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PAPER

Artificial Intelligence and Mental Health: Bibliometric Analysis

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ABSTRACT

Artificial intelligence (AI) is transforming mental health research and care by introducing tools for diagnosis, prevention, and treatment. This bibliometric analysis reviews 68 empirical studies (2004–2024) from Scopus and Web of Science, analyzed using LENS software. Results show a surge in publications after 2020, with strong contributions from the U.S., U.K., and Italy—led by institutions like the University of Washington and Sapienza University of Rome. AI technologies such as machine learning, chatbots, and mobile apps are widely used to detect depression and suicidal ideation and provide scalable psychological support. Mobile-based interventions—like chatbot therapy, mood tracking, and self-help platforms—are increasingly common and user-centered. While AI shows moderate effectiveness when combined with traditional therapy, challenges remain, including limited population diversity and unclear factors influencing user engagement. This study maps the current research landscape, highlighting key trends, leading institutions, and gaps. Findings stress the need for future research on interactivity, personalization, and mobile delivery to improve the reach and impact of AI-driven mental health interventions.

KEYWORDS

artificial intelligence (AI), bibliometric analysis, interactive technology, mental health, publication trends

1 INTRODUCTION

Applying artificial intelligence (AI) in the mental health field indicates its efficiency in the diagnosis, prevention, and treatment of various mental disorders. AI is considered an effective supporting tool for psychological interventions since it enhances the improvement of mental health, psychological well-being, and overall well-being of the patients. Although there are random studies on AI usage in clinical psychology, there is no study synthesizing existing results regarding its efficiency, benefits, and directions for future studies. Some studies explored the use of technology in mental health [1], [2], [44]. These technologies increasingly include mobile

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health (mHealth) apps, smartphone-based tracking, and digital self-help tools, many of which are enhanced by AI algorithms for personalization and decision support [3]–[5]. Other studies focused on the use of AI in the detection of depression [6], [7], its prevention [8], [9], or the detection of suicidal behaviors [10], [11]. The effectiveness of AI in detection, prevention, and treatment was measured for eating disorders [12], anorexia [13], and obesity [14]. There are attempts to investigate the use of AI in the prediction of generalized anxiety disorder [15].

Recent debates highlight both the promise and complexity of integrating AI into mental health care, with growing concerns about ethical use, diagnostic accuracy, and the balance between human and machine support [1], [2]. While some view AI as a revolutionary tool for scalable, personalized care, others caution against over-reliance without addressing issues such as bias, data privacy, and clinical accountability. However, the relationships between AI and mental health in a wide perspective have not been explored yet. Therefore, more studies are required to examine the use of AI in the diagnosis, prevention, and treatment of mental disorders. Consequently, the current study will focus on gathering, analyzing, and synthesizing information taken from available studies to establish a complex approach to understanding the connections between AI and mental health. Additionally, the study aims to provide an overview of publication trends for researchers and identify potential gaps, enhancing the effectiveness of correct detection of mental disorders, reducing symptoms, and improving overall well-being.

2 LITERATURE REVIEW

Artificial intelligence has been widely applied in the detection, prevention, and treatment of various mental disorders like depression [6], suicidal behavior [10], [16], [17], anxiety [15], stress [18], eating disorders [12], [19], and generalized anxiety disorder [18]. Recent studies have shown that not only traditional approaches such as CBT and mindfulness interventions but also AI-facilitated social support, either in person or virtually, can be effective in treating these conditions [18], [20]. This aligns with studies on chatbot-based and mobile-delivered support [21], [22], [42] and AI-powered health service bots evaluated in Indonesian and Middle Eastern populations [23], which highlight the effectiveness of mobile platforms in reducing psychological distress and supporting self-guided intervention.

One of the significant research directions is focused on investigating the connections between AI and mental health. Thus, [1] investigated AI support in the mental health field, indicating significant issues regarding using AI in mental health practice. Another study [2] focused on the comparison between traditional and AI-based diagnoses of mental disorders, emphasizing the most influential barriers for diagnosis. A study in [24] conducted a systematic review on interventions for mental health among students, indicating the need for more studies in the field. Related findings in mobile mental health interventions further support this, as chatbots designed with positive psychology principles have been shown to enhance digital well-being and user engagement in mental health support contexts [25], [43].

Some studies focused on the evaluation of the effectiveness of AI in psychological interventions. According to some of them, the application of AI in psychological interventions might result in personalized and efficient treatment of mental health [8]. The study showed the effectiveness of internet-based CBT and computer-assisted therapy, indicating some limitations related to body language. A study on using AI in the prediction of generalized anxiety disorder stated that it helps to gather data needed for effectively managing the risk of GAD symptoms [16]. A recent study stated that psychiatrists prefer human-based support for patients diagnosed

with depression [26], while another study on familiarity with AI among psychology students indicated a wide range of opinions among them and the importance of including related information in academic curricula [27].

Another key research direction explores AI's role in detecting mental disorders, especially depression and suicide. A recent study examined how social media data, images, facial expressions, texts, and emotional chatbots can aid in detecting depression and emotions, finding that various modalities like images, gestures, and speech are effective [6]. Another study used Bayesian networks to analyze suicide risk factors such as gender, age, diagnosis, and type of therapy, noting its potential to influence psychotherapy outcomes [10]. AI has demonstrated effectiveness in suicide risk prediction, highlighting both its advantages and limitations at individual and societal levels, as well as its utility in diagnosis, evaluation, and treatment [11]. AI also is useful in identifying suicidal ideation on social media [28]. Moreover, AI and other technologies will likely be widely used for prediction and prevention of depression in the future, since they show no prejudice or biases in making predictions [9]. They studied various non-pathological factors (gender, year of study, lifestyle, network usage, and social software) impacting the occurrence of depression. The study in [7] explored how social media can help to recognize symptoms of depression or other mental disorders among its users.

Using AI for the detection of various eating disorders was explored in recent studies as well. AI was found effective in the detection, prevention, and treatment of eating disorders [12]. The impact of gender bias while applying AI to patients with anorexia was recognized as significant [13]. Another study evaluated technological support for CBT among patients with obesity, stating significant improvement in their body weight and weight percentage [14].

Studies on AI and well-being attract attention among some researchers. Therefore, AI effectiveness in improving mental well-being among students during COVID-19 was explored [29]. Another research focused on the impact of chatbots on mental health, demonstrating their practical and effective role in reducing mental distress [30]. A similar study examined the impact of chatbots and robots on self-management of occupational stress [31]. Another research demonstrated the effectiveness of AI in decreasing anxiety and fear and preventing traumatic memories among children exposed to frightening medical experiences [32].

Recent studies [3], [4] emphasized the synergistic role of mobile applications and conversational agents in supporting mental health and well-being. For example, [4] demonstrated how an AI-enabled mobile app helped new mothers manage depressive symptoms. Recent meta-analysis demonstrated that AI-based conversational agents integrated into apps can enhance engagement and communication, critical factors in therapeutic success [3]. Moreover, [5] evaluated the Mind Tutor app, an AI-enhanced application for student well-being, finding significant effects on mood, anxiety, and coping. Another research stated that using AI to analyze information cocoons helps to reduce depression among elderly populations through decreased social isolation [33].

Studies on AI and mental well-being among mothers stated a reduction of the symptoms of depression [4]. A systematic review and meta-analysis on AI and promotion of well-being found that quality of relationships, content engagement, and effective communication shape the evaluation of experience with AI [3]. AI was effective in improving students' psychological well-being by increasing their motivation [34]. A similar study [5] confirmed the effectiveness of AI in improving students' well-being by measuring anxiety, low mood, academic study, transition to university, and relationships [35]. Another study focused on measuring the effectiveness of digital cognitive-behavioral resilience/well-being intervention among children, suggesting the use of CUES for schools [36]. These findings are echoed in

interactive mobile contexts, where AI-powered mental health apps and gamified chatbots have demonstrated increased user satisfaction and emotional regulation [21], aligning well with the direction of mobile-based mental health technologies. Given the rise of mobile-delivered psychological support tools such as AI-based mental health apps and wearable monitoring systems, this bibliometric review also sheds light on how interactivity and mobility are influencing the development of digital interventions.

3 METHODOLOGY

3.1 Bibliometric study

Bibliometric analysis provides analysis of research data published in journals, conference proceedings, periodicals, reviews, and reports using statistical methods. A wide choice of tools for analyzing empirical and theoretical data by subject areas, fields of study, years of publishing, citations, keywords, and the most productive authors, journals, organizations, and countries has been employed. The use of bibliometric study enables authors to investigate the existing patterns, tendencies, and associations within the research subject and interrelated fields, considering the chosen time frame. To conduct bibliometric research, a structured database should be provided [22], [36], [37], [38], [39], [40], [41].

3.2 Data collection and data analysis

LENS software provides access to the most recent and relevant studies from highly ranked databases, including Crossref, Microsoft Academic, PubMed, and Core, then merges and links diverse sources, including scholarly works and patents, to provide an analysis of available information for scholars or practitioners on an open web platform. The unique content sets support the four primary functions of the LENS, such as discovery, analyze, manage, and share knowledge. We also noted whether reviewed articles included mobile or interactive features in AI-based mental health solutions. In a current study, the descriptive characteristics of the publication results have been discussed, including the most productive authors, institutions, countries, publishers, and journals.

Search query:

Scholarly Works (68) = Artificial AND (intelligence OR (digital AND (media AND (impact AND (mental AND health))))) Filters: Year Published = (2004–2024) Field of Study = (Clinical psychology) Subject = (Clinical Psychology, Applied Psychology, Artificial Intelligence)

The above-mentioned search was applied, and the data was retrieved in plain text (.txt) and Excel (csv) file formats for further analysis. The Microsoft Excel and LENS platform (version 7.4) software with the “bibliometrix” package was used for descriptive and bibliometric data analysis. The inclusion criteria allowed for studies that examined AI as well as mobile health applications and digital platforms, reflecting the growing domain of AI-powered mHealth tools.

3.3 Research questions

The current bibliometric study aims to explore scientific publication patterns in research domains of “using AI in the mental health field.” This study discovers

the contribution of available scientific studies to highlighting the potential areas for further studies. Considering the above-mentioned research aim and scope, the following research questions are formed:

RQ1 What are the overall descriptive characteristics of extracted studies?
RQ2 What are the publication trends in terms of the most productive countries, institutions, and authors?
RQ3 What are the most productive journals releasing studies in the mentioned domain? What are the citation results?

4 FINDINGS

4.1 Publication profile and descriptive publication results

A total of 68 publications for the research domain were retrieved from the LENS software. Microsoft Academic provided 38, PubMed 33, OpenAlex 31, PubMed Central 17, and Core 11 results. The same papers were found in a few data sets, so as a result 68 papers were selected. Most of the papers were written in the English language by 98 authors/co-authors from 21 different countries. The three top countries leading in citations productivity are the United States (n = 26), the United Kingdom (n = 9), and Italy (n = 6). Descriptive characteristics of the publications show a significant increase in their numbers in 2020 and 2023, with a noticeable prevalence of clinical psychology and applied psychology fields of study and a noticeable decrease of citations recorded within the same time frame. The top two leading institutions are the University of Washington (n = 3 and 171 citations), followed by Sapienza University of Rome (n = 2 papers and 89 citations). The Eating and Weight Disorders journal is the leading (n = 12 records and 426 citations in total), followed by Mindfulness (n = 10 and 153 citations).

After applying the query search criteria to each candidate document, we selected 68 studies. Figure 1 presents the strategy and process of inclusion studies into systematic review.

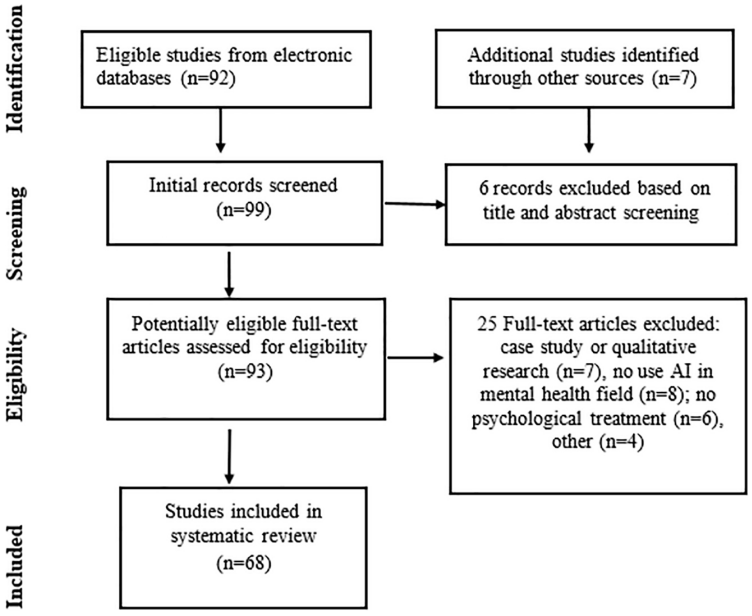

Fig. 1. Depiction search strategy, yielded studies and final sample of studies

4.2 Publication profile and descriptive publication results

As shown in Figure 2, research on using AI in mental health can be roughly divided into two phases. The first phase was from 2004 to 2014, when a few studies per year were published, with 15 papers in total (n = 15). In the second phase from 2015 to 2020, the number of records became more stable with an average of 3 papers per year. Figure 1 displays the results of the score of publishing within various fields of study between 2004 and 2024. From 2020 till now, the interest in the studied domain has increased significantly, from six to 15 papers per year.

Fig. 2. Changes in document counts by the date of publishing within top 10 subjects of study between 2004 and 2024

The top 10 fields of studies publishing papers on using AI in the mental health field between 2004 and 2024 were shown in Figure 2. The overall dynamic changed from a few records per year to a significant increase after 2022 to nine and 15 records. Records start with n = 2 in psychology and reach n = 15 in 2023. Papers in clinical psychology n = 1 in 2006 increased to n = 6 in 2022, while records in psychiatry increased from n = 1 in 2009 to n = 9 in 2023. Published studies in AI increased from n = 1 in 2004 to n = 5 in 2023. Altogether, the data shown in Figure 1 indicate an emerging trend in the increasing volume of publications focused on AI-enhanced mobile mental health applications, including smartphone-based tools, digital self-help platforms, and app-integrated AI agents designed for real-time psychological support.

Figure 3 illustrates changes in citing papers published within the top 10 fields of studies on using AI in the mental health field between 2004 and 2024. Records start with n = 18 in developmental psychology and n = 35 in psychology in 2004, then increase in 2005 (n = 217). In 2006 records decreased sharply (n = 3). In 2011 the publication records rose sharply in eating disorder (n = 143), cognition (n = 202) and psychology (n = 210) and then decreased in 2014 (n = 6). After 2017 the citation record decreased significantly (below 70 citations in psychology and clinical psychology). The most productive subjects in 2005, 2011, and 2017 were psychology and clinical psychology. Analysis of Figures 2 and 3 shows opposite tendencies in decrease or increase of publishing and citation records within the domain. Few papers published between 2004 and 2012 were cited more often in comparison

with a higher number of publications between 2020 and 2024, when the citation records are significantly lower.

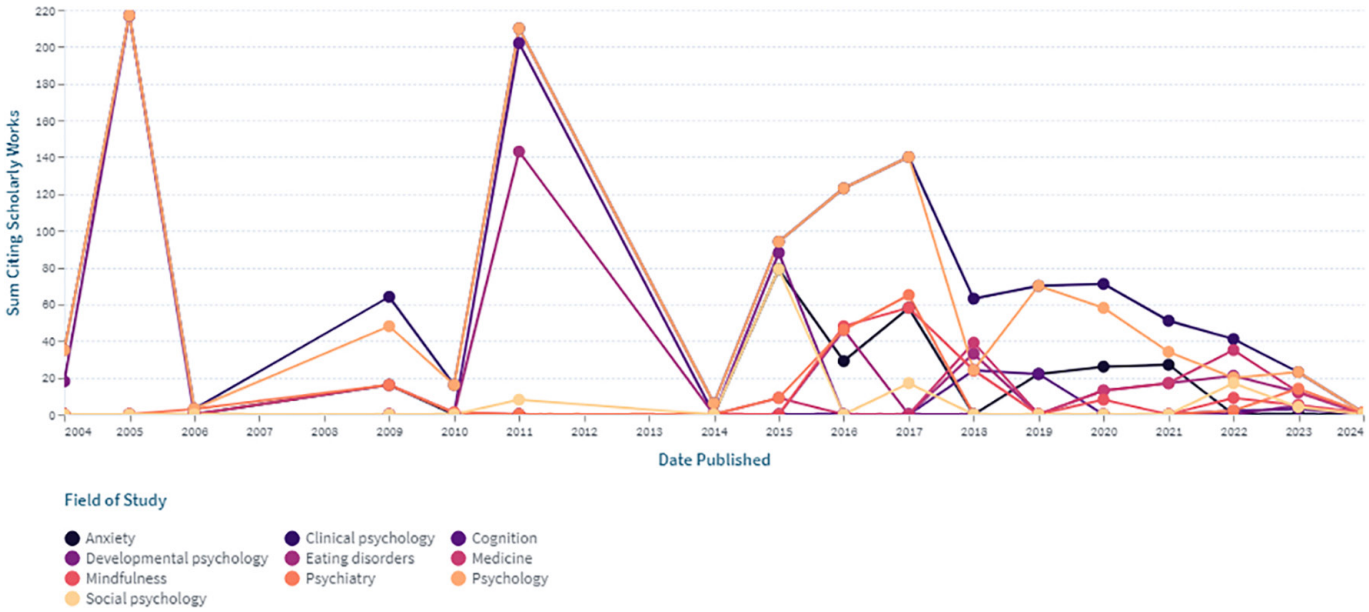

Fig. 3. Changes in citing papers within the top 10 subjects of study by the date of publishing between 2004 and 2024

Table 1 presents findings regarding the most popular subjects of study in the domain of AI and mental health published between 2004 and 2024.

Table 1. Most popular subjects of study published

Subject of Study	Publications (n)	Average Citing (n)	Sum Citing (n)
Clinical Psychology	34	27.7	944
Psychiatry and Mental Health	19	31.8	604
Experimental and Cognitive Psychology	21	18.3	385
Developmental and Educational Psychology	12	23.8	286
Applied Psychology	24	8.4	203
Social science	10	15.3	153
Social Psychology	3	47	141
General Medicine	6	14.8	89
Artificial Intelligence	10	8.1	81
Clinical Psychology	34	27.7	944

Table 1 highlights key subject areas in the reviewed publications. Clinical psychology stands out with the most publications (34) and strong citation impact (944 total, 27.7 average), suggesting strong academic interest and influence within the domain. Psychiatry and mental health have fewer studies (19) but the highest average citations (31.8), while social psychology shows remarkable influence with only 3 studies averaging 47 citations. Fields such as applied psychology and AI show lower citation rates, suggesting more limited impact, possibly reflecting emerging or more niche scholarly interest.

4.3 Distribution of the most productive authors, institutions, and countries

According to Table 2, the University of Washington is a leading institution, with three papers and 171 citations, followed by Sapienza University of Rome with two papers and 89 citations. McGill University published two papers and received nine citations in total.

Table 2. Most active institutions published research about AI and mental health (2004–2024)

Institution	Publications (n)	Percent n = 68 (%)	Sum Citing (n)	Average Citing (n)
University of Washington	3	4.4	171	57
Sapienza University of Rome	2	2.9	89	44.5
Econa	2	2.9	83	41.5
University of Louisville	2	2.9	53	26.5
Medical University of South California	2	2.9	47	23.5
Florida State University	2	2.9	34	17
University of Exeter	2	2.9	28	14
University of Turin	3	4.4	23	7.6
University of Birmingham	2	2.9	21	10.5
McGill University	2	2.9	9	4.5

Table 3 shows the most productive (top 9) countries by corresponding authors who contributed to the research domain fields.

Table 3. Most relevant countries by average citing scholarly works (2004–2024)

Country	Sum Citing (n)	Average Citing (n)	Publications (n)
United States	559	21.5	26
Italy	255	42.5	6
United Kingdom	207	23	9
Canada	57	19	3
Netherlands	40	13.3	3
Australia	19	4.75	4
Israel	19	9.5	2
Germany	18	6	3
Spain	8	4	2

The studied domain was mainly explored by United States researchers (n = 26), followed by the United Kingdom (n = 9) and Italy (n = 6). The three top countries by sum citing scholarly works are the United States (n = 559), Italy (n = 255), and the United Kingdom (n = 207). However, by an average citing score, the leading country is Italy (n = 42.5), followed by the United Kingdom (n = 23) and then the United States (n = 21.5).

Table 4 shows the most productive journal by the number of publications and its average and overall citing score.

Table 4. The most productive journal by document count, sum and average citing scholarly work (2004–2024)

Journal	Publications (n)	Sum Citing (n)	Average Citing (n)
Clinical child and family psychology review	2	133	66.5
Eating and Weight Disorders	12	426	35.5
Cognitive Therapy and Research	4	120	30
Journal of Psychopathology & Behavioural Assessment	4	109	27.75
Cognitive Processing	5	80	16
Mindfulness	10	153	15.3
Journal of Contemporary Psychotherapy	2	29	14.5
Applied psychophysiology and biofeedback	2	18	9
Journal of Police and Criminal Psychology	3	9	3
International Journal of Applied Positive Psychology	3	1	0.33

The top publication sources were distributed and sorted from the highest to the lowest. *The Eating and Weight Disorders* is the leading journal with 12 records and 426 citations in total, followed by *Mindfulness* with 10 papers and 153 citations, and *Cognitive Processing Journal* with five published studies and 80 citations only. By the average citation score, the top three leading journals are *Clinical Child and Family Psychology Review* (n = 2, average citing 66.5), *Eating and Weight Disorders* (n = 12 with average citing 35.5), and *Cognitive Therapy and Research* (n = 4 with average citing 30). The least cited papers were published by the *International Journal of Applied Positive Psychology* (n = 3 with one citation only) and the *Journal of Police and Criminal Psychology* (n = 3 with nine citations only).

Table 5 shows the most productive authors and co-authors by the number of publications and their average and overall citing score.

Table 5. The most productive authors/co-authors by document count, sum and average citing scholarly work (2004–2024)

Author	Publications (n)	Average Citing (n)	Sum Citing (n)
Burgalassi A.	1	143	143
Brytek-Matera A.	2	56.5	113
Raffone A.	2	41.5	83
Belardinelli M.O	2	41.5	83
Milings A.	1	58	58
Dunn B.D	2	14	28
Wright A.	1	25	25
Cutino A.	1	17	17
Hirsh A. T	1	16	16
Meitei A.J.	1	0	0

The two top authors/co-authors were listed from the highest to the lowest. Burgalassi A. published one paper and received 143 citations, while Brytek-Matera A. published two studies and received 113 citations in total. No citations received by A.J. Meitei (n = 1).

5 DISCUSSION AND CONCLUSIONS

The current study aimed to explore the data discussed in scientific papers recently published in highly ranked journals. The bibliometric method of this study allowed for achieving the main goal and exploration of the research domains of "AI and mental health." According to the results, 68 studies have been selected within the study domain during the period 2004–2024. It shows a moderate interest in the subject analyzed within the period studied. The bibliometric research outcome allows for the statement that the number of articles published in this research domain has increased during the period from 2020 to 2023 in comparison with previous years. This might be affected by COVID-19, which has a few following outcomes: it triggered an increase in experiencing depression and other mental disorders; it stimulated the need for developing AI and other technologies supporting detection, prevention, and treatment of mental illnesses; and it reinforced the focus of both professionals and individuals on psychological and overall well-being.

An emerging trend within the reviewed literature is the increasing integration of mobile and interactive components into AI mental health tools. These include smartphone-based CBT programs, chatbot interfaces, and mood-tracking apps. Such technologies enhance accessibility and user engagement—key considerations in mobile learning and mental health support. These findings are particularly relevant in the context of interactive mobile systems, where usability and responsiveness are critical to intervention success. Consequently, this study shows that clinical psychology and applied psychology is the most involved in exploring AI usage in a mental health context. The leading countries in discovering the effects of technology usage on an educational system are the USA, the United Kingdom, and Italy. If the USA and UK conduct more studies in clinical psychology, the increased interest among Italian researchers might be caused by COVID-19 negative experiences as well. The top cited institutions are the University of Washington and Sapienza University of Rome. The top two leading journals are the *Eating and Weight Disorders* and *Mindfulness*.

Since one of the current bibliometric study limitations was a broad search query to get access to as many related studies as possible, further analysis might be more specific to explore interconnections between different variables, including different types of technology, mental disorders, psychological interventions, and tools. Further study in the same research domain can focus on a more in-depth exploration through the content, co-word, and network analyses. Overall, a complex study on the impact of AI combined with other types of diagnosis, prevention, and interventions on well-being among patients should be well-planned to gather significant and relevant data.

The AI utilized in mental health allows both healthcare specialists and patients to engage in various new experiences, deepen their understanding of mental issues they are facing, and enhance positive change in their lives. Especially relevant are mobile apps and chatbot platforms, which offer accessible, real-time psychological support that complements traditional therapy. The integration of these apps with AI enhances user personalization, emotion detection, and treatment

adherence tracking. However, simply inserting AI into detection, prevention, or psychological interventions does not guarantee an immediate increase in their effectiveness.

6 FUTURE RESEARCH DIRECTIONS

The current bibliometric analysis emphasizes the need for more studies exploring the effectiveness of using AI to increase effective detection, prevention, and professional treatment of various mental disorders. This will result in the improvement of psychological and overall well-being. Analysis of published research papers allowed us to come up with the most significant recommendations for further studies within the domain. Conducting more similar studies in various environmental conditions, including educational institutions and primary health facilities, to measure the efficiency of the studied model with special attention to the age variable is recommended [10]. Moreover, future studies should explore the role of AI in detecting mental disorders by measurement of various categories of patients experiencing a wide range of emotions [6]. We should consider personal preferences and differences while planning prevention or treatment of depression among college students [9]. Integrating AI with EMRs for more efficient suicide prevention with consideration of clinical expertise, however, requires more measurements of its safety and effectiveness are needed [11]. More research is required to explore the impact of AI in treatment and recognizing missed care and to learn attitudes and beliefs related to AI's impact on well-being [1]. To conclude, further research should be conducted to understand factors that increase acceptance and involvement in using AI for increased well-being. To make it possible, more research should be conducted on larger and more diverse samples to check if applied AI can be generalized to wider populations. Future research should also explore the usability, effectiveness, and ethical implications of mobile mental health apps powered by AI. As shown in recent studies [3], [4], these tools offer scalable and personalized interventions. However, more research is needed on their long-term impact, user privacy concerns, and integration into health systems. There is also a need to evaluate hybrid models that combine therapist-led care with AI-supported app-based interventions.

This study allowed us to take an essential step in the exploration of scientific publication patterns in AI usage for detection, prevention, and treatment of mental disorders published between 2004 and 2024. The conducted bibliometric study analyzed and synthesized relevant research papers within explored research domains and resulted in creating the complex understanding of interconnections between AI and mental health. Discussed in this study, main tendencies and patterns in published manuscripts will allow practitioners in clinical psychology and researchers to be well-informed about both available data and current needs in gathering and using their fields of expertise to increase the effectiveness of providing help to individuals suffering from mental illness and willing to improve their well-being. The data analyzed in this study also indicated the need for conducting more research on the effectiveness and feasibility of using AI for improving psychological and overall well-being.

7 CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest to report regarding the present study.

8 CONTRIBUTION

Shubina: conceptualization, design, drafting, analysis, writing, final approval. Dzido: conceptualization, design, analysis, writing, editing, proofreading, reviewing, technical support.

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