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Global and LMIC insights into Acceptance and Commitment Therapy (ACT): A bibliometric study from 1998 to 2023

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ABSTRACT

This bibliometric study examined the current state, publication trends, key authors and counties, inter-country collaboration, and research themes of the Acceptance and Commitment Therapy (ACT) publications produced globally and in low-to-middle-income countries (LMIC) from 1998 to 2023. 1458 ACT publications, with 287 (19.68%) publications from LMIC, were extracted from the Scopus database and analyzed using biblioMagika, OpenRefine, VOSviewer, and Biblioshiny. The global publications received 41,357 citations over 25 years, while the LMIC publications received approximately 4% (n = 1,713) of the total citations since its first publication in 2010. Most ACT publications were written in English (92.80%) and focused on the fields of psychology and medicine. Publication output rose over time, yet citation trends varied globally and in LMIC. Michael Twohig was the most prolific author with 71 publications, whereas Steven Hayes was the most highly cited author with 6,115 total citations. The US, UK, Iran, and China were the most productive contributors in the global and LMIC contexts, accounting for 51.9% (n = 757) and 76.3% (n = 219) of total publications, respectively. Additionally, the US was the central hub of international scholarly collaboration while limited inter-country collaboration existed in some parts of Asia and Europe. Co-word and factorial analyses identified thematic clusters, knowledge evolution, and potential research opportunities for ACT scholars.

1. Introduction

Acceptance and Commitment Therapy (ACT) is a psychological intervention categorized within the third wave of psychotherapy, bridging principles from the first (i.e., behavior) and second waves (i.e., behavior, emotive, and cognitive) (Hayes, 2004). It aims to foster psychological flexibility guided by six core processes: being present, acceptance, defusion, self-as-context, values, and committed action (Luoma et al., 2017). ACT offers empirical support for diverse mental health and physical health domains (Brown et al., 2015; Byrne et al., 2021; Dindo et al., 2017; Gloster et al., 2020; Moyer et al., 2018).

While numerous studies have explored ACT's applications, there is a gap in research monitoring the development and evolution of its literature. Bibliometric analysis offers a quantitative lens for summarizing, deciphering, and mapping extensive literature, thus facilitating the identification of prior contributions, knowledge gaps, and future research ideas (Donthu et al., 2021; Othman et al., 2022). It leverages advanced statistical methods to allow for an in-depth examination of performance, productivity, and previously unquantifiable concepts like collaboration, author behavior, and clustering (Ellegaard, 2018). Despite these advantages and applications in other fields, bibliometric analysis remains relatively novel in ACT publications.

Most ACT publications originate from high-income countries, leaving a dearth of evidence from low-and-middle-income counties (LMIC). This paper addresses this gap by conducting a bibliometric analysis to systematically map the ACT literature, specifically focusing on LMIC publications. Aside from offering a descriptive analysis of the development of ACT publications, this study seeks to uncover underlying thematic clusters, evolution, and knowledge gaps within global and LMIC literature.

This bibliometric study aims to address the following research questions (RQs).

RQ1. What is the current impact of ACT publications globally and in

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LMIC?

RQ2. What publication trends can be identified in ACT publications globally and in LMIC?

RQ3. Which key players – authors and countries – have significantly contributed to ACT publications globally and in LMIC?

RQ4. What is the nature of inter-country collaboration in ACT publications?

RQ5. What underlying research themes support the evolution and growth of the ACT publications?

2. Literature review of bibliometric analysis

2.1. Bibliometric analysis and techniques

Bibliometric analysis has been used to quantitatively examine publication metadata to identify patterns and relationships in research (Othman et al., 2022). The beginning of this methodology can be traced to the 1950s (Wallin, 2005); however, it has only recently gained comprehensive application beyond the field of library and information science (Donthu et al., 2021; Ellegaard, 2018). This includes informing policy decisions, research funding allocation, library acquisition decisions, and scholarly activity evaluation (Pesta et al., 2018). As such, the bibliometric methodology has been applied in different fields, including psychology, medicine, neuroscience, finance, computer science, engineering, education, and tourism (Denche-Zamorano et al., 2022; Florido-Benítez, 2022; Gavinolla et al., 2022; Lawal et al., 2022; Nawaz et al., 2022; Othman et al., 2022; Tuyon et al., 2022; Xiao et al., 2022). The upward trend is supported by data acquisition and analysis tools like VOSviewer, Bibliometrix, Gephi, and CiteSpace as well as scientific databases like Scopus and Web of Science (WoS). These tools have made bibliometric studies more accessible in recent years, increasing scholarly interest (Donthu et al., 2021).

Two main techniques to conduct bibliometric analysis are performance analysis and science mapping (Donthu et al., 2021). Performance analysis describes the contributions of research constituents, such as articles, authors, countries, affiliations, and journals of a domain (Donthu et al., 2021). The most reported information includes publication year, subject area, language, document type, total publications, total citations, and the research constituents' *h*- and *g*-indexes. Meanwhile, science mapping investigates the relationships between the research constituents or concepts (Baker et al., 2020; Donthu et al., 2021). Various science mapping techniques exist, with citation, co-authorship, and co-word analyses being employed in this study. Citation analysis quantifies the impact of publications and journals by measuring the number of citations they received, thereby identifying the most influential works in a field (Donthu et al., 2021; Kim & So, 2022). Co-authorship analysis examines researchers' formal collaboration and affiliations in a research field (Cisneros et al., 2018; Ranjbar-Sahraei & Negenborn, 2017). This analysis helps to identify established and trending research networks alongside the evolution of intellectual development and provides insights for new research (Donthu et al., 2021). Co-word analysis is based on the premise that frequently co-occurring words are likely to share a thematic relationship. It also examines aspects like author keywords, article titles, abstracts, and full texts to predict future trajectories of the research field (Donthu et al., 2021).

Bibliometric analysis differs from other review alternatives in several key areas. While both bibliometric analysis and meta-analysis leverage quantitative techniques for large datasets, these techniques pivot on different research focuses where the latter synthesizes empirical evidence to weigh and compare variable relationships within homogenous studies (Donthu et al., 2021; Snyder, 2019). Meta-analysis also requires studies with comparable research designs, statistical measures, and methodological approaches (DerSimonian & Laird, 1986). Conversely, bibliometric analysis utilizes advanced tools to offer a broader view. This is achieved by examining the bibliometric metadata of the entire research domain to reveal its intellectual structure and emerging trends. Contrary to bibliometric analysis, systematic literature review involves manually collecting and synthesizing a small dataset that answers specific research questions (Palmatier et al., 2018; Snyder, 2019). Despite following a rigorous approach (Moher et al., 2009), the qualitative methods employed in its interpretation may introduce bias (MacCoun, 1998). Such issue is addressed in bibliometric analysis by incorporating both quantitative and qualitative (e.g., thematic analysis) techniques, thus providing a more comprehensive overview and mitigating bias inherent in purely qualitative methods.

2.2. Previous studies on ACT publications

Rostami and colleagues (2022) published a narrative review on technology-based ACT intervention for smoking cessation by analyzing 17 articles published between 2010 and 2021 from the MEDLINE, Embase, Scopus, PsycINFO, and WoS databases. Furthermore, Ma et al. (2021) conducted a bibliometric analysis of 1,389 randomized controlled trials (RCTs) investigating mindfulness and acceptance-based interventions published in PubMed between 2000 and 2019. Besides ACT, this article included other mindfulness and acceptance-based interventions, including dialectical behavior therapy, mindfulness-based stress reduction, and mindfulness-based cognitive therapy. More recently, Li et al. (2022) performed a bibliometric analysis of ACT involving 799 articles published before 2022, which were retrieved from the WoS Core Collection database.

This bibliometric study distinguishes itself from prior studies across several aspects. First, the data collection period was extended from 1988 to November 9, 2023 and included 1,458 publications, surpassing the scope of previous studies. Second, it focuses exclusively on ACT and the wider range of ACT interventions beyond smoking cessation compared to the narrative review by Rostami and colleagues (2022) and the bibliometric study by Ma et al. (2021), which examined different mindfulness and acceptance-based modalities. Third, it expands the scope of the bibliometric study published by Li et al. (2022) by examining ACT publications across all disciplines rather than focusing solely on the fields of medicine and psychology. Fourth, this study presents a more comprehensive view of the ACT field by employing a different data source (i.e., Scopus) instead of the PubMed and WoS databases used in previous bibliometric studies. Finally, this study compared bibliometric data from global publications and those affiliated with LMIC, a novel approach not undertaken by previous bibliometric studies within the field.

3. Methods

The metadata used in this study was retrieved from the Scopus database on November 9, 2023. It contained information such as subject area, document type, source type, language, country, author's affiliation, citation data, and keywords. Scopus was selected as the data source for this bibliometric analysis due to its broad range of peer-reviewed literature, including documents that WoS did not cover (Visser et al., 2021).

3.1. Search strategy

The search included all ACT publications with article titles containing the keyword "acceptance and commitment therapy." We included publications available in all languages from 1998 to November 9, 2023, which yielded 1,477 publications. The dataset's titles, abstracts, and keywords were examined. In cases of ambiguity, the entire text was read. This resulted in the exclusion of errata (17), retracted (1), and duplicated (1) documents. Subsequently, 1,458 publications were downloaded for analysis.

The search results were further refined by limiting the scope to publications from LMIC as defined by the World Bank (2023). Manual screening was done to ensure that only publications with first authors primarily affiliated with institutions located in LMIC were included. This process excluded 1,171 records, resulting in 287 LMIC-affiliated publications. This process is illustrated in Fig. 1.

3.2. Tool and data analysis

The included studies were analyzed using Microsoft Excel 2023, biblioMagika (Ahmi, 2024), OpenRefine, VOSviewer (Van Eck & Waltman, 2010), and Biblioshiny (Aria & Cuccurullo, 2017). Microsoft Excel was used in the initial data organization. BiblioMagika transformed the Scopus metadata into various metrics and facilitated author, affiliation, and country data cleaning. OpenRefine was later employed to further clean and harmonize the author names, affiliations, and author keywords (Ahmi, 2023). The data cleaning and harmonization process was followed by network analysis visualization using VOSviewer and Biblioshiny. VOSviewer, a graphic interface, was used to create and visualize the maps for co-authorship and co-word analyses. Additionally, it facilitated the exploration of research themes and topics evolution within the ACT publications. Finally, Biblioshiny, a shiny app of the Bibliometrix R package, contributed to factorial analysis using author keywords. More details on data cleaning and harmonization are provided in the supplementary material.

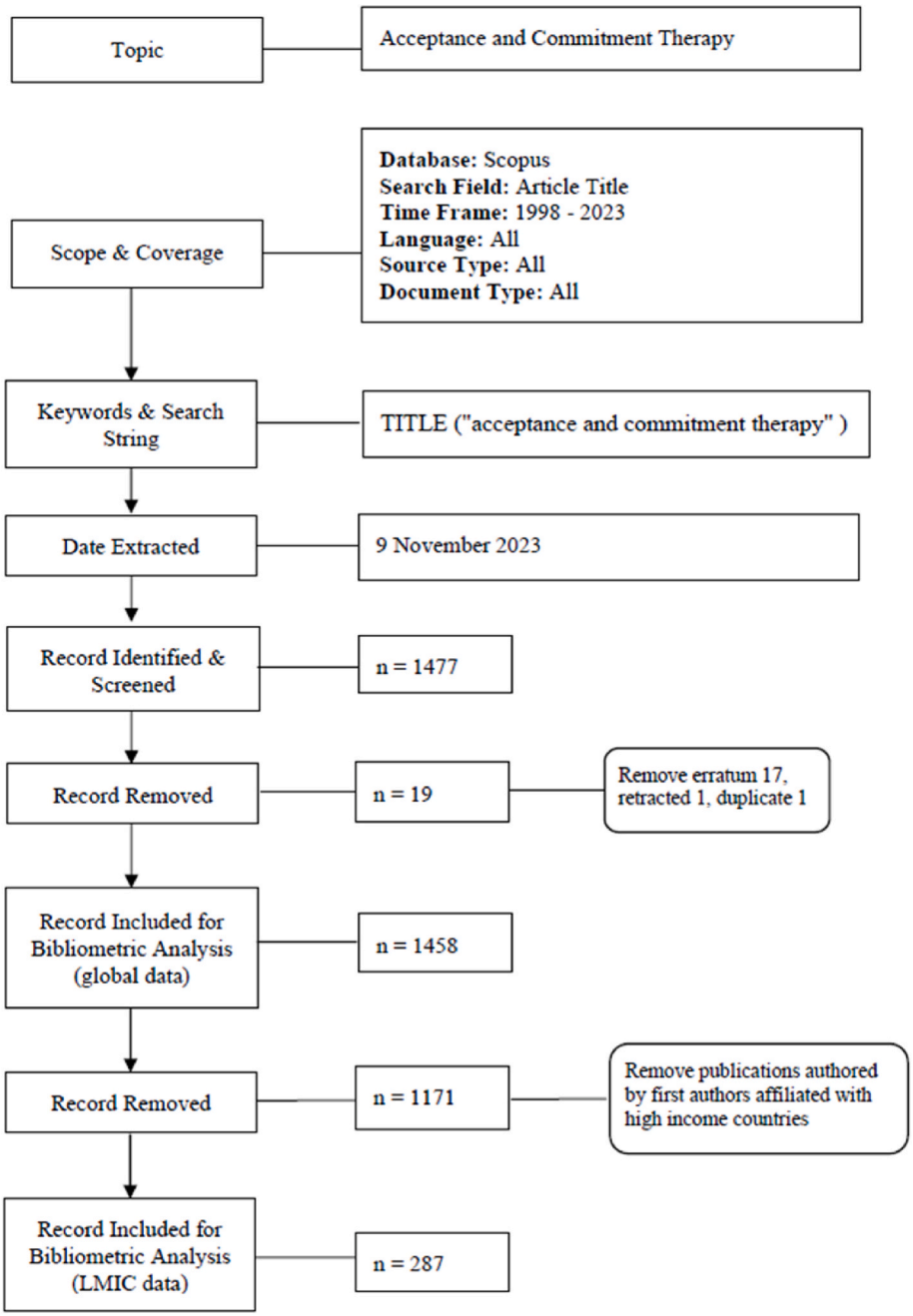


Fig. 1. Flow diagram of the search strategy.
Source: Adapted from Moher et al. (2009), Zakaria et al. (2021).

4. Analysis and findings

4.1. Current state

Citation analysis of ACT publications was conducted with 1,458 global publications and 287 publications from LMIC (Table 1). The results showed that 83% (n = 1,205) of the global and 73% (n = 209) of the LMIC publications were cited. The global publications received 41,357 citations over 25 years, while the LMIC publications received approximately 4% (n = 1,713) of the total citations over 13 years. Overall, the LMIC publications received less than a quarter of citations per paper and citations per cited paper of the global publications. The *h*-index, which measures the cumulative impact of an author's contribution (Hirsch, 2005), was 94 and 19 for the global and LMIC publications, respectively. Meanwhile, the *g*-index, which weighs highly cited articles (Egghe, 2006), was 166 and 29 for the two datasets, respectively.

Articles and reviews were the most common document types in global and LMIC publications at 90.19% and 98.61%, respectively. The top five global ACT documents received 16.09% of total citations (TC, n = 41,357), while the top five LMIC-affiliated publications garnered only 0.74% of TC. *Behaviour Research and Therapy, Behavior Therapy,* and *Journal of Contextual Behavioral Science* were the three most frequently cited journals, receiving 32.35% of TC. A breakdown of the information is provided in the supplementary material.

In terms of language, 92.80% of ACT publications were published in English (Table 2), followed by Persian (3.09%) and Spanish (2.13%). Other languages collectively contributed less than 4% to the field.

Globally, a significant portion of ACT publications was categorized within the psychology category (57.48%), while LMIC's ACT publications were predominantly found in the medicine category (65.16%) (Table 3). Additionally, ACT publications were distributed across diverse subject areas, including agricultural and biological sciences, business, management and accounting, and environmental science, thus underscoring ACT's transdiagnostic nature.

4.2. Publication trends

Annual ACT publications (TP) have risen since its first publication in 1998, reaching three digits in 2018 (Table 4). Similarly, the number of cited papers (NCP) and the *h*-, *g*-, and *m*-indexes steadily increased, indicating a growing research community and impact. The trend line showed that publications grew polynomially ($R^2 = 0.9841$), which was greater than a linear increase (Fig. 2). Notably, total citations (TC) peaked in 2006 and resumed an upward trend until 2014 before decreasing in the subsequent nine years (Fig. 2). The average citations per publication (C/P) and average citations per cited publication (C/CP) mirrored TC, with a visible decline starting in 2014 (Table 6).

LMIC published its first ACT research in 2010, twelve years after the first ACT publication authored by Strosahl et al. (1998). Since then, the number of publications (TP) and cited publications (NCP) has risen over the years (Table 5 and Fig. 3). The power model with an R-squared value of 0.9282 revealed a strong relationship between TP and year growth.

Table 1
Citation metrics.

Main Information	Global data	LMIC Data
Publication Years	1998–2023	2010–2023
Total Publications	1458	287
Number of Cited Papers	1205	209
Total Citations	41357	1713
Citations per Paper	28.37	5.97
Citations per Cited Paper	34.32	8.20
Citations per Year	1654.28	131.77
Citations per Author	6.08	1.44
h-index	94	19
g-index	166	29

Table 2
Languages.

Language	Total Publications	Percentage (%)
English	1353	92.80
Persian	45	3.09
Spanish	31	2.13
German	12	0.82
Chinese	11	0.75
French	11	0.75
Italian	7	0.48
Polish	3	0.21
Dutch	2	0.14
Arabic	1	0.07
Hungarian	1	0.07
Korean	1	0.07
Portuguese	1	0.07

*Twenty-one documents have been prepared in dual languages.

Table 3
Subject areas.

Subject Area	Global data		LMIC data	
	Total Publications	Percentage (%)	Total Publications	Percentage (%)
Psychology	838	57.48	92	32.06
Medicine	794	54.46	187	65.16
Social Sciences	243	16.67	47	16.38
Neuroscience	217	14.88	33	11.50
Agricultural and Biological Sciences	137	9.40	17	5.92
Business, Management and Accounting	136	9.33	14	4.88
Nursing	88	6.04	37	12.89
Arts and Humanities	76	5.21	9	3.14
Health Professions	42	2.88	12	4.18
Environmental Science	21	1.44	9	3.14
Biochemistry, Genetics and Molecular Biology	20	1.37	11	3.83
Pharmacology, Toxicology and Pharmaceutics	16	1.10	4	1.39
Multidisciplinary	8	0.55	4	1.39

Similarly, the *h*-, *g*-, and *m*-indexes exhibited an upward trend despite lower *h*- and *g*-indexes after 2020 (Table 5). The trend line showed increased citations (TC), which peaked in 2020 (Fig. 3). Nevertheless, the C/P and C/CP showed variations over time.

4.3. Publications by authors

Michael Twohig from Utah State University of the United States (US) was the most prolific author, with 71 publications, 64 of which were cited. The total citations were 2,920, averaging 41.13 citations per publication and 45.63 citations per cited paper. His *h*-, *g*-, and *m*-indexes were 29, 54, and 1.450, respectively (Table 6). However, Steven Hayes was the most highly cited author, accruing 11,005 citations and averaging 161.84 citations per paper.

Francisco J. Ruiz from Fundación Universitaria Konrad Lorenz, Colombia, emerged as the most productive LMIC-affiliated author (Table 7). While his earlier publications were associated with Spain (a high-income country), this analysis exclusively examined his LMIC-affiliated works. These publications received 98 citations, with a C/P of 10.89 and a C/CP of 12.25. His *h*-, *g*-, and *m*-indexes were 6, 9, and 0.857, respectively. Despite having fewer publications (n = 6 each),

Table 4
Publication by year (global data).

Year	TP	NCP	TC	C/P	C/CP	*h*	*g*	*m*
1998	1	1	98	98.00	98.00	1	1	0.038
1999	1	1	9	9.00	9.00	1	1	0.040
2000	2	2	31	15.50	15.50	2	2	0.083
2001	2	2	194	97.00	97.00	2	2	0.087
2002	5	5	804	160.80	160.80	4	5	0.182
2003	3	3	244	81.33	81.33	3	3	0.143
2004	8	8	2059	257.38	257.38	7	8	0.350
2005	10	10	666	66.60	66.60	8	10	0.421
2006	15	15	4908	327.20	327.20	12	15	0.667
2007	8	8	960	120.00	120.00	8	8	0.471
2008	10	9	917	91.70	101.89	9	10	0.563
2009	24	22	1166	48.58	53.00	16	24	1.067
2010	19	17	1644	86.53	96.71	13	19	0.929
2011	37	37	2664	72.00	72.00	26	37	2.000
2012	42	41	2941	70.02	71.73	26	42	2.167
2013	50	48	2384	47.68	49.67	23	48	2.091
2014	56	55	3408	60.86	61.96	29	56	2.900
2015	84	78	3124	37.19	40.05	29	54	3.222
2016	84	78	2711	32.27	34.76	28	50	3.500
2017	77	76	2403	31.21	31.62	26	46	3.714
2018	100	94	2143	21.43	22.80	30	42	5.000
2019	129	118	1842	14.28	15.61	24	36	4.800
2020	150	141	2032	13.55	14.41	22	36	5.500
2021	176	153	1347	7.65	8.80	18	25	6.000
2022	171	126	498	2.91	3.95	10	10	5.000
2023	194	57	160	0.82	2.81	5	8	5.000
Total	**1458**	**1205**	**41357**	**28.37**	**34.32**			

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; g = g-index; and m = m index.

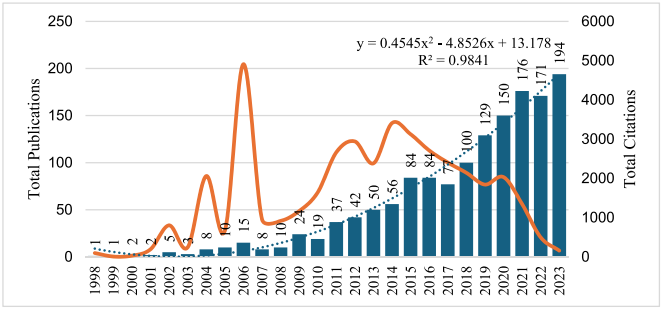


Fig. 2. Total publications and citations by year (global data).

Table 5
Publication by year (LMIC data).

Year	TP	NCP	TC	C/P	C/CP	*h*	*g*	*m*
2010	1	1	3	3.00	3.00	1	1	0.071
2013	1	1	4	4.00	4.00	1	1	0.091
2014	6	6	54	9.00	9.00	5	6	0.500
2015	9	9	157	17.44	17.44	7	9	0.778
2016	7	7	87	12.43	12.43	5	7	0.625
2017	8	8	119	14.88	14.88	6	8	0.857
2018	17	15	169	9.94	11.27	6	12	1.000
2019	37	33	198	5.35	6.00	8	11	1.600
2020	43	40	491	11.42	12.28	12	21	3.000
2021	41	35	255	6.22	7.29	9	13	3.000
2022	62	37	120	1.94	3.24	5	7	2.500
2023	55	17	56	1.02	3.29	5	5	5.000
Total	**287**	**209**	**1713**	**5.97**	**8.20**			

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; g = g-index; and m = m index.

Shuanghu Fang and Dongyan Ding from Anhui Normal University, China, exhibited higher C/P (15.50, 14.67), C/CP (15.50, 17.60), and *m*-index (both 1.000).

4.4. Publications by countries

A total of 24 countries published more than ten ACT publications (Table 8), a quarter being LMIC: Iran, China, Brazil, Turkiye, Colombia, and Malaysia. High-income countries dominated publication volume with the US leading substantially (528 publications) and followed by the United Kingdom (UK) (229 publications). Similarly, LMIC demonstrated growing contributions, with Iran being the most prolific LMIC contributor (163 publications), followed by China (56 publications excluding Hong Kong).

Besides leading in publication volume, the US and the UK also led in citation metrics. Their *h*- (76 and 36), *g*- (158 and 95), and *m*-indexes (≥2.000) reflected impactful research over time. Despite ranking third in publication volume, Iran's publications (TP = 163) received fewer citations than those of high-income countries. Although 121 of its papers were cited, they averaged only 5.48 citations per paper and 7.39 citations per cited paper. While Iran's *h*- and *g*-indexes (15 and 29) surpassed China's, they remained significantly lower than some high-income countries. Interestingly, China exhibited a different trend. With a smaller publication volume (TP = 56), its publications were more influential compared to Iran, as evidenced by a higher C/P (8.39), C/CP (11.75), and *m*-index (1.571). The *m*-index is defined as the *h*-index divided by the number of years since its first publication (Choudhri et al., 2015). China's fifth-highest *m*-index on the list may suggest a recent rise in its research impact.

4.5. Co-authorship analysis by countries

A network analysis visualized inter-country collaboration within ACT research (Fig. 4). The circle size was proportionally sized to reflect publication count, while line thickness and proximity signified the link strength and closeness of inter-country collaboration. This analysis focused on countries contributing a minimum of eight co-authored publications.

Twenty-eight countries were categorized into seven distinct clusters and color-coded for easy identification. The largest cluster, represented by purple, displayed close internal collaboration among the US, Japan, New Zealand, and South Korea. The US emerged as a central hub, with robust collaborative ties within its purple cluster and extending to nations in the light blue (UK and Australia) and yellow (Sweden) clusters. Notably, the dark blue (Asia) and green (Europe) clusters only consisted of countries from respective continents, suggesting a preference for geographically proximate collaborations. Further analysis revealed two distinct groups based on collaboration frequency. Countries like the US, UK, Sweden, and Australia exhibited high link strengths, indicating frequent collaborations. Conversely, Japan, South Korea, and India had lower link strengths, implying fewer collaborative relationships.

4.6. Co-word analysis of author keywords

Fig. 5 illustrates a VOSviewer-generated network visualization of the co-occurring author keywords that appeared at least ten times. The analysis identified 74 keywords, which were classified into 6 clusters, each represented by a distinct color. The author keywords with the highest occurrences and total link strengths within each cluster are *mindfulness, acceptance, acceptance and commitment therapy, chronic pain, anxiety, depression, randomized controlled trial, mental health, psychological flexibility,* and *cognitive-behavioral therapy* (Table 9).

The average publication year reported in Table 9 indicated that Clusters 2 (green), 3 (dark blue), and 4 (yellow) were associated with more recent publications (Fig. 5). A comparison of each keyword's occurrences, total link strength, and the average publication year revealed

Table 6
Most productive authors with more than seventeen publications.

Author's Name	Affiliation	Country	TP	NCP	TC	C/P	C/CP	*h*	*g*	*m*
Twohig, Michael P.	Utah State University	US	71	64	2920	41.13	45.63	29	54	1.450
Hayes, Steven C.	University of Nevada	US	68	60	11005	161.84	183.42	40	68	1.538
Levin, Michael E.	University of Nevada	US	53	45	2496	47.09	55.47	21	49	1.400
McCracken, Lance M.	King's College London	UK	51	46	1831	35.90	39.80	18	42	1.385
Bricker, Jonathan B.	University of Washington	US	26	23	932	35.85	40.52	14	26	0.933
Lappalainen, Raimo	University of Jyväskylä	Finland	24	21	481	20.04	22.90	11	21	1.100
Wicksell, Rikard K.	Karolinska Institutet	Sweden	22	21	935	42.50	44.52	13	22	0.684
Arch, Joanna J.	University of Colorado Boulder	US	18	17	1447	80.39	85.12	14	18	0.875
Lappalainen, Päivi	University of Jyväskylä	Finland	18	15	340	18.89	22.67	8	18	0.800

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; g = g-index; and m = m index.

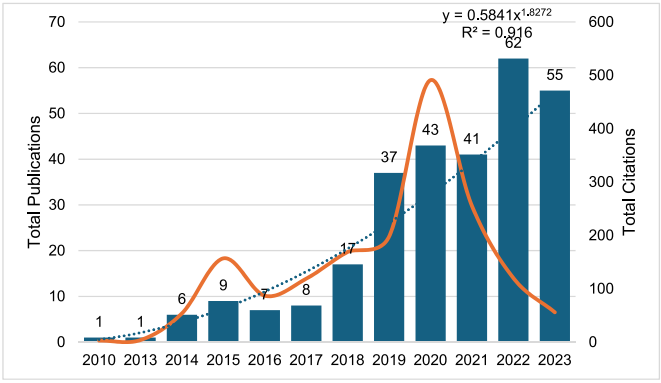


Fig. 3. Total publications and citations by year (LMIC data).

that the trending topics are *digital interventions* (including *e-health, m-health, telehealth, online intervention,* and *internet-based interventions*), *overweight, systematic review, quality of life, meta-analysis, psychological distress, caregiver, mental health, well-being, resilience, self-compassion, body image, fatigue, insomnia,* and *multiple sclerosis.*

Four clusters of 14 co-occurring keywords were discovered among LMIC-affiliated authors (Fig. 6). The trending keywords are *mental health, systematic review, meta-analysis, randomized controlled trial, anxiety,* and *psychological flexibility* (Table 10). Notably, several keywords, such as depression and cognitive-behavioral therapy, still receive continual attention despite appearing dated in global publications. Other means to identify trending topics and knowledge gaps include the overlay and density visualizations of author keywords, which are available in the supplementary material.

4.7. Factorial analysis

Factorial analysis was used to decode the author keyword co-occurrence in ACT publications through multiple correspondence analysis (MCA). MCA generates two-dimensional word maps that visualize hidden thematic relationships. Nodes represent keywords, and proximity reflects the strength of their co-occurrence in publications.

The global ACT publications word map revealed Cluster 1 (blue) as the central cluster (Fig. 7). The publications in this cluster focused on *psychological flexibility* and ACT interventions for physical and mental health, including *chronic pain, eating disorder, obsessive-compulsive disorder,* and *anxiety disorder*. Cluster 2 (red), the smallest cluster, focused on *quality of life* and *psychological distress*. A closer inspection revealed that this cluster mainly consisted of online ACT interventions conducted for family caregivers and individuals with physical injury. Cluster 3 (green) emphasized the theoretical underpinnings of *relational frame theory* and other modalities (i.e., *cognitive therapy, behavioral therapy*) that informed *acceptance* and *mindfulness*-based interventions and their effectiveness in different presenting issues.

The word map of the LMIC-affiliated authors appeared smaller (Fig. 8), indicating ample research opportunities. Most author keywords were represented by Cluster 1 (blue), which emphasized ACT evidence and core processes such as *systematic review, meta-analysis, acceptance, defusion, values,* and *psychological flexibility*. Cluster 2 (red), the smallest cluster, contained *RFT, generalized anxiety disorder,* and *repetitive negative thinking*. Cluster 3 (green) focused on ACT applications on *sleep* and physical conditions like *cancer* and *diabetes mellitus*.

Combining co-word and factorial analyses suggests potential research opportunities for LMIC-affiliated authors in *self-help, digital interventions, well-being, mediation, parent, caregiver, psychosis, self-compassion, overweight, body image, eating disorder, quality of life, psychological distress, resilience,* and *fatigue.*

5. Discussion

This bibliometric study reports the current state of ACT publications, exploring their reach, impact, and diversity. Citation metrics revealed a thriving field with an accumulated total of 41,357 citations across 1,458

Table 7
Most productive authors in LMIC with more than three publications.

Author's Name	Affiliation	Country	TP	NCP	TC	C/P	C/CP	*h*	*g*	*m*
Ruiz, Francisco J.	Fundación Universitaria Konrad Lorenz	Colombia	9	8	98	10.89	12.25	6	9	0.857
Fang, Shuanghu	Anhui Normal University	China	6	6	93	15.50	15.50	4	6	1.000
Ding, Dongyan	Anhui Normal University	China	6	5	88	14.67	17.60	4	6	1.000
Khazaie, Habibolah	Kermanshah University of Medical Sciences	Iran	5	4	75	15.00	18.75	4	5	0.800
Ren, Zhihong	Central China Normal University	China	5	4	67	13.40	16.75	4	5	0.800
Zanjani, Zahra	Kashan University of Medical Sciences	Iran	5	3	50	10.00	16.67	3	5	0.500
Omidi, Abdollah	Kashan University of Medical Sciences	Iran	5	3	50	10.00	16.67	3	5	0.500
Yıldız, Erman	Inönü Üniversitesi	Turkiye	4	4	50	12.50	12.50	3	4	0.750
Zhao, Chunxiao	Central China Normal University,	China	4	3	62	15.50	20.67	3	4	0.600
Mirzaian, Bahram	Islamic Azad University, Sari Branch	Iran	4	3	13	3.25	4.33	3	3	0.500
Khanjani, Mohammad Saeed	University of Social Welfare and Rehabilitation Sciences	Iran	4	3	13	3.25	4.33	2	3	0.500

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; and g = g-index.

Table 8
Top countries that contributed more than ten publications.

No.	Country	Continent	TP	TC	NCP	C/P	C/CP	*h*	*g*	*m*
1	US	North America	528	25222	457	47.77	55.19	76	158	2.923
2	UK	Europe	229	9129	196	39.86	46.58	36	95	2.000
3	Iran[a]	Asia	163	894	121	5.48	7.39	15	29	1.071
4	Australia	Oceania	113	2785	106	24.65	26.27	30	52	1.579
5	Sweden	Europe	108	4103	96	37.99	42.74	32	64	1.600
6	Spain	Europe	75	2322	62	30.96	37.45	22	48	0.880
7	China[a]	Asia	56	470	40	8.39	11.75	11	21	1.571
8	Canada	North America	46	663	40	14.41	16.58	14	25	0.778
9	Netherlands	Europe	44	2037	37	46.30	55.05	17	44	1.133
10	Germany	Europe	39	706	32	18.10	22.06	15	26	1.250
11	Ireland	Europe	35	511	28	14.60	18.25	13	22	1.182
12	Finland	Europe	27	506	24	18.74	21.08	12	22	1.200
13	Italy	Europe	25	240	23	9.60	10.43	8	15	0.615
14	France	Europe	20	203	15	10.15	13.53	8	14	0.471
15	Cyprus	Europe	17	380	16	22.35	23.75	8	17	0.571
16	Brazil[a]	South America	16	92	11	5.75	8.36	6	9	0.545
17	Switzerland	Europe	15	480	14	32.00	34.29	10	15	0.588
18	Norway	Europe	15	117	14	7.80	8.36	6	10	0.400
19	Hong Kong	Asia	15	178	14	11.87	12.71	6	13	0.667
20	Turkiye[a]	Europe	13	61	9	4.69	6.78	3	7	0.750
21	Colombia[a]	South America	13	105	10	8.08	10.50	6	10	0.750
22	Malaysia[a]	Asia	11	58	5	5.27	11.60	3	7	0.750
23	Belgium	Europe	11	116	9	10.55	12.89	6	10	0.600
24	Japan	Asia	11	140	9	12.73	15.56	5	11	0.385

Notes: TP = total number of publications; TC = total citations; NCP = number of cited publications; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; g = g-index; and m = m-index.
[a] LMIC.

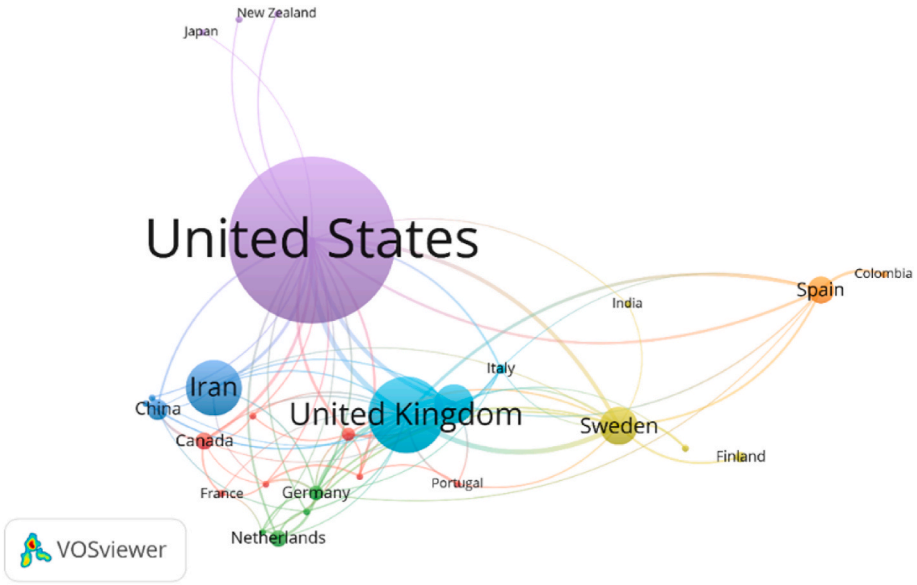


Fig. 4. Network visualization map of co-authorship by countries (http://tinyurl.com/ysewrtcj).

publications and 1,713 citations (4.14%) for 287 publications from the LMIC. While global publications showed markedly higher average citations per paper, citations per cited paper, citations per year, citations per author, as well as *h*- and *g*-indexes, LMIC publications have steadily grown since their first publication in 2010.

Most ACT literature is published as articles and reviews (global publications, 90.19%; LMIC, 98.61%). This is consistent with publishing practices in other fields (Savage & Olejniczak, 2022). English (92.8%) is the primary language used in ACT publications; however, Persian (3.09%) also shows a notable presence, nearly equivalent to the combined contribution of European languages (4.67%). The findings align with the exponential growth of ACT in Iran and potentially reflect ACT's cultural relevance in the Iranian context (Akbari et al., 2022). Within LMIC, ACT publications skew more heavily toward medicine (65.16%) compared to the global trends led by psychology (57.48%). Notably, nursing research features more prominently in LMIC (12.89% vs. 6.04% globally). Despite ACT's transdiagnostic nature, this suggests more emphasis on medical and healthcare applications within LMIC.

ACT publications have grown substantially since 1998, surpassing 100 annually by 2018. This finding aligns with the earlier bibliometric study by Li et al. (2022), which reported substantial growth of ACT literature from 2001 to 2021. However, citation metrics showed an initial rise and recent decline, suggesting evolving citation practices or changes in publication quality that warrant further investigation (Punj et al., 2023). LMIC entered the ACT scene in 2010, and subsequent years witnessed a consistent increase in publications and citations. This

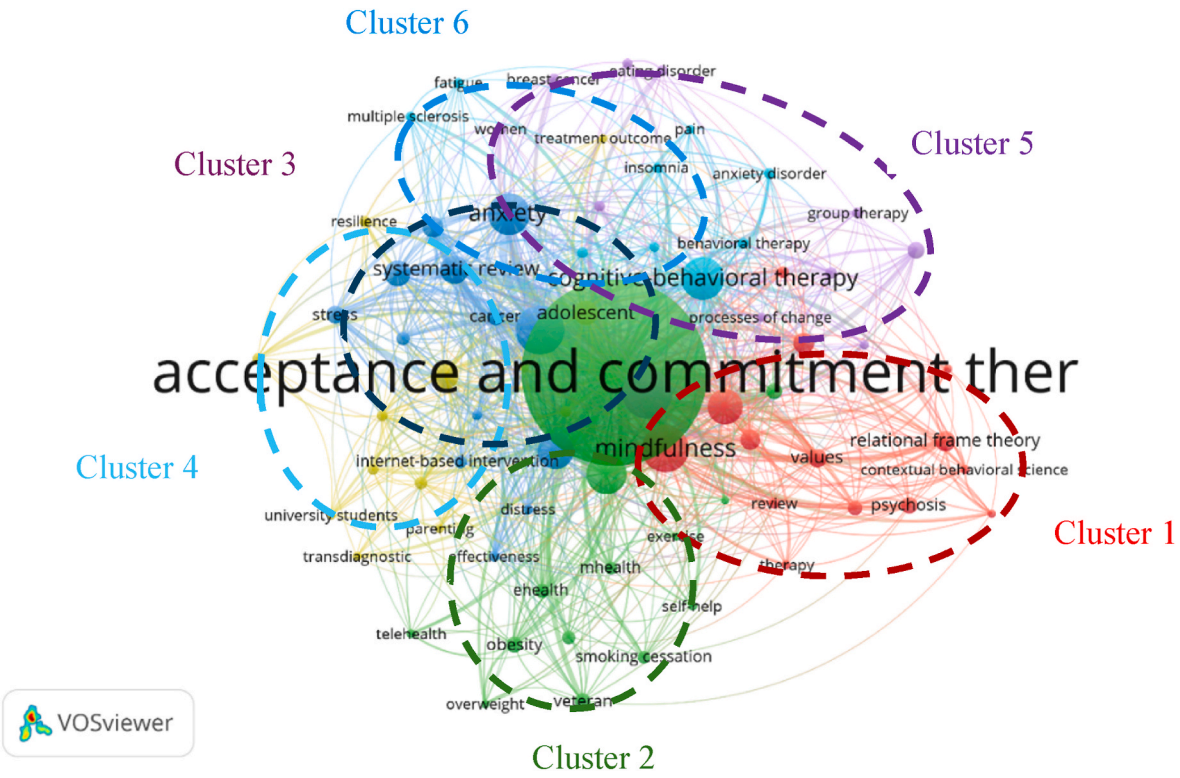


Fig. 5. Network visualization of the author keywords with a minimum of 10 occurrences (http://tinyurl.com/ymznr8bk).

upward trend indicates a thriving research community in LMIC (Association for Contextual Behavioral Science, 2024). LMIC publications also mirror global trends in publication growth and fluctuating citations.

Globally, Michael Twohig is the most productive author with 71 publications, while Steven Hayes leads in citation count, amassing 11,005 citations. The latter is likely contributed by four highly cited articles (published between 2002 and 2013) by Hayes (Li et al., 2022). Within LMIC, Francisco Ruiz, Shuanghu Fang, Dongyan Ding, and their colleagues have enriched the ACT literature through their relatively recent work.

Similar to Li and colleagues' (2022) report, the ACT literature reveals a predominantly Western landscape, with North America and Europe leading. This confirms the concentration of psychological studies in Western, educated, industrialized, rich, and democratic (WEIRD) nations (Muthukrishna et al., 2020). However, LMICs are emerging contributors led by Iran with 163 publications and China with 56 publications (excluding Hong Kong). This surge in LMIC research activity signifies increasing ACT applications across different cultural contexts and wider knowledge dissemination (Association for Contextual Behavioral Science, 2024).

Consistent with previous bibliometric analysis findings (Baminiwatta & Solangaarachchi, 2021; Ferreira & Demarzo, 2023), WEIRD nations like the US and the UK lead in quantity and citation metrics while LMICs like Iran still lag in impact. Their publications attract fewer citations on average, suggesting potential limitations in dissemination or integration into the ACT literature (Akbari et al., 2022). Notably, China produced a smaller volume but outperformed Iran in citation metrics. This observation invites exploration of potential factors beyond quantity, particularly language, collaboration patterns, methodology, and other barriers. Insights can be gleaned from nations like the Netherlands, Cyprus, and Switzerland. Despite smaller publication counts, they produced impactful research with high C/P and C/CP ratios. Notwithstanding fewer publications, LMICs can similarly impact the field by producing unique studies emphasizing culturally responsive interventions (Akbari et al., 2022).

Co-authorship analysis revealed the US as a central hub in international collaboration, with the UK, Sweden, and Australia demonstrating high interconnectivity on the global stage. Conversely, limited intercountry collaboration exists in some parts of Asia and Europe. Collaboration between high-income and LMIC authors is pivotal for bridging this gap and driving impactful ACT publication growth within LMIC. Such collaboration leverages the strengths of both sides, ultimately fostering knowledge exchange, lowering research costs, boosting researcher productivity, enhancing acceptance rates, and increasing citations (Cisneros et al., 2018; Narin et al., 1991) while enriching the field with diverse perspectives (Akbari et al., 2022).

Analysis of keyword co-occurrence and factorial structure within ACT publications revealed a surge in methodological rigor, with the increasing prevalence of randomized controlled trials, systematic reviews, and meta-analyses. Co-word analysis showed diverse thematic priorities within the ACT publications, with trending keywords like *digital interventions (including e-health, m-health, telehealth, online intervention,* and *internet-based interventions), overweight, quality of life, systematic review, meta-analysis, psychological distress, caregiver, mental health, well-being, resilience, self-compassion, body image, fatigue, insomnia, and multiple sclerosis.*

LMIC-affiliated publications exhibit a narrower research agenda. However, its literature contains unique keywords that have less prominence in global literature, such as *counseling, nursing, sleep, infertility, psychoeducation,* and *self-efficacy*. Co-word and factorial analyses identified research opportunities for LMIC-affiliated ACT scholars in *self-help, digital interventions, well-being, mediation, parent, caregiver, psychosis, self-compassion, overweight, body image, eating disorder, quality of life, psychological distress, resilience,* and *fatigue*. Potential future research areas for LMIC-affiliated authors may include (1) digital and internet ACT interventions for resource-limited, geographically dispersed, or underserved settings; (2) culturally adapted ACT interventions for more varied conditions; and (3) modifications to existing interventions that

Table 9
Research themes based on author keywords with a minimum of 10 occurrences.

Author's keyword	Cluster	Occurrences	Total link strength	Average publication year	Theme
mindfulness	1	131	366	2017.4809	Theme 1: Roots and processes of ACT
acceptance	(red)	84	206	2015.119	
psychotherapy		38	79	2017.0526	
experiential avoidance		37	95	2016.7838	
relational frame theory		36	101	2013.5556	
values		33	99	2016.9394	
psychosis		27	64	2015.2963	
schizophrenia		22	53	2018.6818	
cognitive therapy		16	37	2015.25	
review		15	37	2017.0667	
contextual behavioral science		12	44	2017.4167	
therapy		11	31	2017.6364	
defusion		10	35	2014.3	
functional contextualism		10	34	2016.3	
acceptance and commitment therapy	2 (green)	1083	1871	2018.4672	Theme 2: ACT and novel applications
chronic pain		105	220	2017.819	
obesity		26	63	2019.3077	
treatment		26	58	2014.9231	
veteran		25	53	2018.28	
ehealth		21	52	2020.6667	
posttraumatic stress disorder		20	38	2017.55	
mhealth		19	49	2019.3158	
smoking cessation		19	35	2018.2632	
telehealth		12	25	2021.0833	
self-help		11	24	2018.0909	
exercise		10	20	2017.6	
feasibility		10	17	2021	
overweight		10	28	2020.3	
depression	3	139	408	2018.8921	Theme 3: ACT research methodologies and approaches
anxiety	(dark blue)	113	327	2019.7965	
randomized controlled trial		88	227	2018.5	
systematic review		63	170	2020.5238	
quality of life		54	152	2020.1296	
meta-analysis		38	117	2020.4737	
stress		30	107	2019.5667	
cancer		27	76	2019.5556	
psychological distress		20	68	2020.4	
internet-based intervention		18	60	2020.8333	
effectiveness		14	44	2017.6429	
caregiver		13	39	2020.8462	
distress		13	36	2019.7692	
mental health	4	51	104	2020.451	Theme 4: ACT in the non-clinical population
adolescent	(yellow)	50	124	2019.36	
well-being		18	56	2020.6667	
psychological well-being		16	35	2019.5	
intervention		15	39	2018.4667	
online intervention		14	33	2021.2143	
resilience		14	39	2020.7143	
web-based		14	46	2019.5	
parenting		12	24	2018.4167	
psychology		12	28	2018.8333	
transdiagnostic		11	22	2020	
treatment outcome		10	23	2017.4	
university students		10	24	2021.4	
psychological flexibility	5	142	355	2019.1127	Theme 5: Psychological flexibility and health
obsessive-compulsive disorder	(purple)	27	56	2018.3333	
mediation		17	54	2016	
eating disorder		15	30	2016.0667	
group therapy		15	32	2019	
self-compassion		15	42	2020.8	
breast cancer		14	27	2019.5714	
body image		13	30	2020	
women		13	35	2019.6923	
cognitive defusion		11	32	2019	
processes of change		11	35	2017.0909	
cognitive-behavioral therapy	6	116	309	2016.4569	Theme 6: ACT and other behavioral and cognitive therapies
behavioral therapy	(light blue)	15	31	2015.4667	
anxiety disorder		14	39	2013.6429	
parent		14	37	2018.6429	
children		13	42	2016.7692	

(*continued on next page*)

Table 9 (*continued*)

Author's keyword	Cluster	Occurrences	Total link strength	Average publication year	Theme
fatigue		13	30	2020.6923	
insomnia		13	28	2020.3077	
multiple sclerosis		13	31	2020.3846	
Pain		10	25	2017.9	

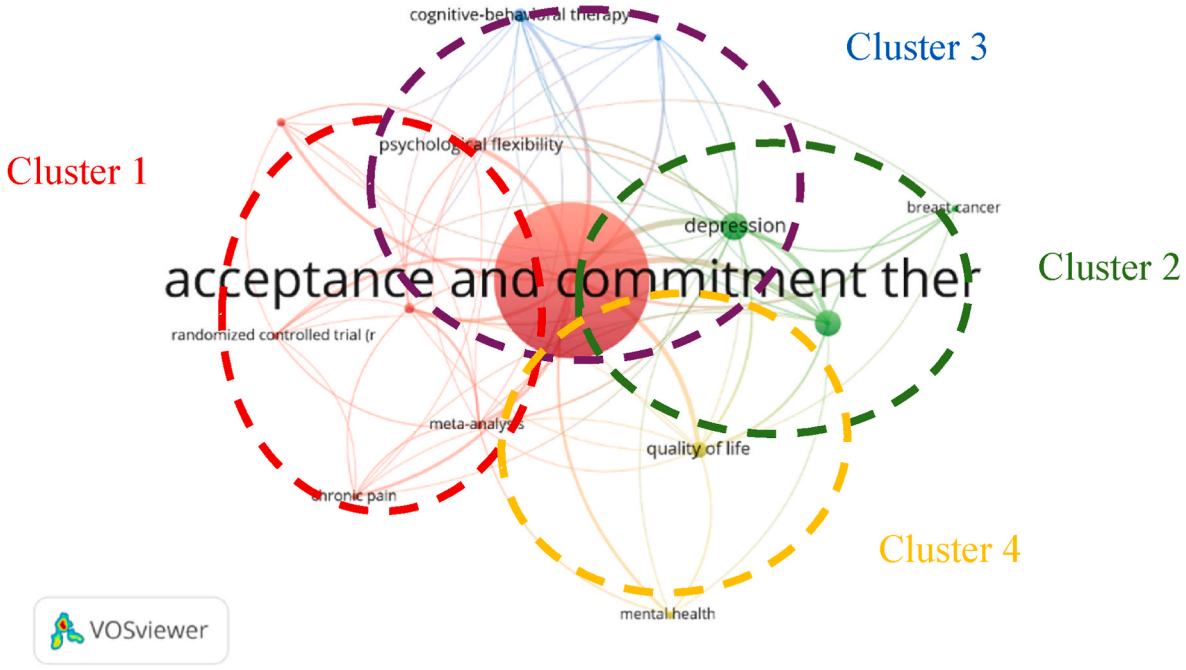


Fig. 6. Network visualization of the LMIC-affiliated author keywords with a minimum of 10 occurrences (http://tinyurl.com/ytwqpqtq).

Table 10
Research themes based on LMIC-affiliated author keywords with a minimum of 10 occurrences.

Author's keyword	Cluster	Occurrences	Total link strength	Average publication year	Theme
acceptance and commitment therapy	1	238	218	2020.4538	Theme 1: ACT's processes and quality of life
quality of life	(red)	21	40	2020.2381	
cognitive-behavioral therapy		18	28	2020.6111	
acceptance		13	19	2020.3846	
mindfulness		10	17	2020.9	
mental health	2	17	21	2021.3529	Theme 2: ACT evidence
systematic review	(green)	15	35	2022.0667	
chronic pain		13	25	2019.9231	
meta-analysis		13	34	2022	
randomized controlled trial		12	23	2021.6667	
depression	3	41	89	2020.6829	Theme 3: ACT and mental health
anxiety	(blue)	33	72	2021.1818	
psychological flexibility	4 (yellow)	28	42	2021.5714	Theme 4: Psychological flexibility and psychopathology
obsessive-compulsive disorder (OCD)		13	23	2018.9231	

address the specific needs and cultural nuances of LMIC populations.

Researchers who strategically align their efforts to address these emerging areas and knowledge gaps can potentially maximize their relevance and impact. However, a lack of diverse perspectives is a critical dearth. This study advocates for collaborative efforts to explore these trending topics from an LMIC perspective to promote a more inclusive ACT landscape. Collaboration that expands beyond the traditional research partners may further enrich the field by extending ACT's reach to previously under-represented populations.

This study aims to map the current ACT literature, uncover themes, and record evolving trends in both the global and LMIC contexts. The identified themes offer a foundation for future research, potentially contributing to the field's incremental growth. This study adheres to the PRISMA protocol and details the bibliometric techniques utilized, providing a methodological reference for future bibliometric research in the field. Lastly, this study offers practical insights to researchers, educators, and funding organizations. Researchers can leverage our findings to identify emerging avenues and unexplored areas within the field. Furthermore, funding organizations can use our findings to identify critical needs within the field, facilitating the optimal allocation of their

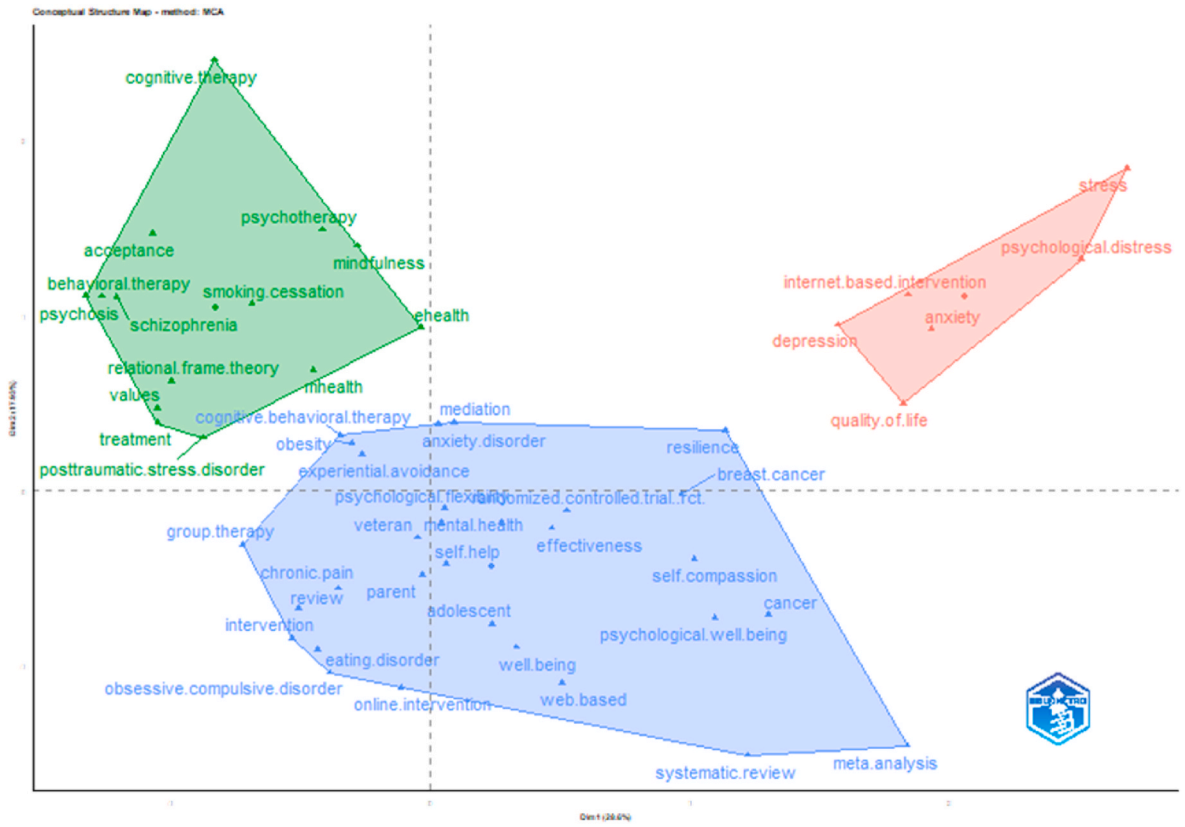


Fig. 7. Word map of the author keywords in global ACT publications.

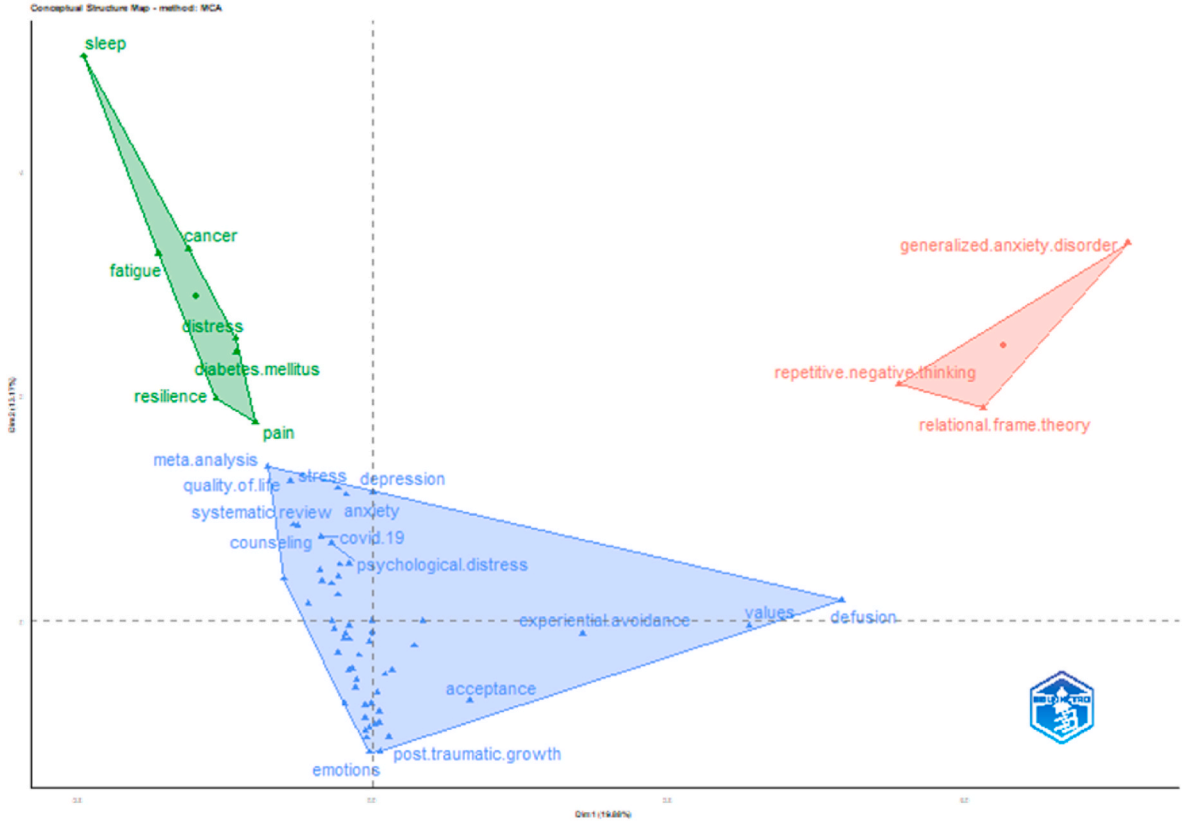


Fig. 8. Word map of the LMIC-affiliated author keywords in ACT publications.

limited resources.

There are a few limitations to this bibliometric study that are important to note. Scopus bibliometric data is not produced explicitly for bibliometric analysis and may contain inaccuracies, which may impact subsequent bibliometric analyses. Additionally, different databases with varying publication coverage may produce slightly different bibliometric results. Future bibliometric studies should combine multiple databases to provide a more comprehensive overview. Also, the authors relied on the first authors' primary institutional affiliations to identify ACT literature from LMICs. It is possible that the authors missed out on some ACT literature from LMIC because the first authors were not affiliated with institutions located in an LMIC. It is also worth noting that while identifying thematic clusters through the author keywords provides valuable insights, it could be enhanced by incorporating other science mapping techniques, such as co-citation analysis and bibliographic coupling for a more comprehensive view. Regardless of the chosen approach, it is crucial to recognize that bibliometric analysis offers only a short-term forecast of any field. Therefore, researchers and authors must exercise prudence when making long-term predictions based on the findings.

In conclusion, this bibliometric analysis of 1,458 global and 287 LMIC publications spanning the past 25 years has identified the current publication state, impact, and evolution within the field. It also uncovers underlying themes and potential directions for future investigation and highlights knowledge gaps that LMIC-affiliated authors can address within their settings.

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Data sharing

Data is available upon reasonable request.

CRediT authorship contribution statement

Re Gal Lim: Writing – review & editing, Writing – original draft, Visualization, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Siok Ping Voon:** Writing – review & editing, Supervision. **Fatahyah Yahya:** Writing – review & editing, Supervision. **Fitri Suraya Mohamad:** Writing – review & editing, Supervision. **Aidi Ahmi:** Validation, Software, Resources, Methodology.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used Grammarly, ChatGPT, and Gemini to check language and improve readability. After using these tools, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

Declaration of competing interest

Authors declare that there is no conflict of interests.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jcbs.2024.100796.

References

Ahmi, A. (2023). OpenRefine: An approachable tool for cleaning and harmonizing bibliographical data. In *11th international conference on applied science and technology 2022 (11th ICAST 2022) AIP conference proceedings* (Putrajaya, Malaysia).

Ahmi, A. (2024). biblioMagika. https://bibliomagika.com.

Akbari, M., Seydavi, M., Davis, C. H., Levin, M. E., Twohig, M. P., & Zamani, E. (2022). The current status of acceptance and commitment therapy (ACT) in Iran: A systematic narrative review. *Journal of Contextual Behavioral Science, 26*, 85–96. https://doi.org/10.1016/j.jcbs.2022.08.007

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics, 11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Association for Contextual Behavioral Science. (2024). *ACT studies in low and lower middle income countries*. https://contextualscience.org/act_studies_in_low_and_middle_income_countries.

Baker, H. K., Pandey, N., Kumar, S., & Haldar, A. (2020). A bibliometric analysis of board diversity: Current status, development, and future research directions. *Journal of Business Research, 108*, 232–246. https://doi.org/10.1016/j.jbusres.2019.11.025

Baminiwatta, A., & Solangaarachchi, I. (2021). Trends and developments in mindfulness research over 55 Years: A bibliometric analysis of publications indexed in Web of science. *Mindfulness, 12*(9), 2099–2116. https://doi.org/10.1007/s12671-021-01681-x

Brown, F. L., Whittingham, K., Boyd, R. N., McKinlay, L., & Sofronoff, K. (2015). Does stepping stones triple P plus acceptance and commitment therapy improve parent, couple, and family adjustment following paediatric acquired brain injury? A randomised controlled trial. *Behaviour Research and Therapy, 73*, 58–66. https://doi.org/10.1016/j.brat.2015.07.001

Byrne, G., Ghráda, Á. N., O'Mahony, T., & Brennan, E. (2021). A systematic review of the use of acceptance and commitment therapy in supporting parents. *Psychology and Psychotherapy: Theory, Research and Practice, 94*(S2), 378–407. https://doi.org/10.1111/papt.12282

Choudhri, A. F., Siddiqui, A., Khan, N. R., & Cohen, H. L. (2015). Understanding bibliometric parameters and analysis. *RadioGraphics, 35*(3), 736–746. https://doi.org/10.1148/rg.2015140036

Cisneros, L., Ibanescu, M., Keen, C., Lobato-Calleros, O., & Niebla-Zatarain, J. (2018). Bibliometric study of family business succession between 1939 and 2017: Mapping and analyzing authors' networks. *Scientometrics, 117*(2), 919–951. https://doi.org/10.1007/s11192-018-2889-1

Denche-Zamorano, Á., Pereira-Payo, D., Franco-García, J. M., Pastor-Cisneros, R., Salazar-Sepúlveda, G., Castillo, D., Marín-Gil, M., & Barrios-Fernandez, S. (2022). Mapping the scientific research on suicide and physical activity: A bibliometric analysis. *International Journal of Environmental Research and Public Health, 19*(24), Article 16413. https://doi.org/10.3390/ijerph192416413

DerSimonian, R., & Laird, N. (1986). Meta-analysis in clinical trials. *Controlled Clinical Trials, 7*(3), 177–188. https://doi.org/10.1016/0197-2456(86)90046-2

Dindo, L., Van Liew, J. R., & Arch, J. J. (2017). Acceptance and commitment therapy: A transdiagnostic behavioral intervention for mental health and medical conditions. *Neurotherapeutics, 14*, 546–553. https://doi.org/10.1007/s13311-017-0521-3

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research, 133*, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Egghe, L. (2006). An improvement of the h-index: The g-index. *ISSI newsletter, 2*(1), 8–9.

Ellegaard, O. (2018). The application of bibliometric analysis: Disciplinary and user aspects. *Scientometrics, 116*(1), 181–202. https://doi.org/10.1007/s11192-018-2765-z

Ferreira, G. F., & Demarzo, M. (2023). Trends of research on mindfulness: A bibliometric study of an emerging field. *Trends in Psychology*. https://doi.org/10.1007/s43076-023-00286-8

Florido-Benítez, L. (2022). The impact of tourism promotion in tourist destinations: A bibliometric study. *International Journal of Tourism Cities, 8*(4), 844–882. https://doi.org/10.1108/IJTC-09-2021-0191

Gavinolla, M. R., Livina, A., & Swain, S. K. (2022). State of the research on teacher education and sustainability: A bibliometrics analysis. *Journal of Teacher Education for Sustainability, 24*(2), 147–165. https://doi.org/10.2478/jtes-2022-0022

Gloster, A. T., Walder, N., Levin, M. E., Twohig, M. P., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: A review of meta-analyses. *Journal of Contextual Behavioral Science, 18*, 181–192. https://doi.org/10.1016/j.jcbs.2020.09.009

Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy, 35*(4), 639–665. https://doi.org/10.1016/s0005-7894(04)80013-3

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences, 102*(46), 16569–16572. https://doi.org/10.1073/pnas.0507655102

Kim, H., & So, K. K. F. (2022). Two decades of customer experience research in hospitality and tourism: A bibliometric analysis and thematic content analysis. *International Journal of Hospitality Management, 100*, Article 103082. https://doi.org/10.1016/j.ijhm.2021.103082

Lawal, Z. K., Yassin, H., Lai, D. T. C., & Che Idris, A. (2022). Physics-informed neural network (PINN) evolution and beyond: A systematic literature review and bibliometric analysis. *Big Data and Cognitive Computing, 6*(4), 140. https://doi.org/10.3390/bdcc6040140

Li, Z., Shang, W., Wang, C., Yang, K., & Guo, J. (2022). Characteristics and trends in acceptance and commitment therapy research: A bibliometric analysis [original research]. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.980848

Luoma, J. B., Hayes, S. C., & Walser, R. D. (2017). *Learning ACT: An acceptance and commitment therapy skills training manual for therapists* (2nd ed.). New Harbinger Publications.

Ma, Y., Kraemer, K. M., Lyu, J., & Yeh, G. Y. (2021). Randomized controlled trials of mindfulness and acceptance-based interventions over the past two decades: A bibliometric analysis. *Journal of Alternative & Complementary Medicine, 27*(11), 930–939. https://doi.org/10.1089/acm.2020.0548

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine, 6*(7), Article e1000097. https://doi.org/10.1371/journal.pmed.1000097

Moyer, D. N., Page, A. R., McMakin, D. Q., Murrell, A. R., Lester, E. G., & Walker, H. A. (2018). The impact of acceptance and commitment therapy on positive parenting strategies among parents who have experienced relationship violence. *Journal of Family Violence, 33*(4), 269–279. https://doi.org/10.1007/s10896-018-9956-5

Muthukrishna, M., Bell, A. V., Henrich, J., Curtin, C. M., Gedranovich, A., McInerney, J., & Thue, B. (2020). Beyond western, educated, industrial, rich, and democratic (WEIRD) psychology: Measuring and mapping scales of cultural and psychological distance. *Psychological Science, 31*(6), 678–701. https://doi.org/10.1177/0956797620916782

Narin, F., Stevens, K., & Whitlow, E. S. (1991). Scientific co-operation in Europe and the citation of multinationally authored papers. *Scientometrics, 21*(3), 313–323. https://doi.org/10.1007/BF02093973

Nawaz, M., Maulud, A. S., & Zabiri, H. (2022). Analysis of multiscale process monitoring in industrial processes from a bibliometric perspective. *Computers & Chemical Engineering, 168*, Article 108055. https://doi.org/10.1016/j.compchemeng.2022.108055

Othman, Z., Abdul Halim, A. S., Azman, K. F., Ahmad, A. H., Zakaria, R., Sirajudeen, K. N. S., Wijaya, A., & Ahmi, A. (2022). Profiling the research landscape on cognitive aging: A bibliometric analysis and network visualization. *Frontiers in Aging Neuroscience, 14*. https://doi.org/10.3389/fnagi.2022.876159

Palmatier, R. W., Houston, M. B., & Hulland, J. (2018). Review articles: Purpose, process, and structure. *Journal of the Academy of Marketing Science, 46*(1), 1–5. https://doi.org/10.1007/s11747-017-0563-4

Pesta, B., Fuerst, J., & Kirkegaard, E. O. W. (2018). Bibliometric keyword analysis across seventeen years (2000–2016) of intelligence articles. *Journal of Intelligence, 6*(4), 46. https://doi.org/10.3390/jintelligence6040046

Punj, N., Ahmi, A., Tanwar, A., & Rahim, S. A. (2023). Mapping the field of green manufacturing: A bibliometric review of the literature and research frontiers. *Journal of Cleaner Production, 138729*. https://doi.org/10.1016/j.jclepro.2023.138729

Ranjbar-Sahraei, B., & Negenborn, R. (2017). *Research positioning & trend identification: A data-analytics toolbox*. Delft University of Technology. http://resolver.tudelft.nl/uuid:e736746b-7cba-4239-ac87-49634ccb43e4.

Savage, W. E., & Olejniczak, A. J. (2022). More journal articles and fewer books: Publication practices in the social sciences in the 2010's. *PLoS One, 17*(2), Article e0263410. https://doi.org/10.1371/journal.pone.0263410

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Strosahl, K. D., Hayes, S. C., Bergan, J., & Romano, P. (1998). Assessing the field effectiveness of Acceptance and Commitment Therapy: An example of the manipulated training research method. *Behavior Therapy, 29*(1), 35–63.

Tuyon, J., Onyia, O. P., Ahmi, A., & Huang, C.-H. (2022). Sustainable financial services: Reflection and future perspectives. *Journal of Financial Services Marketing*. https://doi.org/10.1057/s41264-022-00187-4

Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics, 84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Visser, M., van Eck, N. J., & Waltman, L. (2021). Large-scale comparison of bibliographic data sources: Scopus, Web of science, dimensions, crossref, and Microsoft academic. *Quantitative Science Studies, 2*(1), 20–41. https://doi.org/10.1162/qss_a_00112

Wallin, J. A. (2005). Bibliometric methods: Pitfalls and possibilities. *Basic and Clinical Pharmacology and Toxicology, 97*(5), 261–275. https://doi.org/10.1111/j.1742-7843.2005.pto_139.x

Xiao, Z., Hu, S., Xu, W., Wang, S., Mo, W., Deng, H., Wei, J., Yang, H., Zhou, W., Li, Q., Zhou, H., & Lv, X. (2022). A bibliometric analysis of NLRP3 inflammasome in acute lung injury/acute respiratory distress syndrome from 2010 to 2021. *Frontiers in Immunology, 13*. https://doi.org/10.3389/fimmu.2022.1053658

Zakaria, R., Ahmi, A., Ahmad, A. H., & Othman, Z. (2021). Worldwide melatonin research: A bibliometric analysis of the published literature between 2015 and 2019. *Chronobiology International, 38*(1), 27–37. https://doi.org/10.1080/07420528.2020.1838534