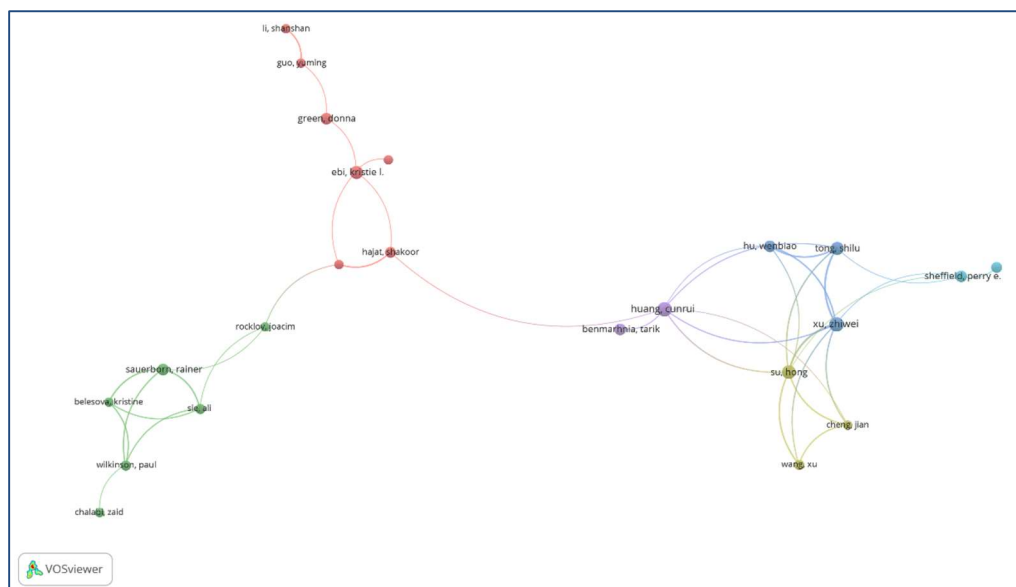
Figure 3: climate change's impact on child health research collaborators

Table 5: Climate Change's Impact on Child Health Most cited articles with citation score

Paper	Total Citations	TC per Year	Normalized TC
Wang H, 2016, Lancet[22]	3574	446.75	52.54
Laxminarayan R, 2013, Lancet Infect Dis [23]	2570	233.64	33.99
Naghavi M, 2017, Lancet[24]	2001	285.86	37.32
Vos T, 2017, Lancet[25]	1534	219.14	28.61
Feigin VL, 2021, Lancet Neurol[26]	773	257.67	63.93
Berrang-Ford L, 2011, Glob Environ Change-Human Policy Dimens[27]	527	40.54	9.04
Mcgeehin MA, 2001, Environ Health Perspect[28]	484	21.04	1.98
Knowlton K, 2009, Environ Health Perspect[29]	482	32.13	6.91
Kraemer Mug, 2019, Nat Microbiol[30]	454	90.80	19.37
Messina JP, 2019, Nat Microbiol[31]	418	83.60	17.84

Table 6: Countries' Scientific Production related to Climate Change's Impact on Child Health

Countries	Number of Publications	Average Publication Per Year	Total Citation	h-index
USA	631	33.85	28,943	70
England	266	14.27	19,203	49
Australia	239	12.82	13,943	43
Peoples R China	228	12.23	13,384	39
Canada	190	10.19	16,407	41
India	113	6.06	11,936	25
Germany	103	5.52	10,933	30
Malaysia	95	5.09	9,692	25
Bangladesh	90	4.82	10,121	30
South Africa	84	4.5	11,599	23

Most-cited articles with citation count: The top 10 publications on how climate change affects children's health are listed in Table 5, along with the number of times they have been mentioned overall, citations per year, and their normalised citation score. The Lancet article "The Global Burden of Disease of Climate Change" by Wang et al. (2016) has received the most citations. It has received 3574 citations. "The Lancet Commission on Investing in Health" by Laxminarayan et al. (2013), which appeared in the Lancet Infect Dis, is the second-most cited article. It has received 2570 citations. "The Global Burden of Disease of Climate Change" by Wang et al. (2016) also has the highest normalised citation score of 52.54. This indicates that it has received more than 50 citations every year since its publication.

Most Scientific production countries: Table 5 demonstrates that, with 631 articles, the United States has the highest rate of scientific production in this area. Additionally, it has the greatest TC (28,943), h-index (70), and APY (33.85). This shows that the United States is a world authority in the study of the effects of climate change on children's health. Second place with 266 publications belongs to England. Although it has a lower TC (19,203) and APY (14.27) than the US, its h-index (49) is higher. With fewer highly referenced articles, this shows that England has a more concentrated research effort in this area. Less than 200 publications are available for each of the remaining nations in the table. With an average h-index of 25, countries like China, Canada, India, Germany, Malaysia, Bangladesh, and South

Africa appear to be conducting moderate research in this area.

Scientific Mapping Analysis

Analysing the authors' chosen keywords in scientific articles allows interested scholars to identify the major study domain topics. Author keywords were examined in the current study based on their frequency, cluster identification, trending patterns, and thematic progression during the 22-year study period.

Co-occurrence Analysis: Co-occurrence analysis is adopted to explore and analyse the frequency and patterns of occurrences related to climate change's impact on child health -related terms from the data extracted from the Web of Science database. It helps us uncover the relationships and associations between climate change's impact on child health and its allied application areas. Co-occurrence analysis is aimed at identifying meaningful connections and patterns that provide future insights.

Keyword co-occurrence: Keyword-based co-occurrence among the research findings is carried out. In all, 7 clusters were found using 8277 relationships among the 646 examined keywords. The most important cluster, cluster 1, is depicted with yellow in Figure 4 [**Fig. Co-occurrence Visualization Network**]. with " climate-change," and "climate change standing out. These phrases are the most frequently used while discussing Climate Change's Impact on Child Health. Cluster 2 (highlighted in green) encompasses five keywords, namely " children," " impact," "risk," and " ambient-temperature". The 17 most significant keywords are displayed in Table 7 and Figure 4, together with the strength of each connection.

Climate Change's Impact on Child Health-related Trend Topic Analysis: Burst words indicate that the topic has attracted much attention in the corresponding year since they demonstrate a rapid rise in keyword frequency. A visual representation of the author's burst keywords is shown in Figure 5. The beginning and end of the line indicate the beginning and end of climate change's impact on child health-related topics publication in the extracted database, while the circle represents the year when the database's highest topics were covered.

Intellectual Analysis: Any research area's intellectual structure is formed by analysing and grouping the co-cited references in the bibliographic data, which highlights the primary subjects and approaches in that research domain. Table 8 shows that the titles of the cited publications were used to text mine the cluster labels, with the quantity of references referenced in each cluster representing the clustering quality; the greater the value, the better the clustering quality. It is important to note that the study paths align with the findings of the analysis of the co-occurrence of keywords and subject evolution.

Figure 6 [Reference Co-citation Network] depicts the —-- nodes and —- linkages in the reference's co-citation network created by CiteSpace. The nodes stand in for the cited references, the links connecting them for co-citation relationships, and the colours of the nodes stand in for the 39 selected cluster labels.

The chronological development of the discovered clusters is depicted in Figure 7 [Temporal evolution of cluster]. Orange, Yellow and light purple are the node colours, and they stand for 2000, 2005, 2010, 2015, 2020 and 2022, respectively, as publication years. The node depths show how frequently articles in certain clusters are cited together. With many more co-citation relationships between the references, this development demonstrates that Clusters 0–5 are more active than the other clusters. Emerging tendencies in Clusters 6–11 need more investigation.

Table 7: Co-Occurrence Keywords Related to Climate Change's Impact on Child Health

| Keywords	Total link strength	Occurrences	Avg. citations	Cluster
climate-change	3347	511	35.2427	1
children	2776	430	21.4605	2
climate change	2604	416	21.7885	1
health	1854	254	32.5866	3
impact	1241	174	20.7701	2
mortality	1186	153	43.3922	4
risk	1038	144	25.3542	2
temperature	1168	142	29.1268	2
exposure	905	129	21.0775	4
air-pollution	907	117	30	4
asthma	830	112	28.4643	4
impacts	764	112	34.6696	3
vulnerability	669	88	29.1932	3
association	677	85	17.3412	4
prevalence	619	83	56.7711	4
adaptation	547	75	25.48	3
ambient-temperature	549	68	16.7353	2
disease	449	66	23.4545	2
epidemiology	472	66	30.2121	2
united-states	518	66	131.7273	2
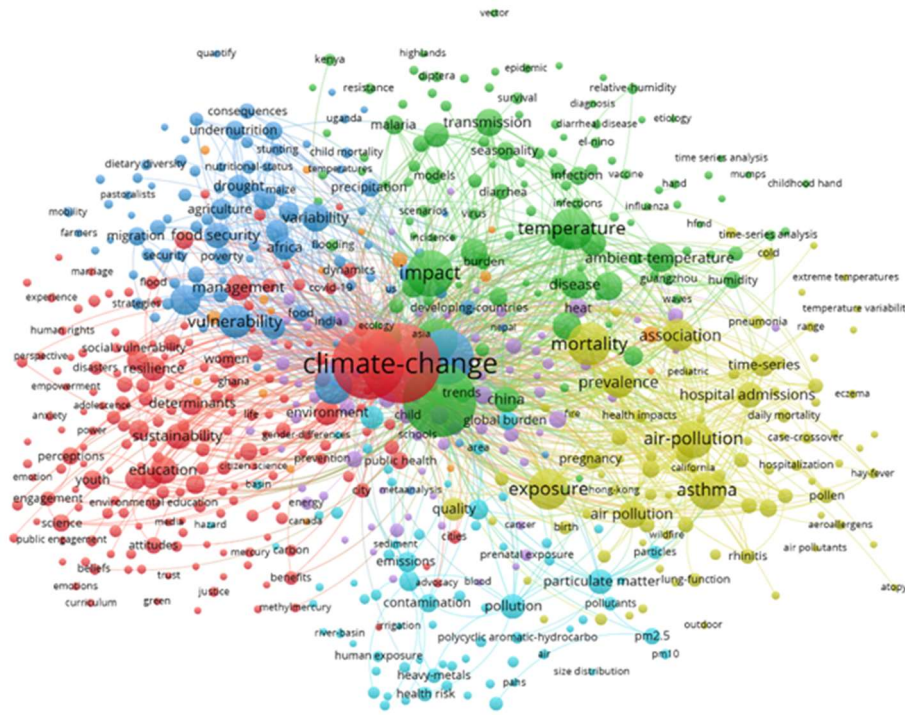
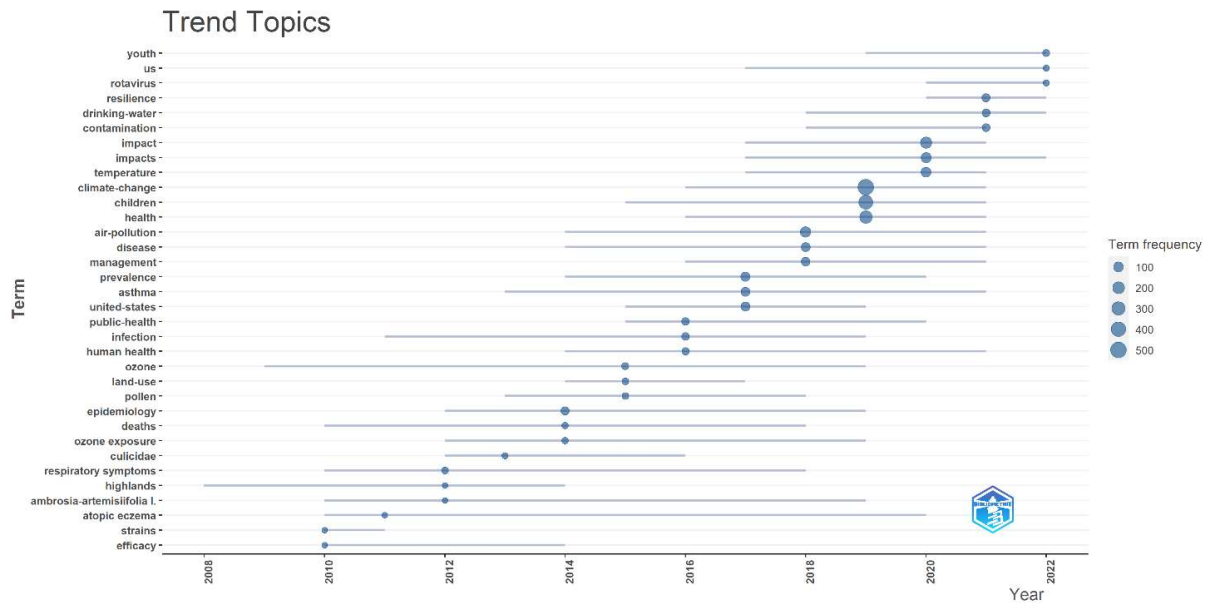**Figure 4: Co-occurrence Visualization Network**

Figure 5: Keyword burst indicator based on Author input

Table 8: Clusters related to climate change's impact on child health based on research domain

| Cluster ID	Cluster Name	Size	Silhouette	Average year	Year Range	Top cited reference
0	Stunting	122	0.872	2015	2010-13	Black RE, 2008, Lancet, V371, P243[32]
1	Advocacy	64	0.849	2018	2011-14	McMichael AJ (2006), Lancet, V367, P859[33]
2	Efficacy	64	0.849	2018	2011-14	Costello A, 2009, Lancet, V373, P1693[34]
3	Youth	84	0.894	2021	2018-22	Masson-Delmotte V (2018) Global Warming 15 C, V0, P0[35]
4	Youth	47	0.96	2019	2013-16	Sheffield PE, 2011, Environ Health Persp, V119, P291[36]
5	Environment	39	0.98	2013	2013-16	Xu ZW, 2012, Environ Res, V117, P120[37]
6	Childhood	35	0.977	2013	2013-14	Knowlton K, 2009, Environ Health Persp, V117, P61[29]
7	Meteorological factor	32	0.988	2014	2014-16	Gasparrini A, 2011, J Stat Softw, V43, P1[38]
8	Malaria	31	1	2010	2015-19	Field CB, 2014, Climate Change 2014: Impacts, V0, P0[39]
9	Electrolyte imbalance	26	0.997	2007	2015-17	Gray C, 2012, World Dev, V40, P134[40]
10	Verbal autopsy	22	1	2019	2017-22	Cohen AJ (2017), Lancet, V389, P1907[24]
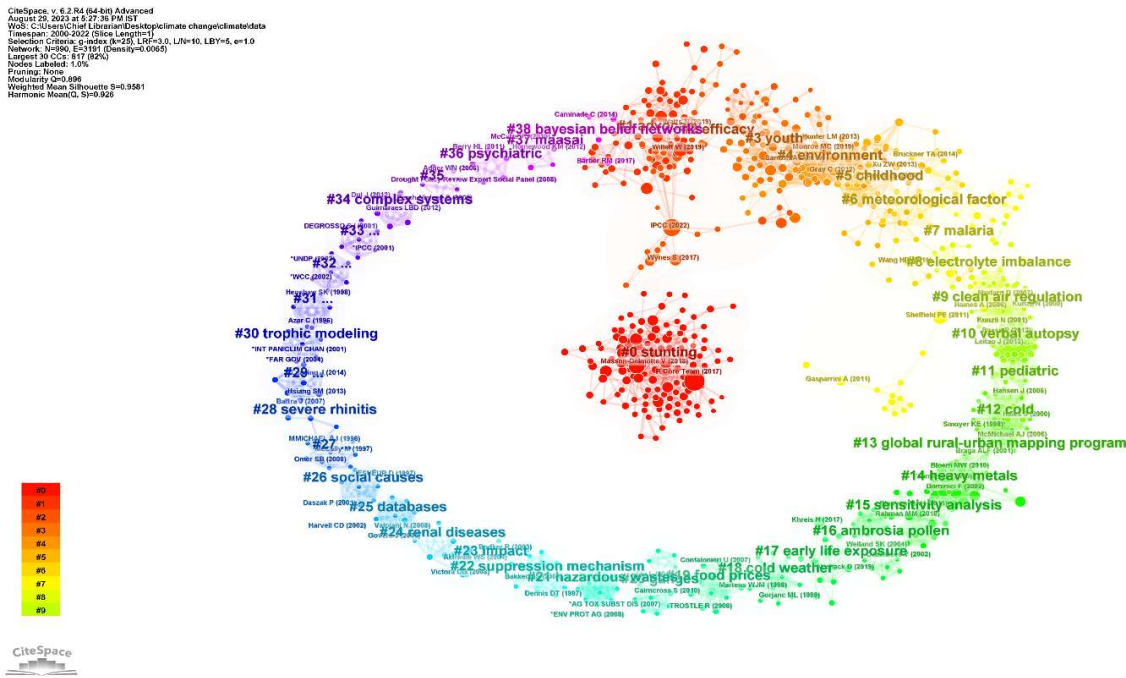
Figure-6: Reference Co-citation Network
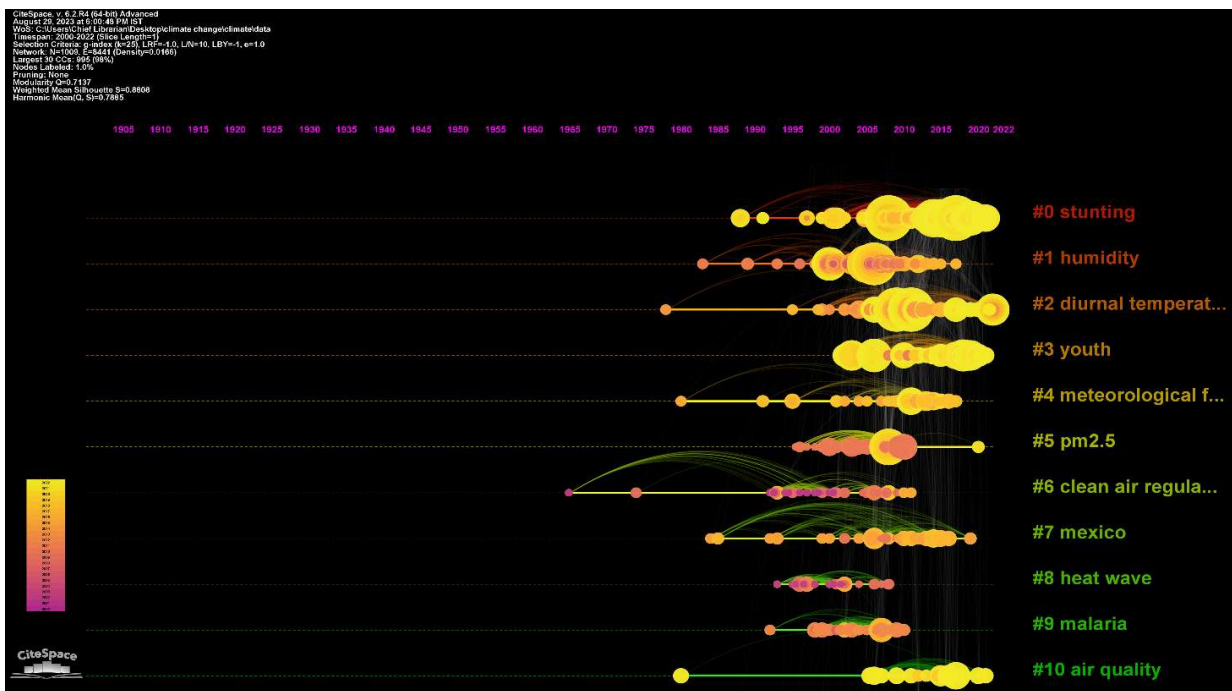
Figure 7: Temporal evolution of cluster

Citation burst analysis is carried out to determine active research areas. This burst means that a publication has received exceptional attention from the research community, embodied in a surge of citations. In addition, many nodes with high citation bursts indicate that this cluster/research area /topic /issue is an active or emerging research trend. Table 8 [Top 10 References with the Strongest Citation Bursts] shows the Top 10 References with the Strongest Citation Bursts, the beginning and end of the citation burst period, the citation burst duration, and the clusters associated with each reference.

DISCUSSION

The bibliometric analysis summarises the current body of knowledge regarding how climate change affects children's health. It demonstrates that there is an expanding amount of research on this subject and that this research is being carried out in a number of different nations worldwide.

The data also reveals that the United States is the top-producing nation in terms of this field's scientific output. This is probably because of a number of things, such as the size and power of the US research

community, the accessibility of money for this kind of research, and the country's intense interest in this problem.

The bibliometric analysis also identifies some of the significant areas of this field's research. These include how the following are impacted by climate change on children's health: 1) Malnutrition; 2) Water-borne illnesses; 3) Parasitic illnesses; 4) Respiratory conditions; and 5) Mental health catastrophes

The analysis also demonstrates the need for additional study on how climate change is affecting children's health in low- and middle-income nations. These nations are more severely impacted by climate change and have less money to deal with its consequences.

Some of the main conclusions from the bibliometric analysis are as follows:

There may be a growing interest in this subject as evidenced by the rise in publications on the effects of climate change on children's health in recent years. In terms of this field's scientific output, the United States is the top-producing nation. The top 10 articles on this subject with the most citations were all released within the last ten years. In studies on this subject, "climate change," "children," "impact," and "risk" are the most often used keywords. Seven keyword clusters are widely employed in this field of study.

Overall, the bibliometric analysis offers an insightful summary of the current body of knowledge about the effects of climate change on children's health. It demonstrates that this is a significant and developing area of research and that more study is required to grasp the issue and create efficient solutions fully.

The bibliometric analysis has some limitations. There are only a few studies on which the analysis is based. The analysis does not take the calibre of the studies into account. The study does not consider the impact of the studies on policy and practice. Despite these drawbacks, the bibliometric analysis offers a valuable place to start when determining the current state of research on how climate change affects children's health. It can pinpoint research gaps and determine the priorities for the following studies.

Further observations regarding the bibliometric analysis: This bibliometric analysis point to a rising understanding of the grave threat that climate change represents to children's health. The analysis also indicates the need for additional study on this subject, particularly in low- and middle-income nations. The results can inform policy makers and other stakeholders of the bibliometric analysis about the importance of taking action to combat climate change and safeguard children's health.

CONCLUSION

This study delves quantitatively into the burgeoning field of climate change's impact on child health research between 2000 and 2022. The findings illuminate a surge in research activity, with nearly 79.26% of articles published since 2015, highlighting the field's increasing prominence and promise. The comprehensive bibliometric analysis employed in this research provides valuable insights beyond traditional, subjective literature reviews. By examining co-authorship, citation patterns, co-occurrence, and co-citation relationships, this study unveils yearly publication trends, influential articles, geographical distribution of research, prominent authors and journals, and key areas of concentrated research activity. Additionally, this analysis uncovers the evolving themes within the field, pinpointing behavior tracking across diverse contexts as a crucial area demanding further investigation.

Though valuable, this study acknowledges certain limitations. The analysis relies solely on data extracted from the Web of Science Core Collection, potentially overlooking relevant research from other databases. Furthermore, the bibliometric analysis focuses on abstracts, keywords, and titles, leaving room for deeper understanding through a more thorough content analysis. Addressing these limitations in future research holds the potential to further enrich our understanding of this vital field and its impact on the health of children.

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