

DIGITAL INNOVATIONS FOR EDUCATOR WELL-BEING - A SCIENTOMETRIC REVIEW OF VIRTUAL REALITY APPLICATIONS IN STRESS REDUCTION

INOVASI DIGITAL UNTUK KESEJAHTERAAN PENDIDIK: SUATU TINJAUAN SAINTOMETRIK APLIKASI REALITI MAYA DALAM PENGURANGAN TEKATAN

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ABSTRACT

The intersection of digital innovation and educator psychological well-being represents one of the most dynamic and consequential frontiers in contemporary educational research, as global concerns over teacher burnout, occupational stress, and mental health crises within academic institutions continue to intensify. This paper presents a scientometric review of 1,406 Scopus-indexed publications spanning a decade of scholarship from 2016 to 2026, systematically charting the intellectual evolution, structural composition, and thematic orientation of research at the nexus of virtual reality (VR), extended reality (XR), and educator well-being. The trajectory of publication growth reveals a field in accelerating ascent — from a modest 13 documents in 2016 to an extraordinary 406 in 2025 — a pattern mirroring the broader global digital health revolution catalysed, in part, by the COVID-19 pandemic and its lasting disruption to educational environments. The United States (23.8%), China (11.9%), and the United Kingdom (9.4%) anchor the global research landscape, though notable contributions from Malaysia, Australia, Germany, and Spain signal a rapidly diversifying geographic base. The inherently cross-disciplinary nature of this field, spanning Social Sciences, Medicine, Computer Science, Psychology, Engineering, and Nursing, positions VR-based well-being research as a genuinely hybrid domain bridging pedagogy, clinical psychology, and human-computer interaction. Thematically, the corpus encompasses keywords across both the technological (virtual reality, augmented reality, digital health, metaverse) and the psychological (anxiety, burnout, mental health, stress, resilience), illustrating the field's dual commitment to technological innovation and human-centered outcomes, with leading journals including *Frontiers in Psychology*, *BMJ Open*, and the *Journal of Medical Internet Research* serving as primary dissemination platforms. Collectively, this scientometric synthesis establishes a comprehensive intellectual map of VR-mediated educator well-being research, identifies foundational

knowledge clusters and emerging thematic gaps, and provides evidence-based guidance for researchers, technology developers, educational policymakers, and institutional administrators seeking to harness digital innovations in support of educator mental health and professional sustainability.

Keywords: “Virtual Reality (VR)”; “Educator Well-Being”; “Scientometric Review”; “Stress Reduction”; “Digital Innovations”;

INTRODUCTION

Mental Health Among Educators

The global teaching workforce is confronted by an escalating psychological crisis of unprecedented magnitude. Occupational stress, chronic burnout, and deteriorating mental health among educators have emerged as critical systemic challenges that threaten not only individual well-being but the broader sustainability of educational institutions worldwide (Maslach & Leiter, 2016). Research consistently indicates that teachers experience disproportionately high rates of emotional exhaustion, depersonalisation, and diminished professional efficacy — consequences attributable to increasing administrative demands, large class sizes, insufficient institutional support, and the relentless pressures of performance accountability (Johnson et al., 2019; Skaalvik & Skaalvik, 2017).

The COVID-19 pandemic further accelerated this crisis, forcing an abrupt and largely unsupported transition to remote and hybrid teaching modalities that exacerbated pre-existing vulnerabilities in educator psychological resilience (Huang et al., 2020; König et al., 2020). In this context, digital health interventions — particularly those leveraging the immersive capacities of virtual reality (VR), augmented reality (AR), and extended reality (XR) — have attracted substantial scholarly attention as potentially transformative tools for stress reduction, emotional regulation, and psychological restoration (Freeman et al., 2021; Rus-Calafell et al., 2018).

Virtual Reality (VR)

Virtual reality, in particular, offers distinctive therapeutic affordances by creating controllable, fully immersive environments in which users can practise mindfulness, engage in exposure-based therapies, develop emotional coping strategies, and experience restorative natural simulations — all within accessible and scalable digital platforms (Carl et al., 2019; Navarro-Haro et al., 2019). From guided meditation landscapes to virtual professional development environments, VR technologies hold considerable promise for addressing the psychological needs of educators in ways that traditional interventions have struggled to achieve (Oprış et al., 2012; Brivio et al., 2018).

Despite this growing body of applied research, the intellectual architecture of the field — its structural development, leading contributors, geographic distribution, thematic evolution, and disciplinary intersections — has not been comprehensively mapped through rigorous bibliometric or scientometric analysis. This gap represents a significant limitation for researchers seeking to locate their work within established knowledge clusters, for policymakers designing evidence-based institutional well-being programmes, and for technology developers aiming to align product development with the most pressing scholarly priorities.

Scientometric Review Scopus-indexed

Accordingly, this study presents a scientometric review of 1,406 Scopus-indexed publications from 2016 to 2026, employing both quantitative bibliometric analyses and systematic data visualisation to construct an empirically grounded intellectual map of VR-mediated educator well-being research. The findings are intended to serve as a strategic navigational resource for scholars, practitioners, and policymakers operating at the productive intersection of digital innovation and human-centered educational governance.

PROBLEM STATEMENT

Despite the rapid proliferation of research on virtual reality applications for psychological well-being and the growing global urgency surrounding educator mental health, the specific intersection of these

two domains remains insufficiently consolidated and systematically examined. While individual empirical studies have explored VR-based interventions for anxiety reduction, burnout mitigation, and stress management among teachers and academic professionals, no comprehensive scientometric analysis has mapped the structural evolution, geographic distribution, disciplinary breadth, and thematic clustering of this emerging field.

This absence of a consolidated intellectual map creates several interconnected challenges. First, researchers entering the field lack reliable bibliometric benchmarks to position their contributions relative to existing knowledge clusters. Second, educational policymakers and institutional administrators have limited empirical guidance for identifying which digital well-being interventions have garnered the strongest scholarly consensus. Third, technology developers and EdTech innovators lack a systematic understanding of the thematic gaps and underexplored research territories within VR-based educator well-being, which could otherwise inform product development and deployment strategies.

Furthermore, the inherently cross-disciplinary nature of this research domain — bridging social sciences, medicine, computer science, psychology, engineering, and nursing — creates additional complexity in navigating the dispersed and multi-contextual body of literature. Without a scientometric synthesis capable of integrating insights across these disciplinary boundaries, the cumulative intellectual progress of the field remains fragmented and potentially redundant, limiting its translational impact on educational policy and practice.

This paper addresses these gaps by conducting a rigorous scientometric review of 1,406 Scopus-indexed publications from 2016 to 2026, applying quantitative bibliometric methods to systematically chart publication trends, leading scholars and institutions, dominant geographic concentrations, core subject domains, and emerging thematic priorities within the nexus of VR-mediated interventions and educator psychological well-being.

LITERATURE REVIEW

Virtual Reality as a Therapeutic Tool for Psychological Well-Being

Virtual reality has evolved from a primarily entertainment-focused technology to a clinically validated therapeutic instrument with demonstrated efficacy across multiple domains of psychological health. Early foundational work by Botella et al. (2007) established the viability of VR exposure therapy for treating phobias and anxiety disorders, while subsequent systematic reviews by Carl et al. (2019) confirmed VR's effectiveness in reducing symptoms of anxiety, depression, and post-traumatic stress disorder. The distinctive therapeutic mechanism of VR — the capacity to generate presence, or the psychological sense of 'being there' in a virtual environment — enables forms of experiential learning, emotional processing, and behavioural rehearsal that conventional digital or print-based interventions cannot replicate (Slater & Sanchez-Vives, 2016).

Within the domain of stress reduction, immersive VR environments have been shown to elicit psychophysiological relaxation responses comparable to those produced by in-person mindfulness-based stress reduction programmes. Navarro-Haro et al. (2019) demonstrated significant reductions in cortisol levels and self-reported stress among participants exposed to virtual natural environments, while Brivio et al. (2018) documented enhanced emotional regulation and reduced psychological arousal following VR-mediated restoration sessions. These findings have catalysed growing interest in deploying VR technologies specifically within high-stress occupational contexts, including healthcare, emergency services, and education (Opriş et al., 2012; Freeman et al., 2021).

Educator Well-Being: Contextual Challenges and Digital Intervention Needs

The scholarly literature on educator well-being has documented a consistent pattern of occupational stress characterised by role overload, emotional labour demands, interpersonal conflict, and insufficient professional support structures (Maslach & Leiter, 2016; Skaalvik & Skaalvik, 2017). Johnson et al. (2019) found that nearly 40% of newly qualified teachers in high-income countries report symptoms of burnout within their first five years of practice, while Huang et al. (2020) documented a significant

amplification of these pressures during and following the COVID-19 pandemic. The cumulative human cost of this psychological burden — manifested in elevated rates of teacher attrition, absenteeism, and reduced instructional quality — has prompted increased policy attention to scalable and accessible well-being interventions within educational institutions.

Digital interventions, including mobile mental health applications, online mindfulness programmes, and increasingly, VR-based immersive experiences, have been positioned as scalable complements to traditional psychological support services for educators (Firth et al., 2017; Torous et al., 2021). The appeal of digital modalities lies partly in their accessibility — deployable without the scheduling constraints or geographic limitations of in-person services — and partly in their capacity to reduce the stigma often associated with help-seeking behaviour among professional populations (Edbrooke-Childs et al., 2020). However, empirical evidence specifically targeting educators, as opposed to broader occupational groups, remains comparatively sparse and methodologically heterogeneous.

Scientometric and Bibliometric Approaches in Educational Technology Research

Scientometric analysis has emerged as an increasingly important methodological framework for mapping the intellectual architecture of rapidly developing interdisciplinary research fields. By applying quantitative bibliometric tools to large corpora of scholarly publications, researchers can identify patterns of knowledge production, citation networks, thematic clustering, and geographic concentrations that would be invisible through traditional narrative reviews (Aria & Cuccurullo, 2017; Van Eck & Waltman, 2010). Within the domain of educational technology research, scientometric methods have been applied to examine the structural development of fields including e-learning (Zawacki-Richter et al., 2019), gamification in education (Hamari et al., 2014), and artificial intelligence applications in learning environments (Chen et al., 2020).

However, to the authors' knowledge, no prior scientometric study has specifically examined the intersection of VR-based interventions and educator psychological well-being. This represents a significant gap in the meta-scientific understanding of the field, particularly given the accelerating pace of publication growth documented in Scopus-indexed sources from 2016 onwards. The present study addresses this gap by applying a comprehensive scientometric methodology to 1,406 publications, yielding insights into publication trends, leading contributors, disciplinary composition, geographic distribution, source title profiles, and keyword co-occurrence patterns that collectively constitute the intellectual map of this emerging field.

METHODOLOGY

Search Strategy and Database Selection

This study employed a comprehensive scientometric methodology, utilising the Scopus database as the primary data source. Scopus was selected on the basis of its extensive multidisciplinary coverage, rigorous quality-assurance indexing standards, and the availability of structured metadata amenable to bibliometric extraction and analysis. The following Boolean search string was applied across titles, abstracts, and keywords (TITLE-ABS-KEY):

((("Educator" OR "Teacher*" OR "Lecturer*" OR "Academic*" OR "Faculty" OR "Professor*" OR "Instructor*" OR "Teaching staff" OR "School leader*") AND ("Virtual Reality" OR "VR" OR "Immersive Technolog*" OR "Digital Innovation*" OR "Virtual Environment*" OR "Augmented Reality" OR "AR" OR "Mixed Reality" OR "Extended Reality" OR "XR" OR "Metaverse" OR "Digital intervention*" OR "Digital health") AND ("Stress*" OR "Burnout" OR "Well-being" OR "Wellbeing" OR "Mental Health" OR "Anxiety" OR "Depression" OR "Resilience" OR "Psychological*" OR "Emotion*"))*

The search was restricted to publications from 2016 to 2026, encompassing a full decade of scholarly output. No language or document-type restrictions were applied during the initial retrieval phase, yielding a total of 1,406 publications for analysis.

Data Extraction and Scientometric Indicators

Bibliometric data were extracted from Scopus using the platform's native export functionality. The extracted dataset included publication year, author names, author affiliations, country of affiliation, source titles, subject areas, funding sponsors, keywords (both author-supplied and indexed), document types, and citation counts. Data retrieved from the Scopus database were subsequently processed and organised using biblioMagika® (Ahmi, 2021), a freely accessible Excel-based bibliometric tool, enabling systematic computation of the following scientometric indicators across each analytical dimension:

Total Publications (TP): The aggregate count of documents within each analytical category.

Total Citations (TC): The cumulative citation count received by publications within each category.

Citations per Publication (C/P): The mean number of citations received per publication.

h-Index: The highest number h of publications that have each received at least h citations, indicating research impact concentration.

g-Index: The highest number g such that the top g publications collectively received at least g^2 citations.

Analytical Framework

The scientometric analysis was organised along seven principal analytical dimensions: (1) annual publication trends; (2) leading authors by publication count; (3) subject area distribution; (4) document type classification; (5) source title analysis; (6) keyword frequency and thematic clustering; (7) institutional contribution profiles; and (8) country-level geographic distribution. Each dimension was examined using both descriptive frequency statistics and proportional analyses expressed as percentages of the total corpus ($N = 1,406$).

FINDINGS AND DISCUSSIONS

Annual Publication Trends (2016–2026)

The temporal distribution of publications reveals a field characterised by sustained and accelerating growth across the review period. As presented in Table 1, the corpus expanded from a nascent 8 publications in 2016 to a peak of 411 articles in 2025, representing a 51-fold increase in annual output over the decade. This trajectory demonstrates three discernible phases of growth: an initial period of modest but consistent expansion from 2016 to 2019 (8, 12, 24, and 43 publications respectively); an accelerated growth phase from 2020 to 2022 coinciding with the COVID-19 pandemic (68, 98, and 139 publications); and a period of exponential scaling from 2023 to 2025 (184, 240, and 411 publications). The 2026 data (179 publications at time of extraction) reflects a partial-year count which till latest of May 2026.

The COVID-19 inflection point is particularly noteworthy: the pandemic catalysed an abrupt 58% increase in publication volume between 2019 and 2020, likely reflecting the simultaneous disruption of established educator well-being supports and the accelerated adoption of digital health technologies in response to lockdown-related isolation and institutional instability. The sustained growth trajectory post-pandemic suggests that the field has achieved sufficient critical mass to maintain momentum independently of crisis-driven research impulses — a hallmark of genuine intellectual institutionalisation.

Table 1: Annual Publication Trends (2016–2026)

Year	Total Publications (TP)	Percentage (%)	h-Index	g-Index
2016	8	0.57%	6	8
2017	12	0.85%	7	12

2018	24	1.71%	18	24
2019	43	3.06%	21	43
2020	68	4.84%	27	52
2021	98	6.97%	27	47
2022	139	9.89%	26	45
2023	184	13.09%	28	49
2024	240	17.07%	24	40
2025	411	29.23%	16	25
2026 (May)*	179	12.73%	3	3
TOTAL	1,406	100%	—	—

*2026 data reflects partial-year extraction at time of study.

Geographic Distribution of Research Output

The geographic analysis reveals a strongly North American and European-anchored research landscape, though with significant and growing contributions from Asian nations. The United States leads with 334 publications (23.8%), reflecting the country's substantial investment in both digital health infrastructure and educational technology research. China ranks second with 168 publications (11.9%), consistent with its rapid expansion of VR-focused research capacity and government-driven initiatives in digital education and health technology. The United Kingdom contributes 132 publications (9.4%), anchored by world-leading institutions such as King's College London, University College London, and the University of Oxford.

Among Asian nations, Malaysia demonstrates a notable research presence with 57 publications (4.1%), positioning it within the top 10 contributing countries globally and reflecting the strategic emphasis on educational technology research at institutions including Universiti Kebangsaan Malaysia and Universiti Teknologi MARA. Other significant contributors include Australia (69 publications, 4.9%), India (67 publications, 4.8%), Canada (61 publications, 4.3%), Germany (60 publications, 4.3%), and Spain (76 publications, 5.4%), indicating a genuinely globalised, if still Western-leaning, research community.

This geographic distribution carries important implications for the generalisability of research findings. The concentration of output in high-income, English-speaking, and Western European nations suggests potential cultural and institutional blind spots in understanding how VR-based well-being interventions may need to be adapted for deployment in diverse educational contexts across the Global South, Southeast Asia, and the Middle East — regions where educator stress and burnout are equally, if not more, acute.

Subject Area Distribution

The disciplinary composition of the corpus confirms the inherently cross-disciplinary character of VR-mediated educator well-being research. Social Sciences constitutes the dominant subject area with 611 publications (43.5%), encompassing education studies, sociology, and communication, reflecting the field's foundational pedagogical and institutional dimensions. Medicine follows with 474 publications (33.7%), underscoring the clinical health orientation of VR-based psychological interventions. Computer Science contributes 342 publications (24.3%), capturing the technical development and human-computer interaction dimensions of immersive technology design.

Table 2: Subject Area Distribution of Publications

Subject Area	Total Publications (TP)	Percentage (%)
Social Sciences	611	43.5%
Medicine	474	33.7%
Computer Science	342	24.3%
Psychology	184	13.1%
Engineering	103	7.3%
Arts and Humanities	98	7.0%
Nursing	87	6.2%
Business, Management and Accounting	84	6.0%
Health Professions	74	5.3%
Multidisciplinary	53	3.8%
Environmental Science	48	3.4%
Neuroscience	39	2.8%
Mathematics	37	2.6%

The presence of Psychology (13.1%), Nursing (6.2%), Engineering (7.3%), and Arts and Humanities (7.0%) within the top subject areas further illustrates the field's genuinely transdisciplinary character. This multi-domain configuration reflects the complexity of the research problem itself: effective VR-based educator well-being interventions require not only technological design competencies (engineering, computer science) but also clinical insights (medicine, nursing, psychology), pedagogical understanding (social sciences, education), and evaluative methodological sophistication (multidisciplinary research frameworks).

Leading Source Titles

The source title analysis identifies a cluster of high-impact journals that function as the primary dissemination platforms for research at this intersection. *Frontiers in Psychology* leads with 34 publications (2.4%), followed by *BMJ Open* with 30 publications (2.1%), and both the *Journal of Medical Internet Research* and *JMIR Formative Research* with 29 publications each (2.1%). *Education and Information Technologies* contributed 24 publications (1.7%), while *PLOS ONE* published 22 articles (1.6%). *Interactive Learning Environments* (19 publications), *Frontiers in Education* and *International Journal of Environmental Research and Public Health* (15 each), and *Education Sciences* (14 publications) round out the top tier of publication venues.

This journal distribution reveals a notable tension between clinical and educational publication cultures within the field. The prominence of health-oriented journals (*BMJ Open*, *JMIR*, *Frontiers in Psychiatry*, *JMIR Mental Health*) alongside education-focused publications (*Education and Information Technologies*, *Interactive Learning Environments*, *Education Sciences*) suggests that the two

disciplinary traditions are developing somewhat in parallel rather than in fully integrated convergence. Bridging this interdisciplinary publishing gap — perhaps through more explicitly cross-domain journals or through deliberate co-authorship strategies between clinical and educational researchers — represents a strategic opportunity for the field's next phase of development.

Keyword Analysis and Thematic Mapping

The keyword frequency analysis provides valuable insight into the thematic priorities and conceptual vocabulary of the field. Across the 1,406 publications, the most frequently occurring index keywords include: Human/Humans (480 and 330 occurrences respectively), Virtual Reality (442), Article (366), Female (308), Male (289), Adult (241), Mental Health (179), Psychology (142), Digital Health (131), Augmented Reality (129), and Anxiety (128). The high frequency of demographic descriptors (Human, Female, Male, Adult, Adolescent) reflects the importance of participant characterisation in clinical and quasi-experimental studies.

Among substantively thematic keywords, Virtual Reality (442, 31.4%), Mental Health (179, 12.7%), Digital Health (131, 9.3%), Augmented Reality (129, 9.2%), and Anxiety (128, 9.1%) collectively define the core technological and psychological coordinates of the field. The emerging prominence of Artificial Intelligence (67, 4.8%), Metaverse (54, 3.8%), Gamification (28, 2.0%), and Digital Intervention (28, 2.0%) signals the field's evolving technological frontier, pointing toward research trajectories that extend beyond traditional VR toward integrated XR ecosystems, AI-enhanced personalisation, and gamified well-being programme architectures.

The keyword cluster surrounding COVID-19 — including Covid-19 (99), Pandemic (63), Coronavirus Disease 2019 (61), Pandemics (38), and SARS-CoV-2 (29) — collectively accounts for a significant proportion of publications, confirming the pandemic's catalytic role in accelerating research attention toward digital well-being interventions for educators displaced from their conventional working environments. The gradual transition of these crisis-driven keywords toward longer-term constructs such as Wellbeing (42), Resilience, and Higher Education (44) in more recent publications suggests a maturing of the field's research agenda beyond acute crisis response toward sustainable institutional well-being practice.

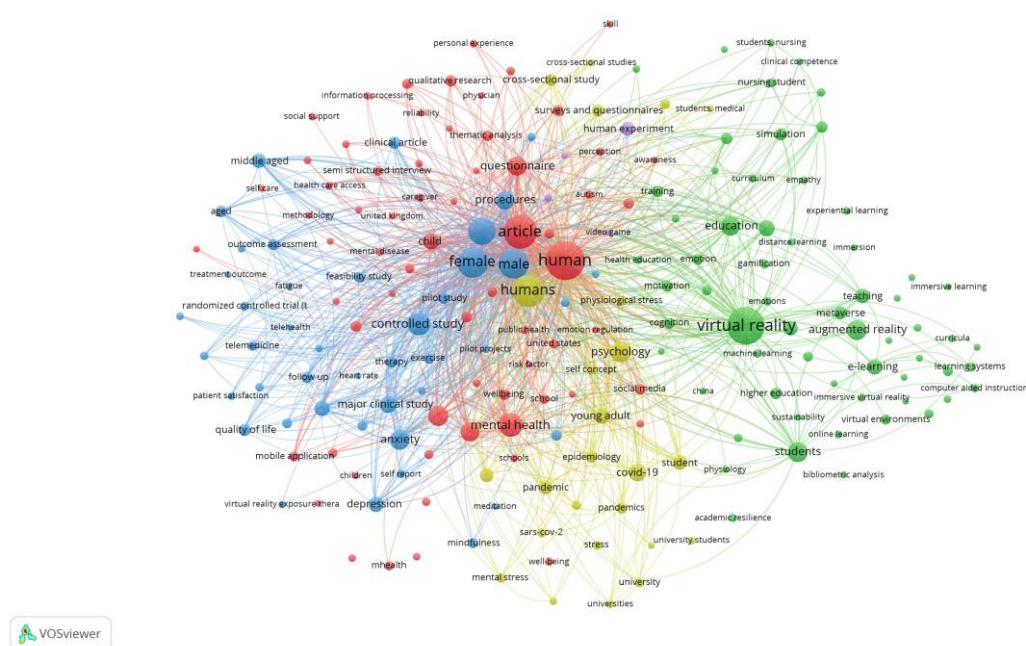


Figure 1. VOSviewer Keyword Co-occurrence Network Map Illustrating Thematic Clusters in VR-Based Educator Well-Being Research (N = 1,406 Publications)

Figure 1 presents a VOSviewer-generated keyword co-occurrence network map derived from the full corpus of 1,406 publications. In this visualisation, each node represents a keyword, with node size proportional to the frequency of its occurrence across the corpus and the thickness of connecting lines (edges) reflecting the strength of co-occurrence between keyword pairs. Nodes are colour-coded according to thematically coherent clusters identified through VOSviewer's modularity-based clustering algorithm, with each colour representing a distinct research cluster within the broader field of VR-based educator well-being.

The network map reveals five principal thematic clusters. The first and most prominent cluster, rendered in red, is anchored by the nodes "human," "article," "female," "male," and "mental health," and encompasses methodological and clinical descriptors including "controlled study," "anxiety," "depression," "psychology," and "qualitative research." This cluster reflects the dominant strand of empirical, participant-focused research that examines psychological health outcomes such as anxiety reduction and depression management, frequently employing controlled study designs and qualitative methodologies. The centrality and size of "human" and "mental health" nodes within this cluster confirm that the psychological well-being of individual participants constitutes the primary unit of analysis across much of the corpus.

The second cluster, displayed in green, is centred on "virtual reality," "education," "students," and "augmented reality," with supporting nodes including "simulation," "e-learning," "immersive learning," "gamification," "metaverse," "teaching," and "higher education." This cluster represents the educational technology dimension of the field, encompassing research into VR and AR applications within formal learning environments. The co-occurrence of "gamification" and "metaverse" within this cluster signals the field's progressive orientation toward next-generation immersive technologies and their pedagogical integration, consistent with broader trends in educational technology innovation documented in recent scholarship.

The third cluster, rendered in blue, groups keywords associated with clinical and telehealth research methodologies, including "major clinical study," "controlled study," "randomised controlled trial," "telemedicine," "telehealth," "quality of life," "patient satisfaction," and "outcome assessment." This cluster reflects the medical and health services research tradition that informs the rigorous evaluation of digital interventions, including VR-based therapies, in clinical settings. Its presence within the network underscores the multidisciplinary character of the field, bridging health informatics, clinical psychology, and digital therapeutics.

A fourth cluster, rendered in yellow, captures the pandemic-era research surge, with prominent nodes including "covid-19," "pandemic," "stress," "mindfulness," "wellbeing," "young adult," "university students," and "school." The clustering of COVID-19 and stress-related terminology with educational constructs such as "university students" and "school" affirms the pandemic's catalytic role in directing research attention toward the psychological toll of educational disruption and the potential of digital mindfulness and VR interventions as remedial strategies. The co-occurrence of "meditation" and "mindfulness" within this cluster further suggests a growing evidence base at the intersection of contemplative practices and digital well-being technologies.

Collectively, the co-occurrence network map in Figure 1 provides a visually compelling and analytically rigorous representation of the intellectual architecture of this field. The density of inter-cluster connections — particularly the strong linkages between the red clinical cluster and both the green educational technology cluster and the yellow pandemic-response cluster — confirms that VR-based educator well-being research does not operate as a monolithic subdiscipline but rather as a convergence zone in which clinical psychology, educational technology, telehealth, and public health scholarship intersect. The relative peripheral positioning of emerging nodes such as "metaverse," "machine learning," and "artificial intelligence" indicates that these technological frontiers remain nascent within the corpus, representing promising but as yet underexplored trajectories for future interdisciplinary inquiry.

Leading Authors and Institutional Affiliations

The author analysis identifies Edbrooke-Childs, J. as the most prolific contributor with 6 publications, followed by a cluster of researchers — including Puritat, K., Blandford, A., Intawong, K., and Torous, J. — each with 5 publications. A second tier of authors including Agarwal, A.K., Dirin, A., Hall, C.L., Jong, M.S.Y., Manning, J.B., Keshav, N.U., Namaziandost, E., and Vahabzadeh, A. each contributed 4 publications. The relatively flat distribution of authorship — with no single author accounting for more than 0.4% of the total corpus — is characteristic of early-to-mid-stage interdisciplinary fields in which research activity is broadly dispersed rather than concentrated in dominant research teams.

At the institutional level, the University of Toronto leads with 18 publications (1.3%), followed by King's College London (15 publications, 1.1%), Stanford University School of Medicine and University College London (14 each, 1.0%), and Harvard Medical School (13 publications, 0.9%). Among Asian institutions, Universiti Kebangsaan Malaysia (11 publications, 0.8%) and Nanyang Technological University (10 publications, 0.7%) register as notable contributors, alongside leading Asia-Pacific universities including The University of Hong Kong and the University of Melbourne (11 publications each). The presence of Universiti Kebangsaan Malaysia and Universiti Teknologi MARA (9 publications) among the top contributing institutions affirms Malaysia's increasing prominence in this research domain, consistent with national digital education and health technology investment priorities.

CONCLUSION

This scientometric review of 1,406 Scopus-indexed publications from 2016 to 2026 provides a comprehensive and empirically grounded intellectual map of research at the intersection of virtual reality technologies and educator psychological well-being. The findings collectively reveal a field in rapid and sustained ascent — characterised by exponential publication growth, expanding geographic reach, and deepening thematic sophistication — that has transitioned from a nascent scholarly interest to a substantive interdisciplinary domain over the review decade.

Several conclusions of strategic significance emerge from the analysis. First, the exponential growth trajectory (from 8 publications in 2016 to 411 in 2025) confirms that VR-mediated educator well-being represents one of the most dynamically expanding frontiers in contemporary digital health and educational technology research. Second, the field's inherently cross-disciplinary character — spanning social sciences, medicine, computer science, psychology, nursing, and engineering — necessitates collaborative research architectures that transcend conventional disciplinary boundaries in methodology, publication, and knowledge translation. Third, while the United States, China, and the United Kingdom anchor global research production, the notable contributions from Malaysia, Australia, Germany, India, and Spain signal a genuine internationalisation of the field with important implications for cultural adaptation and ecological validity of intervention designs.

Thematically, the analysis reveals a field whose conceptual vocabulary spans both the technological horizon (virtual reality, augmented reality, metaverse, artificial intelligence, digital health) and the psychological core (mental health, anxiety, burnout, resilience, wellbeing), positioning it as a productive site for technology-human integration research. The COVID-19 pandemic served as a significant catalyst for accelerated research activity from 2020 onwards, and the post-pandemic trajectory suggests that this momentum has been successfully institutionalised within mainstream educational and health technology scholarship.

For future research, the findings point to several priority directions: (1) methodologically rigorous randomised controlled trials specifically targeting educators as the intervention population, rather than treating teachers as a subsample within broader occupational studies; (2) culturally adapted VR well-being interventions for educational contexts in the Global South and Southeast Asia; (3) longitudinal studies examining the sustained effects of VR-based stress reduction on educator retention, professional efficacy, and institutional well-being outcomes; and (4) interdisciplinary research syntheses that integrate technical design, clinical validation, and pedagogical implementation within unified research frameworks. The findings of this scientometric review are intended to provide researchers,

policymakers, technology developers, and institutional administrators with the evidential foundation necessary for strategic, coordinated, and impactful investment in digital innovations for educator well-being.

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