

# A Bibliometric Study of Community Resilience Research in G20 Countries

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## ABSTRACT

The present bibliometric study examines the publication outputs on community resilience among G20 countries as cited in the Scopus database over the last 10 years, 2013-2022. Research in community resilience among G20 countries and other allied areas was analyzed in terms of their year wise growth, authorship pattern, collaborations, relative research effort, citation impact, document type preference, most productive authors and most popular journals. Beside this, the study tried to rank top ten prolific authors and popular journals according to their Citations per Publication. The study revealed that from 2013 to 2022 the publication outputs on community resilience among G20 countries showed consistent growth and resulted in 3570 publications. Initially, in 2013, only 143 publications were published and in 2022 it had increased to 661 publications. The USA is the leader in Community Resilience Research with 1351 publications but their CPP and impact are not so higher compare to the average. The degree of collaboration displayed its strength in multi-authored collaborative publications. Articles are the most preferred type of document. 81.46% of publications remain cited and only 18.54% of publications remain uncited till now. A total of 52146 citations have been received by 3570 publications and CPP is 14.61. In terms of *p*-index, the top three countries are USA, UK and Australia. Being the world's leading economies, the G20 countries can take leadership in future research on community resilience. This work can provide valuable insights into research trends and help identify key themes and topics in the field.

**Keywords:** Bibliometrics, Community Resilience, Research, G20 Countries.

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## INTRODUCTION

Community resilience is the ability of a community to respond and recover from adverse events, such as natural disasters, economic downturns, or social conflicts. Boshier and Chmutina (2017) defined Community resilience as “the sustained ability of a community to use available resources like energy, communication, transportation, food etc. to respond to, withstand and recover from adverse situations like economic collapse, global catastrophic risks, etc., Resilience is not just about bouncing back to the way things were before, but also about adapting and improving in the face of adversity. Community resilience has been portrayed as both a process and an outcome in disaster literature. The process approach to community resilience consists of four key components: anticipating threats, reducing vulnerability to hazard events and responding to and recovering from hazard events when they occur (Colten *et al.*, 2008). Building community

resilience requires collaboration between community members, government agencies and other stakeholders. It involves investing in infrastructure, education and training to prepare for potential hazards, as well as developing strategies for responding to and recovering from disasters.

Research on community resilience is critical because by identifying the factors that contribute to resilience, researchers can help communities build the capacity to withstand and recover from a wide range of challenges and emergencies. A lot of research is carried out on related and sub-areas of community resilience. Measuring these research outcomes is hence important.

The G20 (Group of Twenty) is an international forum of the world's major economies. It consists of 19 individual countries plus the European Union (EU). Individual countries are: Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russian Federation (RUS), Saudi Arabia (SAU), South Africa (SAF), South Korea (SKOR), Turkey, United Kingdom of Great Britain and Northern Ireland (UK) and United States of America (USA). The G20 countries collectively account for over 80% of global GDP, making it a crucial forum for economic policy discussions (Hutt and Conley,



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2022). The G20 Summit is held annually with a rotating presidency and in 2023, India will hold the presidency. Without a permanent secretariat the group is supported by the troika, previous, current and future holders of the presidency. In 2023, they are Indonesia, India and Brazil. 'Vasudhaiva Kutumbakam', which translates to "One Earth, One Family, One Future," is the theme of India's G20 presidency. It highlights the importance and interdependence of all life-human, animal, plant and microorganism on Earth and across the universe (Overview of G20, *n.d.*). By promoting international cooperation and dialogue among the world's leading economies against key global challenges, the G20 can help build a more prosperous, secure and sustainable world for all.

Pritchard (1969) defined bibliometrics as "the application of mathematics and statistical methods to books and other media of communication. The bibliometric and scientometric analysis have been increasingly used to evaluate the research performance of researchers and the developments in various disciplines of sciences for many years. This study tries to check the status of the publication output of research on Community Resilience among G20 countries.

## LITERATURE REVIEW

Research on community resilience can cover a broad range of topics. Norris *et al.* (2008) argued that community resilience allows a community to adapt and grow after disaster strikes. Sharifi (2016) argued that resilient communities can minimize any disaster, making the return to normal life as effortless as possible.

Using the Web of Science database, Rana (2020) presented a bibliometric analysis based on three categories, disaster resilience, climate change resilience and disaster and climate change resilience. The study revealed a rapidly growing trend in both climate change and disaster resilience. Comparatively publications on climate change were higher than publications on disaster resilience.

Yang *et al.* (2021) in their bibliometric analysis of community resilience revealed that there are three stages in community resilience research. Seven intellectual bases namely social capital mechanism, substance abuse, the evolution of resilience knowledge, earthquake resistance and disaster mitigation, resilient development in rural communities, resilience-building in the least-developed countries and emergency preparedness constitute the research background for community resilience.

E Zuraidi *et al.*'s bibliometric analysis revealed that since 2000, the growth rate of literature in community resilience and spatial planning has increased gradually year by year, most of them in English. Much of the research was in the field of social sciences and environmental sciences. The USA is the leading publishing country.

A visualization of the past decade of research on the resilient city made by Yang *et al.* (2021a) revealed that the current research focused on four aspects: psychological resilience at the micro-community and group levels, assessment of urban disaster resilience, multiple theoretical frameworks of urban resilience and urban resilience promotion strategy.

Pascariu *et al.* (2022) in their literature review and bibliometric analysis highlighted the necessity of a framework and integrated perspective on resilience in sustainable territorial planning and development.

Yang (2022) used the visualization analysis method of the "CiteSpace document" to focus on rural resilience from the ecosystem perspective, to sort out the hotspots of rural resilience construction research and to study and judge future development tendencies. Overall, these studies suggest that research on community resilience has grown rapidly in recent years, with a focus on topics such as disaster management, social capital, rural and urban resilience. A few analytical studies have also been conducted on this topic. But the publication outputs on community resilience among G20 countries have not yet been assessed. This bibliometric analysis seeks to fill this research gap and provide valuable insights into research trends in the literature by examining the research outputs over the last ten years.

## OBJECTIVES

The present study discloses the community resilience research publication productivity of the G20 countries for the period of 2013 to 2022. The objectives of the study are to:

- Assess the publications produced by G20 countries,
- Determine the authorship pattern and its measures,
- Measure the relative research effort through Activity Index,
- Reveal the citation profile and their impacts,
- Reveal the document type preference,
- Finding out the top ten prolific authors and journals and
- Rank top ten prolific authors and popular journals according to their Citations per Publication.

## METHODOLOGY AND SCOPE

The present study focuses on the publication productivity of the G20 countries. These countries were selected because they are the world's major economies. So, it can be assumed that the selected countries are more mature than other countries in terms of funds, infrastructure and research activities.

For this purpose, the Elsevier multidisciplinary database, Scopus (*n.d.*) was consulted. The name of the G20 country was searched individually using "TITLE-ABS-KEY" as the search criteria and "community resilience" as the search term. In the

case of the European Union (EU), all member countries except countries calculated individually searched together using the above-mentioned search criteria. Each result is then refined using the following strategies:

LANGUAGE: English

PUBLICATION YEAR: PUBYEAR>2002 AND PUBYEAR<2023

The search query resulted in 3936 publications and these were exported individually in CSV format. Only 366 publications were found from 2003 to 2012. Most countries have no publication during this period. So, only 3570 publications that were published between 2013 and 2022 were taken into consideration for this study. Information relating to title, authors, affiliations, document type and the number of citations for each publication are exported to MS-Excel and then bibliometric tools such as Compound Annual Growth Rate (CAGR), Degree of Collaboration (DC), Collaborative Co-efficient (CC), Activity Index (AI), Citation per Paper (CPP), Relative Citation Impact (RCI) and p-index have been employed.

## ANALYSIS

The bibliographic information of the records that were collected and recorded has been analyzed and discussed in the subsequent sections.

## Year-wise research output and growth

Table 1 shows the year wise distribution of publications from 2013 to 2022 and the CAGR between the beginning and the end year of the study. The CAGR has been calculated with the formula suggested by Elango (2020):

$$CAGR = \left[ \left( \frac{End\ Value}{Beginning\ Value} \right)^{\frac{1}{n-1}} \right] - 1$$

Where  $n$  is the number of years in the dataset.

Table 1 shows that the G20 countries published 3570 publications during this period with 18.54 percent CAGR. The Highest number of publications was published in 2022 with 661 publications and the lowest number of publications was published in 2013 with 143 publications. The USA topped with 1351 or 37.84% publications, followed by the UK with 365 or 10.22% publications. Argentina published the lowest number of publications with 7 or 0.20% of publications. India ranked 11 with 68 or 1.90% of publications. USA, UK, Australia, European Union and Canada altogether published 2597 publications among 3570 publications. It is revealed that 72.75% of publications are covered by these top 5 countries. Additionally, it can be found from the above dataset that consistent growth was seen in the research publications

**Table 1: Year-wise research output and growth.**

Country	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	%	CAGR
Argentina		1		2			1	1	1	1	7	0.20	0.00
Australia	18	28	25	51	33	42	31	53	30	38	349	9.78	8.66
Brazil	3	3	2	2	2	4	9	5	4	10	44	1.23	14.31
Canada	12	12	12	20	14	14	15	26	30	36	191	5.35	12.98
China		1	6	8	8	16	15	33	33	49	169	4.73	62.66
EU	10	7	14	27	35	31	47	41	50	79	341	9.55	25.82
France	2	1	1	7	7	6	8	4	16	8	60	1.68	16.65
Germany	2	3	7	3	6	7	12	9	17	16	82	2.30	25.99
India	1		1	4	8	5	5	8	15	21	68	1.90	40.25
Indonesia	1	1	4	2	5	14	12	21	40	28	128	3.59	44.81
Italy	4	8	9	11	14	13	21	23	20	24	147	4.12	22.03
Japan	3	5	8	15	12	10	7	9	15	19	103	2.89	22.76
Mexico			3	1	3	2	3	3	4	3	22	0.62	0.00
Russia	1		1		1	1	1	1	1	1	8	0.22	0.00
SAU	1		3		1		1	2		2	10	0.28	8.01
SAF	4		2	4	1	3	8	11	13	18	64	1.79	18.19
SKOR		1	3	7	4	7		9	5	8	44	1.23	29.68
Turkey			1	2	1	1	2	2	5	3	17	0.48	16.99
UK	20	17	24	29	30	48	51	36	46	64	365	10.22	13.80
USA	61	64	79	100	119	165	145	182	203	233	1351	37.84	16.06
Total	143	152	205	295	304	389	394	479	548	661	3570		18.54

in most of the countries among G20 countries. The maximum research growth occurred in China with 62.66 percent CAGR, followed by Indonesia with 44.81 percent CAGR. Argentina, Mexico and Russia show no growth rate between the beginning year and the end year.

**Authorship pattern and measures**

Table 2 shows the authorship pattern, degree of collaboration and collaboration co-efficient. To determine the extent of collaboration in quantitative terms the Degree of Collaboration (DC) was calculated as suggested by Subramanyam (1983). According to him  $DC = N_m / (N_m + N_s)$ , where,  $N_m$  is the number of Multi authored publications and is the number of Single authored publications. Ajiferuke (1988) has used Collaborative Co-efficient (CC) to assess the strength of collaboration.<sup>[17]</sup> CC is a number between 0 and 1, the more it is bigger than 0.5 the better the collaboration rate among authors. The mathematical formula of CC is given below.

$$CC = 1 - \left[ \frac{\sum_{j=1}^{j=k} \binom{1}{j} F_j}{N} \right]$$

Where,  $F_j$  the number of j authored research publications,  $N$ =the total number of research publications and  $k$ =the greatest number of author per publications.

Table 2 shows that most of the publications during the study period are multi-authored. The Degree of Collaboration is very high in case of all countries. In the case of 12 countries, it is above 0.9. The lowest degree of collaboration was found in case of the UK and that is even above 0.8 (0.81). Most of the articles are written in the collaboration of more than 5 authors. The average CC also ascertains this decision. The highest CC was recorded in France at 0.73 and the lowest CC was recorded in Australia and UK at 0.57.

**Activity Index**

Table 3 depicts the Activity Index (AI) of the country to measure their relative research effort. AI can be calculated by using the

**Table 2: Authorship pattern and measures.**

Country	Number of Authors						Total Multi	Total Pubs.	DC	CC
	One	Two	Three	Four	Five	More Than Five				
Argentina	0	2	1	3	0	1	7	7	1.00	0.68
Australia	56	70	90	63	3	67	293	349	0.84	0.57
Brazil	1	6	8	11	6	12	43	44	0.98	0.71
Canada	16	38	41	35	16	45	175	191	0.92	0.64
China	9	16	29	56	22	37	160	169	0.95	0.70
EU	44	59	73	71	37	57	297	341	0.87	0.61
France	1	8	9	9	6	27	59	60	0.98	0.73
Germany	11	11	10	12	9	29	71	82	0.87	0.64
India	11	15	10	12	4	16	57	68	0.84	0.58
Indonesia	10	18	33	20	23	24	118	128	0.92	0.66
Italy	8	26	36	29	13	35	139	147	0.95	0.67
Japan	10	22	21	10	13	27	93	103	0.90	0.63
Mexico	1	4	4	4	4	5	21	22	0.95	0.68
Russia	1	0	2	3	0	2	7	8	0.88	0.66
SAU	0	0	6	0	3	1	10	10	1.00	0.72
SAF	5	10	19	9	6	15	59	64	0.92	0.65
SKOR	2	12	12	7	6	5	42	44	0.95	0.64
Turkey	2	2	3	0	1	9	15	17	0.88	0.66
UK	69	66	67	53	31	79	296	365	0.81	0.57
USA	196	327	261	182	133	252	1155	1351	0.85	0.59
Total	453	712	735	589	336	745	3117	3570	0.87	0.61

**Table 3: Activity index of G20 countries during 2013-2022.**

Country	2013-2017		2018-2022		Total	Changes in AI during 2013-2022
	Publications	AI	Publications	AI		
Argentina	3	139.22	4	82.56	7	-56.66
Australia	155	144.27	194	80.31	349	-63.96
Brazil	12	88.59	32	105.07	44	16.48
Canada	70	119.05	121	91.53	191	-27.52
China	23	44.21	146	124.81	169	80.60
EU	93	88.59	248	105.07	341	16.48
France	18	97.45	42	101.13	60	3.68
Germany	21	83.19	61	107.48	82	24.29
India	14	66.88	54	114.73	68	47.85
Indonesia	13	32.99	115	129.80	128	96.81
Italy	46	101.65	101	99.27	147	-2.39
Japan	43	135.61	60	84.16	103	-51.45
Mexico	7	103.36	15	98.51	22	-4.85
Russia	3	121.82	5	90.30	8	-31.52
SAU	5	162.42	5	72.24	10	-90.18
SAF	11	55.83	53	119.64	64	63.81
SKOR	15	110.74	29	95.22	44	-15.52
Turkey	4	76.43	13	110.48	17	34.05
UK	120	106.80	245	96.98	365	-9.82
USA	423	101.71	928	99.24	1351	-2.47
Total	1099		2471		3570	

formula,  $AI = \{(N_{ij}/N_{io}) / (N_{oj}/N_{oo})\} * 100$ , where  $N_{ij}$  is the total number of publications of a country in a particular block,  $N_{io}$  is the total number of publications of a country in all blocks,  $N_{oj}$  is the total number of publications of all countries in a particular block and  $N_{oo}$  is the total number of publications of all countries in all blocks (Kumar and Garg, 2005). Here the study period has been divided into two equal blocks five years each. An  $AI > 100$  reflects the relative research effort higher than the average effort.

In the first block 11 countries show higher than average effort while in the second block, 9 countries show higher than average effort. The contributions of Indonesia (96.81) increased rapidly in the second block and the contributions of Saudi Arabia (-90.18) reduced significantly in the second block.

### Citation Profile

Table 4 shows the number of citations received by the individual country. It was found that 81.46% (2908) publications remain cited and only 18.54% (662) publications remain uncited. The highest percentage of citations was recorded by Argentina (100%) and the lowest percentage was recorded by Indonesia (63.28%). Most of the publications received citations between 2 and 5. 145 publications received 50 to 99 citations and 66 publications received more than 100 citations.

### Country wise publication output and their impact

Table 5 reports the citation impact and performance of the publications of G20 countries. Total publications have been denoted as TP and total citations as TC. CPP is computed as the average number of citations per publication (Li and Ho, 2008). On the other hand, RCI measures both the influence as well as visibility of research activity, irrespective of the level of evaluation either country or institute, or author. It is computed by dividing a country's share of total citations by a country's share of total publications.  $RCI > 1$  indicates that the country's citation rate is higher than the average citation rate and also implies a high impact of research in that country (Bhardwaj, 2017). The mock h-index or the composite performance index (*p-index*) was introduced by Prathap and Gupta (2009) and can be computed as follows:

$$p\text{-index} = \left(\frac{C^2}{P}\right)^{1/3}$$

Where,  $C$  is the number of total citations received by a country and  $P$  is the total publications of a country.

A total of 52146 citations have been received by 3570 publications and CPP is 14.61. The publications of the USA received the highest number of citations with 20517 citations and the publications of



**Table 4: Citation Profile of G20 countries.**

Country	Number of citations								Total Publications	Total cited papers	% of Cited papers
	0	1	2-5	6-10	11-20	21-50	51-100	>100			
Argentina	0	1	1	2	2	1	0	0	7	7	100.00
Australia	52	40	71	47	60	50	22	7	349	297	85.10
Brazil	7	8	8	9	7	4	0	1	44	37	84.09
Canada	29	22	33	28	41	24	10	4	191	162	84.82
China	36	15	36	25	24	29	3	1	169	133	78.70
EU	55	35	87	55	47	44	16	2	341	286	83.87
France	10	4	14	9	7	9	6	1	60	50	83.33
Germany	11	9	14	14	15	13	4	2	82	71	86.59
India	21	11	14	5	6	10	0	1	68	47	69.12
Indonesia	47	21	28	12	12	7	1	0	128	81	63.28
Italy	28	8	35	16	26	27	3	4	147	119	80.95
Japan	16	11	20	18	15	17	3	3	103	87	84.47
Mexico	6	2	5	2	4	3	0	0	22	16	72.73
Russia	1	1	4	1	1	0	0	0	8	7	87.50
SAU	2	0	0	2	0	4	2	0	10	8	80.00
SAF	14	13	18	3	9	6	1	0	64	50	78.13
SKOR	7	8	7	10	8	3	0	1	44	37	84.09
Turkey	1	1	5	1	5	4	0	0	17	16	94.12
UK	54	33	81	41	51	72	23	10	365	311	85.21
USA	265	124	338	167	217	160	51	29	1351	1086	80.38
Total	662 (18.54%)	367	819	467	557	487	145	66	3570	2908	81.46

**Table 5: Publication output and their impact among G20 countries.**

Country	TP	TC	CPP	RCI	p-index
Argentina	7	125	17.86	1.22	13.07
Australia	349	6068	17.39	1.19	47.25
Brazil	44	486	11.05	0.76	17.51
Canada	191	3617	18.94	1.30	40.92
China	169	1985	11.75	0.80	28.57
EU	341	2720	7.98	0.55	27.89
France	60	1114	18.57	1.27	27.45
Germany	82	1359	16.57	1.13	28.24
India	68	648	9.53	0.65	18.35
Indonesia	128	649	5.07	0.35	14.87
Italy	147	2323	15.80	1.08	33.23
Japan	103	1741	16.90	1.16	30.87
Mexico	22	220	10.00	0.68	13.01
Russia	8	30	3.75	0.26	4.83
SAU	10	276	27.60	1.89	19.68
SAF	64	469	7.33	0.50	15.09

Country	TP	TC	CPP	RCI	<i>p</i> -index
SKOR	44	436	9.91	0.68	16.29
Turkey	17	242	14.24	0.97	15.10
UK	365	7121	19.51	1.34	51.79
USA	1351	20517	15.19	1.04	67.79
Total	3570	52146	14.61	1.00	91.33

Table 6: Document types.

Country	Total Publications	Types of document						
		Article	Book/Book Chapter	Conference Paper	Editorial	Note	Review	Other
Argentina	7	7	0	0	0	0	0	0
Australia	349	256	46	17	3	3	21	3
Brazil	44	36	3	2	1	0	2	0
Canada	191	152	18	7	3	2	8	1
China	169	140	4	17	1	0	6	1
EU	341	252	32	33	3	1	18	2
France	60	43	6	5	2	0	2	2
Germany	82	59	8	5	1	0	8	1
India	68	44	13	7	0	0	3	1
Indonesia	128	63	7	54	0	1	3	0
Italy	147	104	12	24	0	0	7	0
Japan	103	79	10	10	0	0	4	0
Mexico	22	12	6	1	0	0	3	0
Russia	8	6	0	2	0	0	0	0
SAU	10	9	0	0	0	0	1	0
SAF	64	55	4	1	1	1	1	1
SKOR	44	39	0	1	0	0	3	1
Turkey	17	14	1	1	0	0	1	0
UK	365	265	37	26	3	4	25	5
USA	1351	930	155	164	17	10	72	3
Total	3570	2565	362	377	35	22	188	21
%		71.85	10.14	10.56	0.98	0.62	5.27	0.59

Russia received the lowest number of citations with 30 citations. Saudi Arabia recorded maximum a CPP of 27.60 and the highest impact of 1.89 while Russia recorded the least CPP of 3.75 and the lowest impact of 0.26. The USA published almost 38% of publications among G20 countries but their CPP and impact are not so higher compare to the average. Regarding RCI, the top three countries are Saudi Arabia (1.89), the UK (1.34) and Canada (1.30). On the other hand, regarding the *p*-index the top three countries are the USA (67.79), the UK (51.79) and Australia (47.25). India's rank is 16 with reverence to RCI and 12 regarding the *p*-index.

### Document types

Table 6 shows the types of documents among all publications. There are 10 types of documents found among all publications. Book and book chapters are calculated as a single type and 3 types of documents namely Letter, Retracted and Short Surveys are combined into other types. It was recorded that most of the publications are articles (71.85% or 2565), followed by Conference papers (10.56% or 377) and Book/ Book chapters (10.14% or 36).

### Most Prolific Authors

Table 7 shows the top ten prolific authors along with their present affiliation and *h*-index as available from Scopus. The Table 7 also reflects the CPP and *p*-index of the individual author.

**Table 7: Top 10 prolific authors.**

Full name	Affiliation	h index from Scopus	TP	TC	CPP	Rank
Cimellaro, Gian Paolo	Politecnico di Torino, Italy, EU.	34	30	400	13.33	7
Ellingwood, Bruce R.	Colorado State University, USA.	59	19	392	20.63	4
Van de Lindt, John W.	Colorado State University, USA.	42	19	173	9.11	10
Wang, Naiyu	College of Civil Engineering and Architecture Zhejiang University, Hangzhou, China.	16	19	278	14.63	6
Chandra, Anita	RAND Corporation, USA.	22	15	382	25.47	3
Lam, Nina Siu Ngan	Louisiana State University, Destin, USA.	34	13	263	20.23	5
Mahmoud, Hussam M.	Colorado State University, USA.	3	12	148	12.33	8
Cutter, Susan C.	University of South Carolina, Columbia, USA.	56	11	1057	96.09	1
Kammouh, Omar	Faculteit Techniek, Bestuur en Management, TU Delft, Netherlands, EU.	10	11	123	11.18	9
Wells, Kenneth Brooks	RAND Corporation, USA.	88	11	356	32.36	2

**Table 8: Most popular journals.**

Name of the Journal	Publisher	CiteScore-2021	TP	TC	CPP	Rank
International Journal of Disaster Risk Reduction.	Elsevier	6.1	120	1952	16.27	4
Sustainability	Multidisciplinary Digital Publishing Institute (MDPI), Switzerland.	5.0	70	549	7.84	9
International Journal of Environmental Research and Public Health.	MDPI, Switzerland.	4.5	60	561	9.35	8
Natural Hazards.	Springer Nature.	4.9	47	1218	25.91	1
Natural Hazards Review.	ASCE	4.0	27	662	24.52	2
Ecology and Society.	The Resilience Alliance.	8.0	22	525	23.86	3
International Journal of Disaster Risk Science.	Springer Nature	5.9	19	189	9.95	7
PLoS ONE.	Public Library of Science.	5.6	18	249	13.83	5
Australian Journal of Emergency Management.	Australian Institute for Disaster Resilience.	0.7	17	78	4.59	10
Disaster Medicine and Public Health Preparedness.	Cambridge University Press.	3.8	17	200	11.76	6

It appears from the Table 7 that Cimellaro, Gian Paolo from Italy is the top ranked author with 30 publications and his h-index is 34. Among the top 10 most productive authors, Cutter, Susan C of USA received the most citations (1057) with compare to others; his h-index is 56. The h-index of Wells, Kenneth Brooks (88) from the USA is the highest among the top 10 most productive authors. While the rank of the top 10 productive authors made calculated their CPP, it changed a lot compare to the original rank. In terms of CPP, Cutter, Susan C from the USA is top ranked, followed by Wells, Kenneth Brooks from the USA and Chandra, Anita from the USA. Among top 10 most productive authors, 7 are from the

USA, 1 from China, 1 is from Italy and 1 is from Netherlands which is included in European Union.

### Most popular journals

The 10 most popular journals used for publishing research results, their CiteScore-2021 and CPP are shown in Table 8. A modified rank of the top 10 popular journals was also made based on the CPP. It is revealed that the 'International Journal of Disaster Risk Reduction' published by Elsevier is the most popular journal to publish research on community resilience; its CiteScore-2021 is 6.1. The journal also received the most citations among the 10



most popular journals. The second position is occupied by the 'Sustainability' published by MDPI, Switzerland in terms of popularity and 'Natural Hazards' published by Springer Nature in terms of citations received. CiteScore-2021 is highest for 'Ecology and Society' published by The Resilience Alliance, followed by 'International Journal of Disaster Risk Reduction' published by Elsevier. While the calculation of CPP was made, the rank changed a lot. In terms of CPP the 1<sup>st</sup> position is occupied by 'Natural Hazards' published by Springer Nature, followed by 'Natural Hazards Review' published by ASCE and 'Ecology and Society' published by The Resilience Alliance. The rank of 'International Journal of Disaster Risk Reduction' became 4<sup>th</sup> in terms of CPP.

## CONCLUSION

From 2013 to 2022 the publication outputs on community resilience among G20 countries showed consistent growth and resulted in 3570 publications. Initially, in 2013, only 143 publications were published and in 2022 it had increased to 661 publications. 72.75% of publications are published by the top 5 countries. The USA is the leader in Community Resilience Research with 1351 publications but their CPP and impact are not so higher compare to the average. The degree of collaboration displayed its strength in multi-authored collaborative publications. Articles are the most preferred type of document. 81.46% of publications remain cited and only 18.54% of publications remain uncited till now. A total of 52146 citations have been received by 3570 publications and CPP is 14.61. In terms of *p-index*, the top three countries are USA, UK and Australia.

The COVID-19 pandemic has highlighted the need for community resilience, which refers to the ability of a community to withstand and recover from stressors and disruptions. The pandemic has had a significant impact on the physical and mental health of individuals and communities. COVID-19 has also had a major impact on the economy, with many businesses and individuals facing financial hardship. Community resilience is important not only in the aftermath of a crisis such as COVID-19 but also in preparing for and responding to future challenges and disruptions such as climate change, globalization, emerging risks like cyber security, etc. Building community resilience can help communities anticipate and respond to these challenges and risks minimize their impact and recover more quickly.

Being the world's leading economies, the G20 countries can take leadership in future research on community resilience. This

work can provide valuable insights into research trends and help identify key themes and topics in the field.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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