Bibliometric Profile of Digital Mental Health (DMH) Interventions: A systematic Mapping of Advantages, Disadvantages, Effectiveness, Risks, and Future Potential

Dijital Ruh Sağlığı (DRS) Müdahalelerinin Bibliyometrik Profili: Avantajlar, Dezavantajlar, Etkillik, Riskler ve Gelecek Potansiyellerinin Sistematik Haritalandırılması

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Abstract: This study is a systematic bibliometric mapping study that aims to reveal the bibliometric profile and intellectual structure of scientific publications focusing on the themes of advantages, disadvantages, effectiveness, risks, and future potential of Digital Mental Health (DMH) interventions. A comprehensive search was conducted using the Web of Science and Scopus databases for the period 2015-2025. The study was limited to publications in English that included the document types "Article" and "Review." Data sets were created for five separate thematic focuses (advantages, disadvantages, effectiveness, risks, potentials), and the sample sizes were determined as 5.321, 10.553, 8.983, 4.554, and 5.534 records, respectively. The data were analyzed using the Bibliometrix package and the Biblioshiny interface in R Studio. The theme with the highest number of publications (501) offers the most advantages. The most influential journals are "Jmir Mental Health, Journal of Affective Disorders, Internet Interventions-The Application of Information Technology in Mental and Behavioural Health, Journal of Technology in Behavioural Science"; "Kings College London" is the leading institution. The United States is the most productive country, with the terms "female", "male" and "adult" playing a central role in almost all themes. Since 2019, the themes "depression, mental health, female, mobile application" and "mental health" have been frequently used, and a group of 10-12 authors collaborating on these themes has been identified. DMH literature exhibits a heterogeneous and dynamic structure. The current studies' focus on adult women and depression/anxiety highlights the need for research that includes different demographic groups and mental health issues. This study provides a comprehensive thematic framework for future research.

Keywords: Digital Mental Health, Advantages, Disadvantages, Effectiveness, Potential, Risks, Bibliometric Analysis

Öz: Bu çalışma, Dijital Ruh Sağlığı (DRS) müdahalelerinin avantaj, dezavantaj, etkililik, risk ve gelecek potansiyelleri temalarına odaklanan bilimsel yayınların bibliyometrik profilini ve entelektüel yapısını ortaya koymayı amaçlayan sistematik bir bibliyometrik haritalama çalışmasıdır. Web of Science ve Scopus veri tabanları kullanılarak 2015-2025 yılları arasında kapsamlı bir tarama gerçekleştirilmiştir. Çalışma, İngilizce dilinde yayınlanmış olan ve "Article" ile "Review" doküman türlerini içeren yayınlarla sınırlandırılmıştır. Beş ayrı tematik odak (avantajlar, dezavantajlar, etkilik, riskler, potansiyeller) için veri setleri oluşturulmuş ve örneklem büyüklükleri sırasıyla 5.321, 10.553, 8.983, 4.554 ve 5.534 kayıt olarak belirlenmiştir. Veriler, R Studio'da Bibliometrix paketi ve Biblioshiny arayüzü kullanılarak analiz edilmiştir. Avantajlar en fazla yayın sayısına (501) sahip temadır. "Jmir Mental Health, Journal of Affective Disorders, Internet Interventions - The Application of Information Technology in Mental and Behavioural Health, Journal of Technology in Behavioural Science" en etkili dergiler; "Kings Collage London" önde gelen kurumdur. ABD en üretken ülke olup, "female", "male" ve "adult" terimleri neredeyse tüm temalarda merkezi rol oynamaktadır. 2019'dan itibaren "depression, mental health, female, mobile application" ve "mental health" temaları sıklıkla kullanılmakta olup, 10-12 arasında değişen yazar iş birliği grubu tespit edilmiştir. DRS alan yazını heterojen ve dinamik bir yapı sergilemektedir. Mevcut çalışmaların yetişkin kadınlar ve depresyon/anksiyete odaklı olması, farklı demografik grupları ve ruh sağlığı sorunlarını içeren araştırmalara olan ihtiyacı ortaya koymaktadır. Bu çalışma, gelecek araştırmalar için kapsamlı bir tematik çerçeve sunmaktadır.

Keywords: Dijital Ruh Sağlığı, Avantajlar, Dezavantajlar, Etkilik, Potansiyeller, Riskler, Bibliyometrik Analiz

Introduction

With the digital revolution and the development of artificial intelligence tools, the use of digital technologies in human life has rapidly expanded. This digital transformation, which has had an impact in many areas such as education and health, has the potential to fundamentally transform the delivery and accessibility of mental health services (Torous et al., 2025). This field, referred to as "*Digital Mental Health (DMH)*", offers hope for overcoming the limitations encountered in the delivery of traditional mental health services through innovative interventions such as smartphone applications, web-based therapies, telepsychiatry, and artificial intelligence-supported tools (Löchner et al., 2025). Particularly for populations unable to access services due to geographical, economic, and social barriers, the idea that it offers significant opportunities has made the positive potential of the digital mental health field a key topic of academic and clinical interest, focusing on how it can be utilised to improve well-being (Hunter et al., 2023).

Although there is a rather cautious approach to the integration of digital technologies in the field of digital mental health, the COVID-19 pandemic has proven to be a critical turning point in the growth and spread of this field (Torous et al., 2021). It is emphasised that during the pandemic, telehealth applications began to rapidly proliferate, and initiatives to rapidly integrate mobile mental health technologies such as

smartphone applications, virtual reality, chatbots, and social media with mental health services became widespread (Torous et al., 2019). Therefore, it can be said that the COVID-19 pandemic has created a fundamental transformation and paradigm shift in the approach to digital mental health Technologies (Torous et al., 2021). Along with the increased interest in response to the restrictions brought about by the pandemic, the latest innovations in technological equipment have also contributed to the rapid growth of the digital mental health field (Kinoshita et al., 2024). The encouraging outlook provided by the field of digital mental health the industry for digital mental health is currently one of the most significant and has the potential to develop. The global market for digital mental health was estimated to be worth $19.5 billion in 2022 and is expected to grow to $72.3 billion by 2032, according to research by Gotadki (n.d.) (Gotadki, n.d.).

Studies in the social sciences, psychology, and medicine that use bibliometric analysis are especially interested in educational settings (Duran & Aydın, 2024), neuropsychology (Baca Biçer et al., 2023), neurosociology (Morkoç & Güler, 2025), caregivers of individuals with schizophrenia (Şanlı et al., 2023), digital health in dementia care (Abdulazeem et al., 2025), and digital health research (Hu et al., 2024; Taj et al., 2019), digital health literacy (Yang et al., 2022). It is noteworthy that bibliometric studies on digitalisation and technology in mental health have increased in recent years. Studies conducted include trends in the application of Generalised Artificial Intelligence in mental health (Zhang et al., 2025), the integration of technology with psychotherapy interventions (Zale et al., 2021), an examination of key concepts, themes, and trends in the digital mental health literature (Alan, 2025), ethical concerns and dilemmas encountered in digital mental health services (Sharma et al., 2025), research on improving mental health and well-being through digital interventions (Armaou, 2024), and an examination of key features in the e-mental health literature in the context of COVID-19 (Ellis et al., 2021), research into the acceptability of digital mental health interventions (Armaou, 2024), and studies examining the performance and scope of works focusing on artificial intelligence in the field of mental health (Atılgan & Uslu, 2024) are noteworthy. In these studies on the bibliometric analysis of the digital mental health literature, the keywords forming the basis of the analyses either focused on general concepts such as 'digital mental health' (Alan, 2025) or more specific dimensions of the field such as artificial intelligence and ethical concerns (Atılgan & Uslu, 2024; Sharma et al., 2025). No systematic literature review has been found that comprehensively analyses the themes of advantages, disadvantages, effectiveness, risks, and potentials, which are the fundamental topics of research in the field of digital mental health, separately. Therefore, it is believed that this research will provide comprehensive information by addressing the fundamental topics of research in the field of digital mental health separately and, in this way, contribute to researchers in the field.

As practice has accelerated, there is now a greater need than ever to develop scientifically grounded digital mental health applications and enhance the services provided. In light of this requirement, it is noteworthy that throughout the past ten years, the number of scientific articles in the literature that concentrate on digital mental health therapies has significantly increased (Armaou, 2024). The scientific publications produced appear to fall into two main categories: those highlighting the promising advantages of digital technologies

and those drawing attention to the potential disadvantages that may arise in practice. Publications focusing on promising advantages centre on the potential of digital mental health applications and effectiveness reviews of current applications. On the other hand, publications focusing on disadvantages centre on the risks and concerns related to the provision of digital mental health services and the negative outcomes observed or anticipated in the use of current applications. In this regard, it is considered that scientific publications produced in the field of digital mental health can be addressed under 1- Advantages: potentials and evidence of effectiveness and 2- Disadvantages: possible risks, obstacles and insufficient evidence of effectiveness.

Advantages: Potentials And Evidence of Effectiveness

Publications highlighting a specific set of advantages offered by digital mental health interventions are prominent in the literature. These studies emphasise the potential of integrating digital tools into mental health services, particularly in terms of scalability and accessibility (Hunter et al., 2023). Scalability refers to the capacity of a digital mental health intervention to reach a substantially larger population without a proportional increase in resource use (Park et al., 2022). For instance, a randomised controlled trial conducted by Fitzpatrick et al. (2017) demonstrated that a chatbot named Woebot was effective in reducing symptoms of depression and anxiety. Such findings are interpreted as evidence of the fundamental potential of digital interventions, as chatbot-based systems can simultaneously serve thousands of users at a level of scale and accessibility that traditional face-to-face therapy models cannot feasibly achieve.

Furthermore, the ability to easily adapt interventions to different user groups and needs through mobile applications that can be personalised according to user requirements is frequently highlighted in the literature as one of the most fundamental potentials offered by digital interventions. Furthermore, studies reveal that digital interventions can be customised in a culturally sensitive manner and emphasise their potential to reach traditionally underserved and marginalised populations (Schueller et al., 2019; Shi & Khoo, 2023). Furthermore, the ability to support self-help opportunities for users, to be delivered through different tools and devices, and to incorporate various therapeutic components are highlighted as important strengths of digital mental health interventions (Adler & Van Brunt, 2025; Gega et al., 2022). It is quite likely that the ability to deliver all these mentioned potentials in a low-cost manner strengthens an optimistic outlook for the future of digital mental health interventions among policymakers, practitioners, and researchers.

The applicability and sustainability of the potential offered by digital mental health interventions in real-life conditions inevitably depend on evidence of their effectiveness (Lipschitz et al., 2022). To this end, another dimension that has been the focus of researchers in the literature is effectiveness studies. DMH is appealing due to the compelling data presented in scientific papers on this topic. In this regard, it is significant that randomized controlled trials have given compelling evidence of the effectiveness of digital interventions in lowering symptoms of conditions like anxiety and depression (Fitzpatrick et al., 2017; Fulmer et al., 2018; Karkosz et al., 2024). In addition, there are studies that evaluate the performance of interventions in real-life settings with more heterogeneous user groups and less structured use (Shi &

Khoo, 2023; Titov et al., 2015). The MindSpot application, developed as a research project by Titov et al. (2015), has provided significant evidence that online therapy collected from thousands of people is effective, acceptable, and efficient, and has been transformed into a national health service (Titov et al., 2015). These studies provide important evidence regarding the effectiveness of digital interventions.

Some studies in the literature on the effectiveness of digital interventions also focus on user behaviour (Park et al., 2022). The majority of these studies specifically address the extent to which users engage emotionally, cognitively, and behaviourally (engagement) with these interventions and their behaviour of using or not using these interventions regularly (adherence). Studies with this focus particularly seek to understand which design features, content types, and personalisation strategies engage users for longer and in a more meaningful way (Gonzalez Salas Duhne et al., 2022; Yardley et al., 2016).

Disadvantages: Potential Risks, Barriers, And Insufficient Evidence of Effectiveness

Alongside empirical evidence regarding the advantages of DMH, scientific publications addressing a range of disadvantages are also noteworthy. The rapid growth and proliferation of the digital mental health field has raised questions about the reliability of these interventions and prompted researchers to carefully examine potential disadvantages and risks (Balcombe & De Leo, 2021; Inkster et al., 2023; Wu, 2024). A review of the literature on this topic reveals that one of the most critical issues appears to be *the variability in the quality of* studies examining the effectiveness of digital interventions. Systematic reviews and meta-analyses of studies investigating the effectiveness of DMH interventions have revealed that these studies have a number of *methodological limitations*. Comprehensive reviews of DMH interventions show that a significant proportion of studies have *a high risk* of bias, weak *blinding*, and *inadequate control groups*; that user *adoption levels* are low and *participation rates* are variable; that follow-ups are short-term; and that evidence is derived from homogeneous and small samples (Hollis et al., 2017). Mohr et al. (2017b) also acknowledge the difficulty of bridging the gap between the effectiveness of digital interventions and their real-world validity, stating that the lack of diversity in research samples is one of the biggest barriers to scaling up interventions (Mohr et al., 2017). Furthermore, studies have demonstrated that the marketing aspect of digital interventions affects the research's effectiveness criterion. A research by Larsen et al. (2019), for instance, looked at the claims made by digital treatments in smartphone app stores and discovered that just 14–33% of them were supported by real scientific references (Larsen et al., 2019).

In addition to methodological limitations, research often highlights risks related to *data privacy and security* breaches, such as the misuse or leakage of sensitive mental health data, as a significant disadvantage. Research reveals that while the vast majority of web-based mental health services comply with security protocols such as identity verification and security certificates, they are generally lacking in important privacy policy provisions, do not employ high-level encryption algorithms, and have deficiencies in security and privacy regarding exposure to potential cyber attacks (Iwaya et al., 2023; Parker et al., 2019; Powell et al., 2018; Surani et al., 2023).

Another critical risk raised by researchers in the literature relates to how the indispensable ethical principles and regulatory frameworks of traditional therapy (informed consent, confidentiality, transparency, competence) can be adapted to the digital environment. Lee et al. (2021) specifically highlight algorithmic bias in AI-based systems and its potential to produce inequitable results in this context (Lee et al., 2021). Scholars highlight the dangers that AI algorithms could lead to less accurate or even detrimental diagnosis and detection findings for marginalized and minority groups, thus reinforcing existing inequities (Balcombe, 2023; Timmons et al., 2023). The literature also highlights the risk that digital mental health interventions may deepen inequalities in access to services by creating a *digital divide* for low-income, elderly, and rural populations who lack access to reliable internet and digital literacy (Grieco-Page et al., 2021; O"Shea et al., 2023). Finally, clinical safety risks such as misInformation, inadequate crisis management, and disruption of standard care are increasingly discussed in the literatüre (Smith et al., 2023; Torous et al., 2018).

Findings from scientific publications focusing on the disadvantages of DMH reveal significant methodological limitations and risks, particularly in relation to publications focused on proving the advantages of DMH. These limitations, in particular, cast significant doubt on the generalisability of findings regarding the effectiveness of DMH to more heterogeneous, complex clinical samples in the real world and on the clarity and reliability of evidence due to the presence of commercial conflicts of interest. Consequently, the variability in the quality of evidence in scientific publications and all possible risks and threats emerge as the most significant disadvantages, making the adaptation and integration of these interventions into clinical settings more complex and challenging.

The Present Study

The DMH literature is a rapidly growing area of debate, with studies focusing on the promising potential and advantages of digital interventions alongside studies meticulously examining their significant risks and disadvantages. Although current studies appear to be fundamentally polarised around advantages and disadvantages, the literature has gained considerable momentum over the past decade, becoming highly dynamic and multidimensional, encompassing themes such as potential, risks, and effectiveness alongside advantages and disadvantages. This momentum has led to the production of numerous scientific publications on a wide variety of themes and focuses every day. While this rapid production of scientific knowledge continues, it is quite possible to overlook the conceptual connections between existing studies, current trends in the field, and research gaps.

Consequently, there is no quantitative and objective bibliometric analysis that comprehensively maps publications produced in the literature with different focuses (advantages/disadvantages/potential/risks/effectiveness). In this regard, the main objective of this study is to reveal the bibliometric profile and intellectual structure of scientific publications focusing on the advantages, disadvantages, potential, effectiveness, and risks of DMH interventions. Within the scope of the study, the reflections of these themes in the literature will be mapped through keyword networks; the resulting subsets, thematic foci, and their evolution over time will be analysed quantitatively and visually. Thus, current

trends in the field, research gaps, and recommendations for the future will be presented systematically.

Method

Inclusion and Exclusion Criteria

Eligibility criteria were established to ensure consistency in study selection. In this regard, the criteria for including scientific publications in the study have been determined as follows: (1) Published between 2015 and 2025, (2) in English, (3) research articles published in a peer-reviewed journal, (4) addressing Digital Mental Health interventions, (5) focusing on at least one of the study"s focal points (advantages, disadvantages, effectiveness, risks, future potential). The exclusion criteria for the study are as follows: (1) Book chapters, compilations, editorials, (2) Studies whose full text is not accessible, (3) Studies that only contain a technical software/device introduction and do not address the clinical or social dimension.

Data Sources and Search Strategies

Research data were obtained from the Web of Science (WOS) and Scopus platforms between 06.09.2025 and 18.09.2025. A systematic literature review was conducted to provide a perspective on the field of digital mental health (DMH), following the steps proposed by Rowley and Slack (2004) (Rowley & Slack, 2004).

Scanning and collecting data from WoS and Scopus databases using the defined keywords: In the WoS scan, Web of Science Core Collection was preferred, and a scan was performed across all fields (all files). At this stage, the following terms were used to represent digital mental health: "digital mental health" OR "telepsychiatry" OR "telepsychology" OR "mental health app" OR "mhealth+mental" OR "e-mental health" OR "mobile app*" OR "web-based intervention*" OR "online therapy" OR "mental health chatbot*" OR "virtual reality therapy". The second line of the search was linked with the conjunction "and", and data sets were obtained from studies in the field concerning the advantages, disadvantages, effects, risks, and potential of digital mental health tools/applications in all fields (all files). During the data set acquisition phase, the following terms were used to identify studies on the advantages of digital mental health: "benefits" OR "advantages" OR "opportunities" OR "effectiveness" OR "efficacy" OR "positive impact"; for disadvantages: "limitations" OR "disadvantages" OR "drawback" OR "challenges" OR "risks" OR "concerns" OR "criticism" OR "threats" OR "negative impact"; for effects, the terms "randomised controlled trial" OR "symptom reduction" OR "treatment outcome" OR "adherence" OR "engagement"; for risks, the terms "privacy" OR "data security" OR "ethical issues" OR "digital divide" OR "inequality" OR "safety" OR "adverse events" OR "regulatory frameworks" OR "algorithmic bias" and for potential: "scalability" OR "accessibility" OR "personalised medicine" OR "early intervention" OR "cost-effectiveness" OR "implementation science" OR "integration". Similarly, searches were conducted using the SCOPUS platform by selecting all fields.

Limiting studies based on defined criteria to create a detailed and specific bibliography: Within the scope of organising the data obtained, studies accessed from the WoS and Scopus databases were searched from 2015 onwards and limited to the years. Furthermore, publications such as books, book chapters, and editorials were excluded, and scientific articles were included in the study. Furthermore, category restrictions were applied, and studies outside the fields of psychiatry, psychology and its subfields, and ethics were excluded from the research. Finally, only articles written in English were included in the research. When the specified criteria were applied, 4,581 articles were found in Scopus and 1,474 in Wos on digital mental health and its advantages; 9,763 articles were found in Scopus and 931 in Wos on its disadvantages; 8,210 articles were found in Scopus and 1,045 in Wos on its effects; 3,312 articles on risks in Scopus and 373 in Wos; and 4,409 articles on potential in Scopus and 431 in WoS. The articles were saved in "bibtex" format.

Combining data and removing duplicate studies using the R Studio programme: A phased process was carried out during the data preparation stage for analysis. In this context, the data downloaded in parts from WoS (due to a maximum of 500 data points being downloadable at a time) under the categories of advantages, disadvantages, and impact areas were organised using the R Studio Program (2025.05.1+513). This process involved checking column names, finding common columns, selecting only common columns, merging them, removing duplicate data (1 from the advantage data set, 1 from the disadvantage set, and 2 from the impact data set), removing country data, checking for missing country data, and checking for missing data in all fields. After completing the specified steps, all datasets obtained from WoS and Scopus were converted into files with the ".csv" extension. Subsequently, the datasets obtained separately from WoS and Scopus regarding advantages, disadvantages, effectiveness, risks, and potentials were merged. In this context, the sample size for the data set obtained for advantages is 5,321, for disadvantages 10,553, for effectiveness 8,983, for risks 4,554, and for potentials 5,534. Prior to analysis, the data sets were cleaned of the words "human", "humans", "article" and "articles", and the text files were uploaded to the OpenRefine (3.9.5) programme to convert any text that could cause errors during analysis to lowercase. Here, the KW_merged, DE, ID, and DE_raw columns were processed to remove words and convert them to lowercase, while the AB, TI, AB_raw, and TI_raw columns were only converted to lowercase. The edited files were saved as .xlsx Excel files.

Analysis of the data: The retrieved studies were analysed using the Bibliometrix package (5.1.1) in the R Studio programme via the Biblioshiny (127.0.0.1) interface. The data were analyzed using methods such as source analysis, institutional and country analysis, author network, keyword analysis, co-occurrence analysis, co-authorship, and country collaboration network analysis. The synthesis of results was conducted using an approach that combines the quantitative and qualitative aspects of bibliometric analysis. Quantitative synthesis involves summarizing performance indicators (publication/citation counts). Qualitative synthesis, on the other hand, is based on the interpretation of keyword networks and thematic clusters. The reason for choosing this mixed method is that it aims to reveal not only the numerical size of the field but also its conceptual structure and social dynamics. In addition, subgroup analyses were conducted to examine the possible reasons for heterogeneity in the literature. Keyword co-occurrence networks were created and compared separately in five distinct thematic subgroups (advantages, disadvantages, effectiveness, risks, potentials), and the unique and common conceptual structures of each theme were examined.

Study Risk of Bias Assessment: Due to the nature of this bibliometric analysis, the methodological quality or risk of bias of individual studies was not assessed individually, as is standard in traditional systematic reviews. However, to ensure the overall quality and representativeness of the dataset, the following methods were adopted:

- *Pre-screening and Standardization:* All studies were filtered based on pre-defined inclusion criteria (e.g., being published in peer-reviewed journals, English language, specific document types). This process aimed to ensure the dataset consisted of academically sound and analytically suitable studies.
- *Data Source Quality:* The analysis was restricted to high-quality, indexed, and peer-reviewed databases such as Web of Science (WoS) and Scopus. The comprehensive quality control processes of these databases indirectly contribute to the overall reliability of the included publications.
- *Transparent Reporting of Bias Potential:* Potential sources of bias inherent to bibliometric analysis (e.g., language bias [only English], database bias [only WoS and Scopus], and publication bias) are explicitly discussed and reported in the "Limitations" section of this article.

This approach ensures transparency in study selection and contextual awareness in interpreting the results within the framework of a bibliometric mapping study.

Effect Measures: This bibliometric analysis employed field-specific bibliometric methods rather than statistical effect measures typical of traditional systematic reviews. The study conducted source (journal) analysis, author and country collaborations, author citation networks, and keyword co-occurrence analyses. Metrics such as publication and citation counts, co-authorship frequencies, co-occurrence frequencies, and centrality measures were utilized. The findings were visualized through network maps and trend graphs, alongside descriptive statistics. This approach aims to comprehensively reveal the intellectual structure, leading actors, and thematic trends within the Digital Mental Health domain.

Certainty Assessment: In this bibliometric mapping study, a combination of quantitative and qualitative indicators was used to assess confidence in the synthesized findings. The volume of publications and dataset size for each thematic area (advantages, disadvantages, efficacy, risks, potentials) served as the primary assessment criterion. It was anticipated that larger, more comprehensive datasets (e.g., n=10.553 for disadvantages) would represent the field more robustly and thus provide higher certainty for the findings compared to smaller ones (e.g., n=4.554 for risks). Furthermore, the observation of consistent and meaningful patterns through qualitative methods, such as keyword co-occurrence networks and thematic analyses, further strengthened confidence in the robustness of the findings. Finally, methodological transparency (detailed search strategy, clear inclusion/exclusion criteria) and data source quality (use of reputable databases like WoS and Scopus) were also considered factors contributing to the overall certainty assessment.

Data Analysis

The WoS and Scopus database outputs were saved in "BibTeX" format, combined in the RStudio program, and the data sets organised in OpenRefine were converted to Excel files and saved. Subsequently, the five separate data sets obtained were loaded into Biblioshiny in "xlsx" format using the "load bibliometrix file(s)" option. The sections below present statistics related to the data sets analysed using Biblioshiny.

General Bibliometric Indicators and Main Information

Within the scope of the analysis process, the descriptive statistics of five separate data sets related to studies conducted in the field of DMH since 2015 are presented in Table 2. When the table is examined it is observed that the highest number of journals is 225, the number of articles is 501, and the number of researchers is 3051, and that these figures belong to the dataset focusing on the advantages of digital mental health. On the other hand, the annual growth rate of 41.42% belongs to the dataset focusing on the potential of the field. However, it is noteworthy that the highest citation rate of 22.33% belongs to the sample focusing on the risks of digital mental health, which has the lowest annual growth rate.

Source Analysis

Source analysis involves identifying leading sources in the field, examining sources under Bradford's Law, and researching the impact of these sources on the field. As a result of the analysis carried out within this scope, in the data set focusing on advantages in the field of digital mental health, the journals "Jmir Mental Health" and "Internet Interventions-The Application of Information Technology in Mental and Behavioural Health" were found to have 46 and 25 articles, respectively; in the data set focusing on disadvantages, the journals "Jmir Mental Health" and "Journal of Technology in Behavioural Science" journals, respectively; in the dataset focusing on the effects of digital mental health, "Jmir Mental Health" and "Journal of Affective Disorders" journals, with 30 articles, respectively; in the dataset focusing on the risks of DMH, "Jmir Mental Health" and "Journal of Affective Disorders" with 24 and 13 articles respectively in the dataset focusing on the risks of DMH; and finally, in the dataset focusing on the potentials of DMH, "Jmir Mental Health" and "Internet Interventions-The Application of Information Technology in Mental and Behavioural Health" with 22 and 13 articles respectively are at the top of the list. The results regarding the findings are presented in Table 3.

According to Bradford's Law, sources are divided into three zones: Zone 1, referred to as the core region and representing the main sources relevant to the field, and Zone 2 and 3, representing relatively less relevant sources. In this context, the analysis results show that the data set focusing on the advantages of sources in the core zone in the field of digital mental health is the "Jmir Mental Health" and "Internet Interventions-The Application Of Information Technology in Mental And Behavioural Health"; in the dataset focusing on disadvantages and effects, "Jmir Mental Health" and "Journal Of Technology in Behavioural Science"; in the dataset focusing on effects, "Jmir Mental Health" and "Journal of Affective Disorders"; and in the dataset focusing on risks, "Jmir Mental Health" and "Journal of Affective Disorders" journals, and finally, in the dataset focusing on potentials, "Jmir Mental Health" and "Internet Interventions-The Application of Information Technology in Mental and Behavioural Health" journals are included. The relevant results are shown in Table 3.

Table 1. Flow table

	Advantages	Disadvantages	Effects	Risks	Potentials
Identification	5321	10553	8983	4554	5534
Dublicate records removed	1	1	2	0	1
Screening	5321	10553	8983	4554	5534
-Title screened	5321	10553	8983	4554	5534
-Title excluded	786	0	4053	1798	4301
-Abstracts screening	4535	10553	4930	2756	1233
-Abstract Excluded	153	9962	1723	1335	944
	Out of scope (90), not accessible (15), language (8), limited rigor (40)	Out of scope (7580), not accessible (870), language (0), limited rigor (1512)	Out of scope (1050), not accessible (160), language (100), limited rigor (413)	Out of scope (780), not accessible (130), language (90), limited rigor (355)	Out of scope (710), not accessible (111), language (0), limited rigor (123)
-Full text articles asessed for eligibility	4382	591	3207	1421	289
-Reports excluded Inclusion	3881	306	2734	1157	105
Total number of studies included for systematic review	501	285	473	264	184

Table 2. Main Information about data

	Number of Sources	Number of Documents	Number of authors	Annual Growth Rate %	Average Citations Per Document
Advantages	225	501	3051	19,08	18,09
Disadvantages	143	285	1377	17,97	17,79
Effects	138	473	2820	26,27	20,33
Risks	141	264	1592	15,7	22,35
Potentials	97	184	1140	41,42	15,58

Table 3. Publications of various journals along with most relevant sources, bradford's law, h index and production

	Most Relevant Sources	Bradford's Law	Local Impact (H Index)	Output
Advantages	Jmır Mental Health (46) Internet Interventions-The Application of Information Technology in Mental and Behavioral Health (25)	Jmır Mental Health Internet Interventions-The Application of Information Technology in Mental and Behavioral Health	Jmır Mental Health (20) Behavior Research and Therapy (10)	Jmır Mental Health Internet Interventions-The Application of Information Technology in Mental and Behavioral Health
Disadvantages	Jmır Mental Health (26) Journal Of Technology in Behavioral Science (14)	Jmır Mental Health (26) Journal Of Technology in Behavioral Science (14)	Jmır Mental Health (14) Indian Journal of Psychological Medicine (8)	Jmır Mental Health Journal Of Technology in Behavioral Science
Effects	Jmır Mental Health (30) Journal Of Affective Disorders (30)	Frontiers İn Psychology Journal Of Affective Disorders	Behavior Therapy (12) Jmır Mental Health (12)	Jmır Mental Health Journal Of Affective Disorders
Risks	Jmır Mental Health (24) Journal Of Affective Disorders (13)	Jmır Mental Health Journal Of Affective Disorders	Jmır Mental Health (11) Addictive Behaviors (6)	Jmır Mental Health Journal Of Affective Disorders
Potentials	Jmır Mental Health (22) Internet Interventions-The Application of Information Technology in Mental and Behavioral Health (13)	Jmır Mental Health Internet Interventions-The Application of Information Technology in Mental and Behavioral Health	Jmır Mental Health (11) Frontiers in Psychology (5)	Jmır Mental Health Internet Interventions-The Application of Information Technology in Mental and Behavioral Health

Finally, the index scores demonstrating the academic impact of Information sources on the field were examined. Within this scope, the impact of journals on the field was determined by considering their h-index values. According to the analysis results, the most influential journals in the field for the dataset focusing on the field's advantages were "Jmır Mental Health" and "Behaviour Research And Therapy" with h-index scores of 20 and 10, respectively; for the data set focusing on the disadvantages of the field, "Jmır Mental Health" and "Indian Journal Of Psychological Medicine" with h-index scores of 14 and 8, respectively; for the data set focusing on the effects, "Behaviour Therapy" and "Jmır Mental Health" with an h-index score of 12; For the dataset focusing on risks, the journals are "Jmır Mental Health" and "Addictive Behaviours" with h-index scores of 11 and 6, respectively. For the dataset focusing on potentials, the journals are "Jmır Mental Health" and "Frontiers in Psychology" with h-index scores of 11 and 5, respectively.

In the context of all these analyses, when the cumulative publication rates of the sources are taken into account, it is understood that the most productive journals are "Jmir Mental Health, Journal of Affective Disorders, Internet Interventions - The Application of Information Technology in Mental and Behavioural Health, Journal of Technology in Behavioural Science"

Institutional and Country Analysis

The analysis conducted reveal the most relevant institutions contributing to the field of digital mental health in line with the established criteria. The analysis show that, the institutions that contribute most to the literature focusing on the advantages of the digital mental health field are "Kings College London" and "Northwestern University" with 20 and 18 articles, respectively; focusing on the disadvantages are "Harvard Medical School" and "National Institute of Mental Health and Neurosciences" with 14 articles; in terms of impacts, "Karolinska Institutet" and "Deakin University" with 36 and 25 articles respectively; in terms of risks, "Kings College London" and "University of Washington" with 12 articles; and finally, in terms of potentials, "Northwestern University Feinberg School of Medicine" and "University of Melbourne" with 12 articles. The findings are presented in Table 4.

Table 4. Most relevant affiliations for each data

	Advantages	Disadvantages	Effects	Risks	Potential
Most Relevant Affiliation	Kings Collage London (20) Northwestern University (18)	Harvard Medical School (14) National Institute of Mental Health and Neuro Sciences (14)	Karolinska Institute (36) Deakin University (25)	Kings Collage London (12) University of Washington (12)	Northwestern University Feinberg School of Medicine (12) University of Melbourne (12)

Table 5. Collaboration patterns by dataset including article count, single/multi-country publications, frequency, and citation impact

	Articles	Scp	Mcp	Frequency	Total Citation
Advantages	USA (149)	135	14	USA (542)	USA (3257)
	Australia (57)	52	5	Australia (198)	Australia (1649)
Disadvantages	USA (114)	102	12	USA (2092)	USA (2591)
	Australia (32)	30	2	Australia (420)	Australia (550)
Effects	United States (154)	149	5	USA (365)	USA (3322)
	Australia (65)	62	3	Australia (123)	Australia (2256)
Risks	USA (88)	79	9	USA (268)	USA (2191)
	Australia (34)	29	5	UK (126)	Australia (1034)
Potentials	USA (63)	58	5	USA (228)	USA (1067)
	Australia (24)	23	1	UK (91)	Australia (576)

The results of the country-based analysis are presented in Table 5. Upon examination of the relevant table, it is evident that the United States contributes the highest number of articles to the field of digital mental health worldwide, with 149 articles, and the focus of these articles is on the advantages of DMH. Of these articles, 135 were produced by authors from a single country, and 14 were produced by authors from different countries. However, Austria ranks among the top countries contributing to the literature focusing on the effects of DMH, with 65 articles. On the other hand, when scientific productivity analyses are examined on a country basis, Australia follows the United States (2092) with 420 articles focusing on the disadvantages of DMH. When examining the cumulative contribution of countries to the field over time, it is clear that America and Australia are in the lead. When the most cited countries are considered America and Australia are at the top of the list with citation rates of 3,257 and 1,649, respectively, focusing on the advantages of the field.

Author Network

Table 6 shows authors who have made a significant contribution to the field of digital mental health and provides Information on the number of publications. The analysis results show that in the data set focusing on the advantages of the field, Baumeister has 8 and Daniel Ebert has 5; disadvantages dataset shows Math, Nicholas, and Sander with 4; effects dataset shows Baumeister and Levin with 10; risks dataset shows Baumesiter with 6 and Sander with 5; potentials dataset shows Alvarez-Jimenez with 6 and Schueller with 5 articles, indicating that these authors contribute significantly to the field.

When evaluating the analysis results regarding the author's local impact, Baumeister, S.S., Schaub, and Torous share the top positions with an h-index score of 4 in the context of the advantage dataset. Similarly, in the dataset focusing on the disadvantages of the field, Math 4 and Bartık 3; in the dataset focusing on their impact, Baumeister 8 and Levin 6; in the dataset focusing on risks, Baumeister 4 and Bartık 3; and in the dataset focusing on potential, Alvarez-Jimenez 5 and Schueller 4 h-index scores rank among the top names in the field.

Table 6. Author-wise ranking based on publications and their local impact

	Most relevant authors	Local impact (h-index)
Advantages	Baumeister H. (8) Daniel Ebert DD. (5)	Baumeister (4) S.S. (4) Schaub MP. (4) Torous J. (4)
Disadvantages	Math SB. (4) Nicholas J. (4) Sander LB. (4)	Math SB. (4) Bartık W. (3)
Effects	Baumeister H. (10) Levin ME (10)	Baumeister (8) Levin ME (6)
Risks	Baumeister H. (6) Sander LB. (5)	Baumeister H. (4) Bartık W. (3)
Potentials	Alvarez-Jimenez M. (6) Schueller SM. (5)	Alvarez-Jimenez M. (5) Schueller SM. (4)

Table 7. Most relevant words-wise ranking by each data set

	Advantages	Disadvantages	Effects	Risks	Potential
Most relevant words	Depression (149)	Mental health (52)	Female (280)	Mobile application (102)	Mental health (48)
	Mobile Application (144)	Covid-19 (51)	Male (265)	Male (58)	Mhealth (39)
	Female (119)	Telepsychiatry (47)	Randomized controlled trial (265)	Female (55)	Mobile Application (38)
	Adult (107)	Telehealth (43)	Adult (262)	Adult (52)	Depression (37)
	Male (106)	Depression (42)	Controlled study (261)	Depression (51)	Telemedicine (30)
	Controlled study (103)	Telepsychology (42)	Mobile Application (228)	Mental health (39)	Adult (28)
	Anxiety (101)	Digital mental health (37)	Treatment outcome (185)	Psychology (37)	Female (28)
	Intervention (92)	Intervention (32)	Depression (176)	Intervention (35)	Male (28)
	Randomized controlled trial (91)	Mhealth (32)	Web-based intervention (168)	Anxiety (34)	Technology (24)
	Web-based intervention (91)	Telemedicine (31)	Procedures (165)	Middle aged (31)	Digital mental health (23)

Keyword Analysis

According to the analysis results, the top 10 words frequently used in studies conducted in the field of DMH in the advantage-focused dataset are depression (149), mobile Application (144), female (119), adult (107), male (106), controlled study (103), anxiety (101), intervention (92), randomised controlled trial (91), web-based intervention (91); In the disadvantage-focused dataset: mental health (52), COVID-19 (51), telepsychiatry (47), telehealth (43), depression (42), telepsychology (42), digital mental health (37), intervention (32), mhealth (32), telemedicine (31); In the dataset focusing on the effects of the concept: female (280), male (265), randomised controlled trial (265), adult (262), controlled study (261), mobile Application (228), treatment outcome (185), depression (176), web-based intervention (168), procedures (165); In the dataset focusing on risks: mobile Application (102), male (58), female (55), adult (52), depression (51), mental health (39), psychology (37), intervention (35), anxiety (34), middle aged (31) and finally, in the dataset focusing on the concept's potential: mental health (48), mhealth (39), mobile Application (38), depression (37), telemedicine (30), adult (28), female (28), male (28), technology (24), digital mental health (23).

The results of the analysis on the changing popularity of keywords over the years are presented in Figures 1, 2, 3, 4, and 5 and Table 8. Upon examining the relevant figures and table, it is observed that the concept of digital mental health began to gain popularity in all sub-data sets after 2021. In this context, examining Figure 1 and Table 8, created for the dataset focusing on the advantages of the concept, reveals that from 2020 to 2021, the concepts of depression, mobile application, female, adult, and male were predominantly studied. From 2021 to 2022, the concepts of therapy effect, emotion regulation, and acceptance gained popularity. Examining Figure 2 and Table 8, focusing on the disadvantages of DHM, it is evident that mental health, COVID-19, telepsychiatry, telehealth, depression, digital mental health, mhealth, psychology, therapy, health, psychiatry, mental health service, and mental health care are concepts that have been intensively studied in the field since 2020-2021; in recent years, the concepts of prevention, engagement, and artificial intelligence (AI) have gained popularity.

Figure 3 and Table 8, created for the dataset focusing on the effects of the concept, reveal that the concepts of female, male, randomised controlled trial, mobile application, procedures, psychology, middle aged, and internet have formed the focus of the field since 2019-2020, and that the last two years have seen a concentration on the concepts of single blind procedure, therapeutic alliance, and rehabilitation. Figure 4 and Table 8 show that in the dataset focusing on the

risks of DHM, only the concept of mobile Application has a usage frequency of 100 or more. However, male, female, adult, mental health, psychology, intervention, middle-aged, internet, controlled study, therapy, telehealth, ethics, health, cognitive-Behaviouraltherapy, and child are among the other concepts that the field focuses on. Recent studies indicate that the concepts of child, suicide prevention, and mental Disorders have become popular. When examining Figure 5 and Table 8, it is seen that the concepts of mental health, mhealth, mobile application, depression, telemedicine, adult, technology, digital mental health, telepsychiatry, care, therapy, psychotherapy, psychiatry, health care delivery, and implementation science have been frequently used since 2018-2019 for the data set focusing on the potential of DHM. Recent studies, however, appear to focus on the concepts of children, digital mental health, and therapy.

Relationship Analyses

Co-occurrence Networks

The analysis results indicate the number of times the concepts appear together in the article. According to the analysis outputs, it is seen that 2 groups were formed for the advantage group, 3 for disadvantage, 3 for effectiveness, 2 for risks, and 3 for potentials. The groups formed according to the co-occurrence rates are listed in Table 9.

Another finding related to co-occurrence networks is based on thematic map analysis. In this context, the analysis results for each sub-dataset are presented in figures. Examining the figure for the dataset focusing on the advantages of DMH reveals three distinct regions and three different sizes of word clusters. The first of these is the cluster formed by the words "female, adult and male". This group is located exactly in the middle of the first and third quarters and stands out as the largest group. This word group has medium centrality and is located in a high-density area. In other words, it represents a group of concepts that has matured within itself and is beginning to increase its relationship with other concepts in the field. The word group "depression, anxiety, therapy" is located in the third quarter area. This area shows high centrality and low density of basic themes. In other words, the word clusters here are associated with many words in the field but represent concepts that are developing, with their internal network of connections not yet fully matured. The words "intervention, mhealth, mental health" are located right in the middle of the third and fourth quarters. This area indicates words with very low centrality and medium density. The words in this area have a moderately mature connection within themselves but represent concepts that are not linked to other concepts or are only minimally linked.

The second group focuses on the disadvantages of the DMH concept. The thematic map generated through the analysis process is presented in Figure 7. An examination of the figure reveals the prominence of the word cluster "telehealth, depression, telepsychology" in the second quadrant. This cluster is positioned in an area characterised by high centrality and low density, indicating that these concepts are strongly connected to other themes in the field but require further internal development within their own cluster to gain greater prominence. Another substantial core appears at the centre of the map, occupying an intermediate position in terms of both centrality and density. Its placement suggests that the concepts "mental health, COVID-19, telepsychiatry" have the potential to function as a driving theme within the literature. Finally, the concepts "training, digital, systematic review," located in the third quadrant, exhibit above-average density but very low centrality. This positioning indicates that, although these terms are internally well developed, they are weakly connected to the broader field and may therefore represent themes that have limited influence or have experienced a decline in prominence.

Figure 1. Keywords co-occurrence clustering map related to advantages of DMH"s.

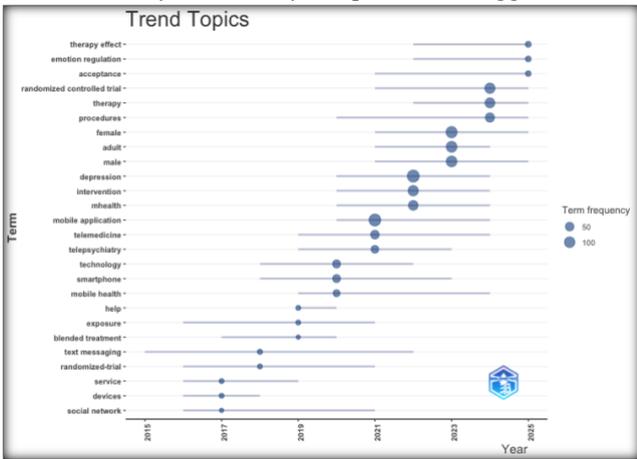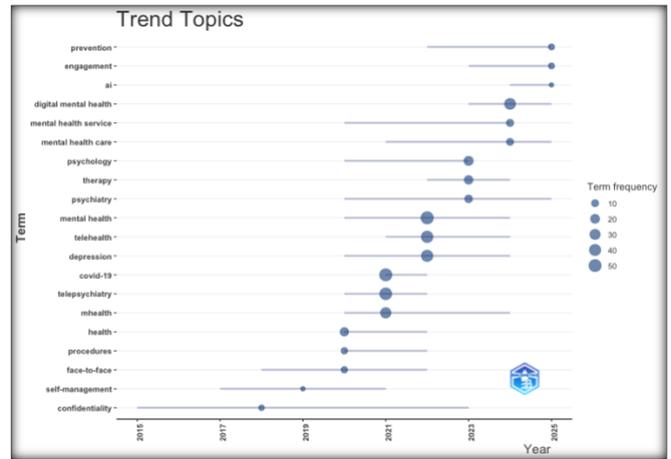**Figure 2**. Keywords co-occurrence clustering map related to disadvantages of DMH"s.
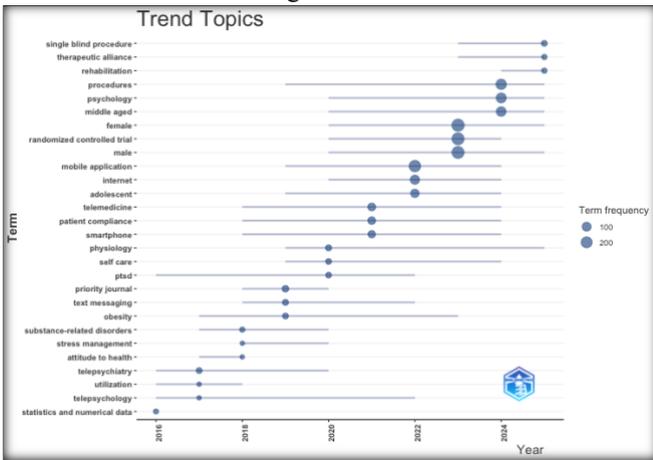

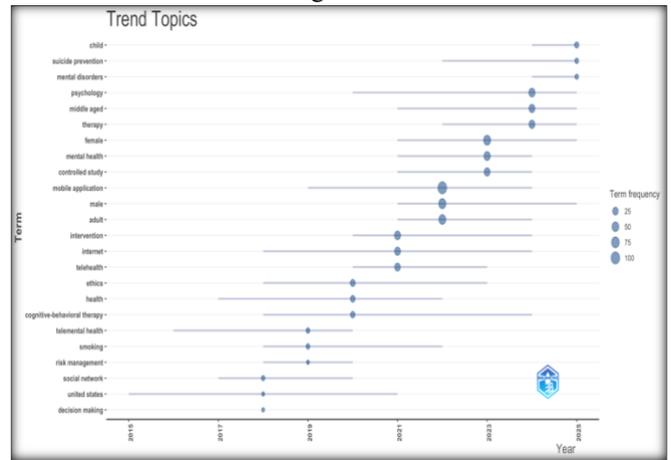**Figure 3**. Keywords co-occurrence clustering map related to effects of DMH"s.

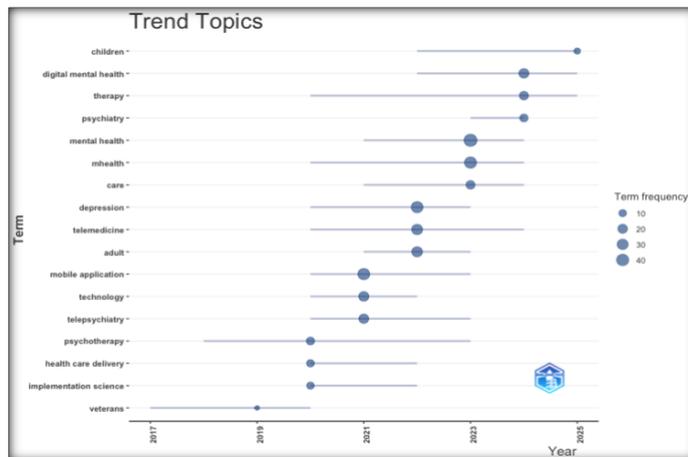**Figure 4**. Keywords co-occurrence clustering map related to risks of DMH"s.

Figure 5. Keywords co-occurrence clustering map related to potentials of DMH"s.

Table 8. The frequency of keyword usage over time for each dataset

Words (Adv)	Frq	Q1	Q2	Q3	Words (Dadv)	Frq	Q1	Q2	Q3	Words (Effects)	Frq	Q1	Q2	Q3	Words (Risks)	Frq	Q1	Q2	Q3	Words (Potentials)	Frq	Q1	Q2	Q3
depression	149	2020	2022	2024	mental health	52	2020	2022	2024	female	280	2020	2023	2025	mobile application	102	2019	2022	2024	mental health	48	2021	2023	2024
mobile application	144	2020	2021	2024	covid-19	51	2021	2021	2022	male	265	2020	2023	2025	male	58	2021	2022	2025	mhealth	39	2020	2023	2024
female	119	2021	2023	2025	telepsychiatry	47	2020	2021	2022	randomized controlled trial	265	2020	2023	2024	female	55	2021	2023	2025	mobile application	38	2020	2021	2023
adult	107	2021	2023	2024	telehealth	43	2021	2022	2024	mobile application	228	2019	2022	2024	adult	52	2021	2022	2024	depression	37	2020	2022	2023
male	106	2021	2023	2025	depression	42	2020	2022	2024	procedures	165	2019	2024	2025	mental health	39	2021	2023	2024	telemedicine	30	2020	2022	2024
intervention	92	2020	2022	2024	digital mental health	37	2023	2024	2025	psychology	144	2020	2024	2025	psychology	37	2020	2024	2025	adult	28	2021	2022	2023
randomized controlled trial	91	2021	2024	2025	mhealth	32	2020	2021	2024	middle aged	127	2020	2024	2025	intervention	35	2020	2021	2024	technology	24	2020	2021	2022
therapy	80	2022	2024	2025	psychology	22	2020	2023	2023	internet	110	2020	2022	2024	middle aged	31	2021	2024	2025	digital mental health	23	2022	2024	2025
mhealth	74	2020	2022	2024	therapy	18	2022	2023	2024	adolescent	77	2019	2022	2024	internet	30	2018	2021	2024	telepsychiatry	22	2020	2021	2023
procedures	63	2020	2024	2025	health	17	2020	2020	2022	telemedicine	59	2018	2021	2024	controlled study	30	2021	2023	2024	care	17	2021	2023	2024
telemedicine	50	2019	2021	2024	psychiatry	13	2020	2023	2025	patient compliance	54	2018	2021	2024	therapy	30	2022	2024	2025	therapy	17	2020	2024	2025
technology	39	2018	2020	2022	mental health service	11	2020	2024	2024	smartphone	45	2018	2021	2024	telehealth	27	2020	2021	2023	psychotherapy	13	2018	2020	2023
smartphone	37	2018	2020	2023	mental health care	10	2021	2024	2025	priority journal	28	2018	2019	2020	ethics	16	2018	2020	2023	psychiatry	13	2023	2024	2024
telepsychiatry	33	2019	2021	2023	face-to-face	8	2018	2020	2022	physiology	18	2019	2020	2025	health cognitive-behavioral therapy	14	2017	2020	2022	health care delivery	11	2020	2020	2022
mobile health	22	2019	2020	2024	procedures	8	2020	2020	2022	text messaging	17	2018	2019	2022	child	12	2018	2020	2024	implementation science	10	2020	2020	2022
therapy effect	11	2022	2025	2025	engagement	7	2023	2025	2025	telepsychiatry	15	2016	2017	2020	smoking	10	2024	2025	2025	children	7	2022	2025	2025
emotion regulation	10	2022	2025	2025	prevention	7	2022	2025	2025	obesity	15	2017	2019	2023	telemental health	7	2018	2019	2022	veterans	5	2017	2019	2020
acceptance	9	2021	2025	2025	confidentiality	6	2015	2018	2023	ptsd	14	2016	2020	2022	suicide prevention	7	2016	2019	2020					
text messaging	7	2015	2018	2022	self-management	5	2017	2019	2021	self care	14	2019	2020	2024		7	2022	2025	2025					
devices	6	2016	2017	2018	ai	5	2024	2025	2025	single blind procedure	14	2023	2025	2025	social network	6	2017	2018	2020					
service	6	2016	2017	2019						rehabilitation	9	2024	2025	2025	mental disorders	6	2024	2025	2025					
randomized-trial	6	2016	2018	2021						therapeutic alliance	9	2023	2025	2025	decision making	5	2018	2018	2018					
exposure	6	2016	2019	2021						substance-related disorders	8	2017	2018	2020	United states	5	2015	2018	2021					
help	6	2019	2019	2020						statistics and numerical data	7	2016	2016	2016	risk management	5	2018	2019	2020					
social network	5	2016	2017	2021						telepsychology	5	2016	2017	2022										
blended treatment	5	2017	2019	2020						utilization	5	2016	2017	2018										
										attitude to health	5	2017	2018	2018										
										stress management	5	2018	2018	2020										

Table 9. Keywords co-occurrence clustering groups

Advantages	*1. Group*	Depression, anxiety, intervention, mhealth, mental health, efficacy, psychotherapy, cognitive-behavioral therapy, disorders, technology, health, metaanalysis, telepsychiatry, prevalence, care, mental-health, covid-19, stress, symptoms
	2. Group	Mobile application, female, adult, male, controlled study, randomized controlled trial, web-based intervention, therapy, internet, procedures, psychology, major clinical study, cognitive behavioral therapy, middle aged, telemedicine, internet-based intervention, adolescent, clinical effectiveness, treatment outcome, follow up, smartphone, telehealth, mindfulness, child, young adult, anxiety disorder, anxiety disorders, clinical, outcome assessment, questionnaire
Disadvantages	*1. Group*	Depression, digital mental health, intervention, technology, online therapy, anxiety, care, internet, metaanalysis, ethics, health, cognitive-behavioral therapy, barriers, adolescents, prevalence, digital health, disorders, alliance, children, mobile phone, e-mental health, efficacy, mental-health
	2. Group	Telemedicine, mobile application, female, adult, male, psychology, pandemic, adolescent, child, mobile app, mental health service, pandemics, india, mental health care, mental health services
	3. Group	Mental health, covid-19, telepsychiatry, telehealth, telepsychology, mhealth, therapy, psychotherapy, telemental health, psychiatry, implementation
Effects	*1. Group*	Treatment outcome, depression, web-based intervention, major clinical study, cognitive behavioral therapy, therapy, anxiety, internet, follow up, internet-based intervention, anxiety disorder, psychotherapy, intervention, questionnaire, anxiety disorders, patient health questionnaire 9, disease severity, clinical effectiveness, cognitive-behavioral therapy, ehealth, clinical outcome
	2. Group	Mobile application, telemedicine, feasibility study, mhealth, patient compliance, pilot study, smartphone, pilot projects, clinical, feasibility studies, adherence
	3. Group	Female, male, randomized controlled trial, adult, controlled study, procedures, psychology, middle aged, young adult, adolescent, outcome assessment, mental health, aged, child, self report, mindfulness, psychological
Risks	*1. Group*	Intervention, mhealth, digital mental health, metaanalysis, care, ethics, health, prevention, adolescents, app, cognitive-behavioral therapy, e-mental health, efficacy, disorders, feasibility
	2. Group	Depression, mental health, anxiety, internet, telehealth, smartphone, technology, telepsychiatry, psychotherapy, telepsychology
	3. Group	Mobile application, male, female, adult, psychology, middle aged, controlled study, therapy, telemedicine, covid-19, privacy, randomized controlled trial, adolescent, young adult, procedures, major clinical study, cognitive behavioral therapy, questionnaire, web-based intervention, suicide, qualitative research, coronavirus disease 2019, clinical, mental disease
Potentials	*1. Group*	Intervention, disorders, care, health, metaanalysis, digital, prevalence, cognitive-behavioral therapy, mental-health, cost-effectiveness, efficacy
	2. Group	Mental health, mhealth, mobile application, telepsychiatry, therapy, adolescent, psychiatry, psychotherapy, questionnaire, psychosis, digital health
	3. Group	Depression, technology, digital mental health, anxiety, cognitive behavioral therapy, implementation science, implementation
	4. Group	Telemedicine, covid-19, telehealth, telepsychology, mental health service, mental health services, pandemic, health care delivery, health services accessibility, mental disease, health care access
	5. Group	Adult, female, male, controlled study, psychology, randomized controlled trial, major clinical study, procedures, child

The figure obtained when analysing the dataset focusing on the effects of DMH is provided below. Upon examining Figure 8, the concepts "female, male, randomised controlled trial" and "mobile application, young adult, adolescent" are found in the 1st Quarter; In the second quarter, the concepts "depression, anxiety, internet" are present; In the third region, the concepts "HIV infections, immunodeficiency virus infection, medication adherence" are present; and In the fourth region, the concepts "intervention, cognitive-Behaviouraltherapy, e-health" are present. Furthermore, the concepts "mhealth, adherence, digital health" are found between Regions 2 and 4, and the concepts "metaanalysis, mental health, health" are found between Regions 3 and 4. The analysis reveals that the concepts "femalemale and rct" are located in a high-centrality and high-density area and constitute the popular concepts of the field.

The analysis results of the dataset focusing on the risks of the digital mental health concept are shown in Figure 9. Upon examining the relevant figure, it can be seen that the words "mobile application, male, female" appear in the first quarter, while the words "depression, intervention, anxiety" appear in the fourth quarter. Firstly, it can be seen that the words appearing in the first quarter are popular concepts within the scope of the risks of DHM. The words appearing in the red core in the fourth quarter, on the other hand, are seen to be in an area with low centrality and density and are thought to constitute the emerging words of the field.

Finally, the analysis results of the dataset focusing on potentials are shown in Figure 10. Examining the relevant figure, the concepts "telemedicine, adult, female" in the first quarter; in the second quarter, the words "mental health, mhealth, technology"; in the third quarter, the words "disorders, adolescents, children"; in the fourth quarter, the words "Access, accessibility, ethics"; and in the centre of all regions, the words "depression, telepsychiatry, intervention". The green core area represents the popular word group, the purple core represents the word group that needs to be studied within itself, the red core area in the third region represents the specialist field words that are beginning to be associated with it, and the red core area in the fourth region represents the developing word group. The large blue core at the centre of all regions indicates the emerging and intensively studied word group in terms of both centrality and density.

The change in concepts according to specific time intervals is also considered important for understanding the development and direction of the field. In this context, the analysis results regarding the thematic evolution of the concept of digital mental health in five separate data sets are summarised in the figures below.

Firstly, in the dataset focusing on the advantages of DMH are shown in Figure 11, the presence of the concepts "alcohol, depression, mobile application" between 2015 and 2018 is noteworthy. Between 2019 and 2022, it is understood that the concepts of "depression" and "mobile application" continued to exist, while the concept of "alcohol" began to be studied in conjunction with the concept of "mobile application". Between 2023 and 2025, the concept of "depression" maintained its position in the field, but it was studied in conjunction with the concepts of "efficacy" and "mobile application," and the concept of "mobile application" was seen to have strong associations with the concept of "female."

The analysis outputs of the dataset focusing on the disadvantages of DMH are shown in Figure 12. Upon examining the relevant figure, it can be seen that the concepts of "acceptability, depression, internet, mobile application, mobile apps, online therapy, telepsychiatry" were studied between 2015 and 2018. Between 2019 and 2022, strong links between the concepts of "acceptability, mobile application, mobile apps, online therapy, telepsychiatry" and the concept of "depression" are noteworthy. Furthermore, strong relationships between "online therapy" and "covid-19" are also observed. The transition from the second to the third period reveals that the concepts of "depression-mental health" were predominantly studied in similar studies and that the concept of "mobile app" evolved into the concept of "mental health". Furthermore, the links between the concepts of "alliance, Covid-19, depression, e-health, mobile app" and "digital mental health" point to the focal points of the literature.

The analysis outputs of the dataset focusing on the effects of DMH are presented in Figure 13 below. In this context, it is observed that the concepts of "acceptability, adult, care, CBT, depression, e-health, health, mental health, mobile apps, obesity, text messaging, treatment outcome, validity, veterans" were studied in the literature between 2015 and 2018. The transformation of the concept "adult" to "female" between 2019 and 2022 indicates that the field has shifted its focus to women. However, it is thought that the concepts of "mobile apps, health" continue to feature in the field as the concept of "e-health" and are also the subject of joint studies with the concepts of "care, CBT, depression". The connection between "depression-female" and "treatment outcome-female" is noteworthy. The connection between "validity-meta-analysis" during the same periods also shows another strong connection. When examining the relationships between words between 2019-2022 and 2023-2025, it is seen that the concept of "female" strongly maintains its place in the field. However, it is understood that the concept of "female" is used in conjunction with the concepts of "self-report, mobile application, depression". It is concluded that the concept of "e-health" is used in similar studies with "intervention" and "depression"; the concept of "meta-analysis" with "validity"; and the concept of "mobile application" with "medication adherence".

The thematic map of the dataset focusing on the risks of DMH is shown in Figure 14. Upon examining the relevant figure, the concepts of "brief intervention, mobile phone, depression, efficacy, male, mobile application, prevention, psychotherapy, social network, technology" form the focus of the field between 2015 and 2018. The decrease in the number of concepts between 2019 and 2022, along with the intensity of the connections, is noteworthy. During this period, the concepts "depression, mobile application, privacy" became the focal points of the field. Subsequently, the transition to the 2023-2025 period shows a significant increase in the number of concepts. Between these periods, the connections between the concepts of "depression-depression, digital mental health, risk" are more pronounced. Similarly, the strong connections between "mobile application – male, mental disease, mobile app" and "privacy – performance, personal Information, privacy concerns" are noteworthy.

Figure 6. Keywords co-occurrence clustering map related to advantages of DMH''s.

Figure 7. Keywords co-occurrence clustering map related to disadvantages of DMH''s.

Figure 8. Keywords co-occurrence clustering map related to effects of DMH''s.

Figure 9. Keywords co-occurrence clustering map related to risks of DMH''s.

Figure 10. Keywords co-occurrence clustering map related to potentials of DMH''s.

Figure 11. Thematic evolution of words related to advantages of dmh's across 2015 to 2025

Figure 12. Thematic evolution of words related to disadvantages of dmh's across 2015 to 2025

Figure 13. Thematic evolution of words related to effects of dmh''s across 2015 to 2025
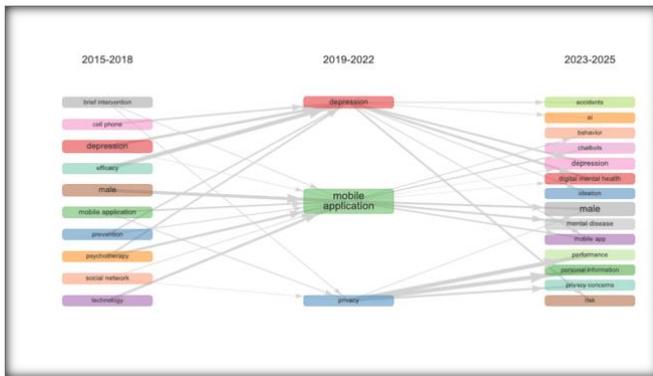
Figure 14. Thematic evolution of words related to risks of dmh"s across 2015 to 2025
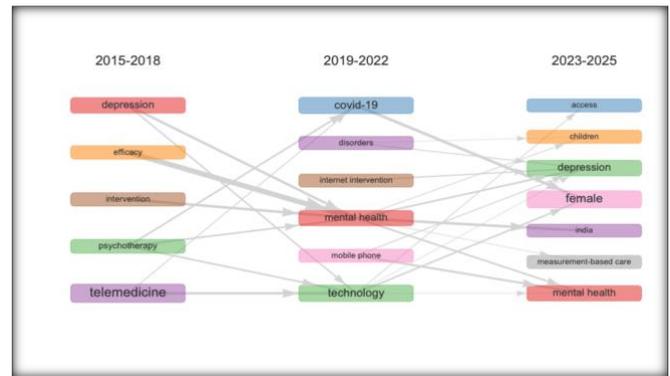

Figure 15. Thematic evolution of words related to potentials of dmh's across 2015 to 2025

The findings obtained when analysing the dataset focusing on DMH's potential are shown in Figure 15. Upon examination of Figure 15, it is seen that the concepts of "depression, efficacy, intervention, psychotherapy, telemedicine" formed the focus of the literature between 2015 and 2018, while the concepts of "Covid-19, disorders, internet intervention, mental health, mobile phone, technology" formed the focus of the literature between 2019 and 2022, and the concepts of "access, children, depression, female, India, measurement-based care, mental health" formed the focus of the literature between 2023 and 2025. The concepts of "access, children, depression, female, India, measurement-based care, mental health" formed the focus points of the literature. When examining the relationships between concepts, the connection between the concepts of "depression, efficacy, intervention, psychotherapy" and the concept of "mental health" from the first period to the second period is noteworthy. When examining the relationships from the second period to the third period, the connection between the concepts of "Covid-19" and "technology" with the concept of "female" and the concepts of "mobile phone" and "India" with the concept of "mental health" points to the field's popular areas of study and collaborations.

The final analysis conducted within the conceptual framework is factorial analysis. Keyword co-occurrence relationships were analysed using the Multiple Correspondence Analysis (MCA) method. As the data set was large, the number of words in the analysis was set to 25 to ensure homogeneity in the sample, and the minimum frequency and cluster number were set to 5. The analysis findings are presented in Table 10, and the groups formed by the word clusters for each sample set are presented in Figures 16, 17, 18, 19, and 20. The MCA results indicate that the key words in the dataset focusing on the advantages of DMH applications explain 99.49% of the total variance, with Dim 1 accounting for 96.27% and Dim 2 accounting for 3.22%. The high variance ratio of Dim 1 indicates that the relationships between the words in this section have a high explanatory power for the patterns in the dataset. This ratio also indicates that the dataset is concentrated around a single theme. When examining the words included in Dim 1, it is seen that the words "Female, adult, male, controlled study, randomised controlled trial, web-based intervention, therapy, procedures, psychology, major clinical study, cognitive Behaviouraltherapy, middle aged, internet-based intervention, clinical effectiveness, treatment outcome" have a negative factor loading of 1 or higher. In Dim 2, only the words

"internet, mobile application, telemedicine, internet-based intervention" have factor loadings of 1 or higher.

The data set focusing on the disadvantages of DMH applications explains 83.04% of the total variance in MCA results, with the keywords in Dim 1 accounting for 63.88% and those in Dim 2 accounting for 19.16%. When examining the keywords in Dim 1, which explain a large portion of the variance, it is seen that the words "psychology, female, adult, male" in the first and third clusters have a factor loading of 1 or higher and show a positive relationship. In Dim 2, the words "depression, mhealth, pandemic, therapy, intervention, anxiety, metaanalysis" in the first and second clusters have factor loadings of 1 or higher. The data set focusing on the effects of DMH applications explains 97.05% of the total variance, with the keywords in Dim 1 accounting for 88.03% and those in Dim 2 accounting for 9.02% in the MCA results. As a result of the analyses performed, the term "anxiety disorder" in the third cluster in Dim 1 has a factor loading of 1 or higher. In Dim 2, the term "mobile application" in the second cluster, "randomised controlled trial" in the second cluster, and "anxiety disorder" in the third cluster are seen to have a factor loading of 1 or higher.

The data set focusing on the risks of DMH applications explains 95.52% of the total variance in MCA results, with keywords accounting for 88.86% in Dim 1 and 6.66% in Dim 2. The keywords "male, female, adult, psychology, middle aged, controlled study, adolescent, young adult, procedures" in the second cluster and "randomised controlled trial" in the third cluster in Dim 1 have factor loadings of 1 or higher. In Dim 2, the words "privacy" in the first cluster and "depression, anxiety, randomised controlled trial" in the third cluster are seen to have factor loadings of 1 or higher. The data set focusing on the potential of DMH applications explains 87.08% of the total variance, with the keywords in Dim 1 accounting for 72.22% and those in Dim 2 accounting for 14.86% in the MCA results. When examining Dim 1, it is seen that only the word "mental health service" in the first cluster and the words "mobile application, adult, female, male, controlled study, psychology" in the third cluster are loaded with factor loadings of 1 and above. In Dim 2, the words "telehealth, mental health service/s" in the first cluster are seen to have factor loadings of 1 and above.

Table 10. International research collaboration network metrics

Words (Advantages)	Dim 1	Dim 2	Cl	Words (Disadvantages)	Dim 1	Dim 2	Cl	Words (Effects)	Dim 1	Dim 2	Cl
Depression	-0,09	-0,68	1	Mental health	0,34	0,03	1	Female	-0,58	0,19	1
Anxiety	-0,26	-0,89	1	Covid-19	0,02	0,63	1	Male	-0,6	0,22	1
Intervention	0,52	-0,26	1	Telepsychiatry	0,03	0,68	1	Randomized controlled trial	-0,5	0,13	1
Internet	-0,31	-1,05	1	Telehealth	0,04	0,57	1	Adult	-0,57	0,19	1
Mental health	0,26	-0,15	1	Depression	0,07	-1,32	1	Controlled study	-0,61	0,15	1
Efficacy	0,6	-0,72	1	Telepsychology	-0,02	0,59	1	Treatment outcome	-0,73	-0,18	1
Psychotherapy	-0,07	-0,32	1	Digital mental health	-0,18	-0,34	1	Web-based intervention	-0,7	-0,62	1
Cognitive-behavioral therapy	0,5	-0,89	1	Mhealth	0,39	-1,08	1	Procedures	-0,65	0,27	1
Mobile application	-0,62	1,09	2	Telemedicine	0,98	0,57	1	Major clinical study	-0,79	-0,14	1
Mhealth	0,32	0,52	2	Mobile application	0,65	-0,44	1	Psychology	-0,67	0,18	1
Telemedicine	-0,4	1,1	2	Technology	-0,43	0,01	1	Cognitive behavioral therapy	-0,72	-0,49	1
Female	-1,43	0,25	3	Online therapy	-0,17	-0,15	1	Middle aged	-0,77	0,26	1
Adult	-1,39	0,18	3	Psychology	1,36	-0,21	1	Therapy	-0,75	-0,19	1
Male	-1,47	0,32	3	Care	-0,55	-0,38	1	Follow up	-0,87	-0,26	1
Controlled study	-1,53	0,13	3	İnternet	-0,01	-0,71	1	Young adult	-0,65	0,52	1
Randomized controlled trial	-1,4	-0,03	3	Pandemic	0,92	1,03	1	Adolescent	-0,35	0,5	1
Web-based intervention	-1,04	-0,86	3	Therapy	0,48	-1,02	1	Outcome assessment	-0,69	-0,03	1
Therapy	-0,95	-0,59	3	Ethics	-0,64	0,19	1	Mobile application	-0,07	1	2
Procedures	-1,61	0,26	3	Health	-0,58	-0,28	1	Telemedicine	-0,07	0,91	2
Psychology	-1,39	0,07	3	İntervention	-0,59	-1,28	2	Depression	0	-0,59	3
Major clinical study	-1,76	-0,13	3	Anxiety	-0,32	-2,13	2	Anxiety	-0,18	-0,81	3
Cognitive behavioral therapy	-1,49	-0,72	3	Metaanalysis	-0,67	-1,73	2	İnternet	-0,48	-0,9	3
Middle aged	-1,66	0,43	3	Female	2,77	-0,3	3	İnternet-based intervention	-0,94	-0,78	3
İnternet-based intervention	-1,55	-1,2	3	Adult	2,7	-0,44	3	Mental health	0,02	-0,07	3
Adolescent	-0,95	0,43	3	Male	2,86	-0,31	3	Anxiety disorder	-1,01	-1	3
Clinical effectiveness	-1,66	0,23	3								
Treatment outcome	-1,91	-0,58	3								

Words (Risks)	Dim 1	Dim 2	Cl	Words (Potentials)	Dim 1	Dim 2	Cl
Mobile application	-0,75	-0,52	1	Mental health	0,06	-0,66	1
Mental health	-0,03	0,11	1	Telemedicine	0,97	-0,65	1
Telehealth	0,07	-0,45	1	Digital mental health	-0,18	-0,48	1
Telemedicine	-0,8	-0,33	1	Telepsychiatry	0,14	-0,37	1
Covid-19	-0,3	-0,59	1	Covid-19	0,16	-0,92	1
Privacy	-0,32	-1,37	1	Telehealth	0,63	-1	1
Smartphone	-0,38	0	1	Telepsychology	0,38	-0,98	1
Technology	0,42	-0,59	1	Mental health service	1,09	-1,75	1
Male	-1,55	-0,08	2	Mental health services	0,91	-1,68	1
Female	-1,58	-0,07	2	Therapy	0,24	-0,12	1

Tablo 10 continues

Adult	-1,61	-0,11	2	Adolescent	0,47	0,09	1
Psychology	-1,39	0,35	2	Mhealth	0,09	0,45	2
Middle aged	-1,86	0,23	2	Depression	-0,12	0,64	2
Controlled study	-1,72	0,81	2	Technology	0,06	0,62	2
Adolescent	-1,28	-0,86	2	İntervention	-0,82	0,73	2
Young adult	-1,67	-0,91	2	Anxiety	-0,24	0,9	2
Procedures	-1,79	0,17	2	Disorders	-0,87	0,55	2
Depression	0,03	1,19	3	Care	-0,68	0,02	2
İntervention	0,56	0,79	3	Health	-0,71	0,55	2
Anxiety	-0,13	1,45	3	Metaanalysis	-0,79	0,88	2
İnternet	-0,03	0,68	3	Mobile application	1,18	1,17	3
Therapy	-0,86	0,71	3	Adult	1,88	0,26	3
Mhealth	0,45	0,29	3	Female	1,95	0,61	3
Randomized controlled trial	-1,24	1,55	3	Male	1,97	0,48	3
Telepsychiatry	0,36	0,11	3	Controlled study	1,89	0,98	3
Psychotherapy	0,05	0,91	3	Psychology	1,73	0,06	3

Figure 16. Factorial analysis of words clustering related to advantages of DMH"s

Figure 17. Factorial analysis of words clustering related to disadvantages of DMH"s

Figure 18. Factorial analysis of word clusters related to the effects of DMH's

Figure 19. Factorial analysis of word clusters related to the risks of DMH"s

Figure 20. Factorial analysis of word clusters related to the potential of DMH"s

Figure 21. Author collaboration network map related to effects of DMH"s

Figure 22. Author collaboration network map related to risks of DMH

Figure 23. Author collaboration network map related to the effects of DMH"s

Figure 24. Author collaboration network map related to risks of DMH"s

Figure 25. Author collaboration network map related to the effects of DMH"s

One of the analyses conducted within the scope of relationship network analysis concerns author relationship networks. The analysis results for all subfields are presented in the figures below. When examining the research groups focused on the advantages of DMH presented in Figure 21, it is observed that there are 10 separate collaboration groups. However, it is noteworthy that there are 12 separate collaboration groups in the dataset focusing on disadvantages presented in Figure 22, 12 in the dataset focusing on effects presented in Figure 23, 10 in the dataset focusing on risks presented in Figure 24, and 8 in the dataset focusing on potentials presented in Figure 25. These author groups generally consist of two or three people.

Finally, the results derived from the analysis of country-level collaborations are presented in Table 11. When collaborations with a frequency of 150 or higher were examined, the findings indicated that studies focusing on the advantages of DHM predominantly emerged from Australia–New Zealand and New Zealand–USA collaborations. Research addressing disadvantages was primarily associated with USA–Fiji collaborations, while studies examining effects were most frequently observed in USA–New Zealand collaborations. Studies focusing on risks appeared mainly within Australia–New Zealand, USA–New Zealand, and USA–Fiji collaborations, whereas research emphasising potential was most evident in UK–New Zealand collaborations. In addition, the literature reveals a broad network of international cooperation, including collaborations involving Germany, the Netherlands, China, Canada, France, Italy, Switzerland, Kenya, Pakistan, Korea, Singapore, India, Iran, Saudi Arabia, Colombia, North Macedonia, Belgium, Slovakia, Egypt, Finland, Sweden, Brazil, Lebanon, Israel, Bangladesh, and the United Arab Emirates, alongside various other countries.

Discussion and Conclusion

Bibliometric analysis studies offer a structure that allows for the examination and analysis of all published articles and other studies related to the field of research (Karaboğa, 2019; Yurdakul & Bozdoğan, 2022). This opportunity provided by bibliometric analysis enables researchers to gain a detailed and up-to-date perspective on their focus topic. Within this framework, this research focused on examining academic publications that explore the advantages, disadvantages, effectiveness, risks, and potential dimensions of digital mental health interventions using bibliometric analysis methods. The research obtained data sets on the advantages of digital mental health from the WoS and Scopus databases, with a sample size

of 501 for advantages, 285 for disadvantages, 473 for effectiveness, 264 for risks, and 184 for potential. In this context, this research presents a bibliometric analysis of all the data in question, revealing research trends in the disciplines of psychology and medical sciences related to digital mental health.

An examination of the findings indicates that the dataset focusing on the advantages of digital mental health had the highest number of journals (225), articles (501), and researchers (3,051). This pattern suggests that, from 2015 to the present, research addressing the advantages of digital mental health applications has been more prevalent than studies focusing on other dimensions. Research on advantages was followed by studies examining the effectiveness of digital mental health applications, as well as investigations into their disadvantages and associated risks. In contrast, studies exploring the potential of digital mental health applications occupied a comparatively smaller proportion of the literature. Further analysis revealed that the growth rate of studies focusing on potential was the highest, whereas the increase in studies addressing application-related risks was the lowest. Overall, these findings demonstrate a steady rise in digital mental health research since 2015, with an emerging emphasis on potential. Studies focusing on potential are followed, in terms of growth, by research on effectiveness and advantages, respectively.

In the bibliometric analysis, the most frequently used keywords in the advantage-focused dataset were, in order, "depression, mobile application, female, adult, male, controlled study, anxiety, intervention, and randomised controlled trial"; in the datasets focusing on disadvantages they were "mental health, COVID-19, telepsychiatry, telehealth, depression, telepsychology, mhealth, telemedicine"; in the data sets focusing on the effectiveness, they were "female, male, randomised control trial, adult, controlled study, mobile application, treatment outcome, depression, web-based intervention, procedures"; in the risk-focused dataset, they were "mobile application, male, female, adult, depression, mental health, psychology, intervention, anxiety" and finally, in the data set focusing on the concept's potential, the keywords were determined to be "mental health, mhealth, mobile application, depression, telemedicine, adult, female, male".

Table 11. International research collaboration network metrics

Country (Advantages)	To	Fre.	Country (Disadvantages)	To	Fre.	Country (Effects)	To	Fre.	Country (Risks)	To	Fre.	Country (Potencials)	To	Fre.
Australia	New Zealand	171,484923	Usa	Fıjı	165,451954	Usa	New Zealand	171,484923	Australia	New Zealand	171,484923	United Kingdom	New Zealand	171,484923
Usa	New Zealand	171,484923	Usa	Australia	134,491	Usa	Australia	134,491	Usa	New Zealand	171,484923	United Kingdom	Australia	134,491
United Kingdom	Japan	138,030896	Germany	Korea	127,839161	Australia United Kingdom	China	103,819073	Usa United Kingdom	Fiji	165,451954	Usa	Australia	134,491
Usa	Australia	134,491	Sweden	Korea	127,839161	United Kingdom	China	103,819073	United Kingdom	Australia	134,491	Australia United Kingdom	China	103,819073
Germany	Korea	127,839161	United Kingdom	Korea	127,839161	Usa	China	103,819073	Usa	Australia	134,491	United Kingdom	China	103,819073
Netherlands United Kingdom	Korea	127,839161	Usa	Korea	127,839161	Colombia	Singapore	103,817256	Germany United Kingdom	Korea	127,839161	Usa	China	103,819073
Usa	Korea	127,839161	Canada	Singapore	103,817256	Mexico	Singapore	103,817256	Usa	Korea	127,839161	Australia United Kingdom	Bangladesh	90,2381274
China	Malaysia	109,697623	France	Singapore	103,817256	Netherlands	Singapore	103,817256	Germany	China	103,819073	United Kingdom	Bangladesh	90,2381274
Australia United Kingdom	China	103,819073	Germany	Singapore	103,817256	Usa	Singapore	103,817256	Usa	China	103,819073	Usa	India	79,6119761
United Kingdom	China	103,819073	Greece	Singapore	103,817256	Usa	India	79,6119761	Brazil United Kingdom	India	79,6119761	Saudi Arabia	Pakistan	69,3395794
Usa	China	103,819073	Italy	Singapore	103,817256	Usa	Egypt	29,861901	Usa	India	79,6119761	Australia	U Arab Emirates	54,3001671
Australia	Singapore	103,817256	Switzerland	Singapore	103,817256	Sweden	Finland	26,2746656	Usa United Kingdom	India	79,6119761	Usa	U Arab Emirates	54,3001671
Canada	Singapore	103,817256	United Kingdom	India	79,6119761	North Macedonia	Macedonia	21,6821135	Usa	Iran	54,27407	Germany	Lebanon	35,8801607
China	Singapore	103,817256	Usa	India	79,6119761	United Kingdom	Macedonia	21,6821135	Usa United Kingdom	Iran	54,27407	Netherlands	Lebanon	35,8801607
France	Singapore	103,817256	Kenya	Iran	54,27407	United Kingdom North Macedonia	Macedonia	21,6821135	Iran United Kingdom	Kenya	37,7959397	Usa United Kingdom	Lebanon	35,8801607
Germany	Singapore	103,817256	United Kingdom	Iran	54,27407	Belgium	Slovakia	19,4790522	Usa	Kenya	37,7959397	United Kingdom	Israel	35,0044469
Italy	Singapore	103,817256	Usa	Iran	54,27407	Germany	Slovakia	19,4790522	Usa United Kingdom	Kenya	37,7959397	Netherlands United Kingdom	Zimbabwe	29,8514412
Switzerland	Singapore	103,817256	Pakistan	Saudi Arabia	44,5368627	Italy	Slovakia	19,4790522	Usa	Lebanon	35,8801607	United Kingdom	Zimbabwe	29,8514412
Switzerland	Nepal	83,9158264	United Kingdom	Kenya	37,7959397	Netherlands United Kingdom	Slovakia	19,4790522	Usa United Kingdom	Israel	35,0044469	Germany	Romania	24,9729304
			Usa	Kenya	37,7959397							Lebanon	Romania	24,9729304m

When examining findings related to the changing popularity of keywords over the years, it is observed that the concept of digital mental health has become a popular topic of study for all subfields since 2021. Studies focusing on advantages have concentrated particularly on the concepts of depression, mobile application, female, adult, and male since 2020, but studies related to the concepts of therapy effect, emotion regulation, and acceptance have also gained popularity in recent years. Studies on the disadvantages of digital applications have focused particularly on concepts such as COVID-19, telepsychiatry, telehealth, depression, and therapy since 2020. However, studies on prevention, engagement, and AI concepts have increased in recent years. Research on the effectiveness of the field has highlighted concepts such as female, male, randomized control trial, mobile application, and internet since 2019. In recent years, topics such as single-blind procedure, therapeutic alliance, and rehabilitation have gained popularity. While no clear popularity stands out in the dataset focusing on risks, studies focusing on children, suicide prevention, and mental Disorders have increased in recent years. Similarly, in studies focusing on the field's potential, the popularity of the concepts of children and therapy has been noteworthy in recent years.

When examining the co-occurrence networks formed as a result of thematic map analyses of the data set related to the advantages of DMH, it is noticeable that the concepts "female, male, adult" and "depression, anxiety, therapy" are the most intensively studied concepts in relation to digital mental health from 2015 to the present. Furthermore, when considering the disadvantages of DMH, it is seen that the concepts "telehealth, depression, telepsychology" are central and intensively studied. When examining the co-occurrence networks of the dataset related to the effects of DMH, the concepts "female, male, randomised control trial" stand out as the most intensively and frequently discussed concepts. Similarly, in the co-occurrence networks of the dataset related to the risks of DMH, it was determined that the most frequently studied concepts were "mobile applications, female, male". Finally, the analysis results of the dataset focusing on potentials reveal that the concepts "telemedicine, adult, female" are the most frequently studied concepts, followed by "depression, telepsychiatry, intervention".

Subsequently, the change in concepts over specific time periods was detailed to clarify the direction of development in the field. The relevant periods were examined in detail under three separate groups: 2015-2018, 2019-2022, and 2023-2025. At this point, the data set on advantages showed that the concepts of "depression" and "mobile application" were the most frequently studied concept in all periods and maintained its position in the field throughout all periods. In recent years, the concepts of "efficacy" and "female" have been seen to accompany these concepts. Similarly, in the dataset focusing on the disadvantages, it is noteworthy that the concept of "depression" was studided most frequently, the concepts of "online therapy" and "COVID-19" persistent throughout all periods, and the concept of "mobile app" evolved into the concept of "mental health". When examining the relationships between words within different time periods for the effects of DMH dataset, it is seen that the concept of "female" strongly maintains its place in the field. It is also understood that the concept of "female" has been used with the concepts of "self-report, mobile app, depression". In the dataset focusing on the risks of DMH, it is striking that the concepts of depression, mobile application, and privacy formed the focus of research

in all periods. Finally, when analysing the dataset focusing on the potential of DMH, it is noteworthy that the term "depression" is present throughout all periods, and the concept of "access, children, female, measurement-based care" has formed the focus of the literature in recent years.

These findings reveal that, across all subfields of DMH, studies focusing on adult female samples have been more prevalent than those focusing on other developmental periods or genders from 2015 to the present. It is noteworthy that studies focusing on the DMH applications show an increase in the number of studies conducted with adolescents and young adults, in addition to adults. In recent years, studies conducted with different sample groups, such as children or parents (Fernández-Batanero et al., 2025; Peyton et al., 2022), are also seen to be the subject of research in studies especially focusing on potentials subfield of DMH. Similarly, it has been determined that studies focus on research related to depressive mood in particular for all data sets (Himle et al., 2022), followed by anxiety as a mental health problem (Lattie et al., 2019). In recent years, studies on effectiveness have also focused on stress-related problems or mental health issues such as PTSD (Tng et al., 2024). The focus of the studies on depression and anxiety may be related to the fact that these are the most common psychological problems worldwide, as indicated by World Health Organization (World Health Organization, 2022).

The analysis results reveal that the most frequently repeated research method across all data sets, as identified through keywords, is the controlled study and RCT. It is noteworthy that controlled studies were mostly conducted in studies focusing on the effectiveness, disadvantages, and advantages of applications (Riboldi et al., 2023), while this method was used to the least extent in articles related to risks. Another noteworthy finding relates to psychotherapeutic interventions, which have been the focus of studies since 2015. The results show that the number of studies focusing on Cognitive Behavioral Therapy-based interventions is higher, particularly across all sub-dimensions (Denecke et al., 2022; Fitzpatrick et al., 2017). This situation appears to be related to the structured and systematic nature of CBT. This is because structured, instructive, modular, self-administered, and measurable interventions appear to be easier to transfer to digital platforms (Andersson, 2016).

Considering the results of the factorial analysis conducted on the conceptual structure, it is seen that within the framework of author relationship networks, 10 separate collaboration groups were formed regarding the advantages of DMH, 12 collaboration groups regarding its disadvantages, 12 collaboration groups regarding its effectiveness, 10 collaboration groups regarding its risks. An examination of the findings reveals that the United States is the country with the most studies in the field of digital mental health, with 149 articles, and that the focus of these articles is on the advantages of DMH. Similarly, it is seen that the most research focusing on the use of artificial intelligence tools in educational environments and in the field of neuropsychology has been conducted in the USA (Baca Biçer et al., 2023; Duran & Aydın, 2024). However, Austria is also seen to be among the top countries contributing to the literature.

Finally, the analysis conducted within the scope of country relations reveals that studies focusing on the advantages of DMH were generally conducted between New Zealand, Australia, and the United States. Studies on the disadvantages, effects, risks, and potentials of DMH were also found to have

emerged from similar country collaborations (USA, New Zealand, Australia, Fiji and UK). Additionally, collaborations between countries such as Germany, Canada, France, Italy, Brazil, Korea, China, the Netherlands, and Sweden with other nations are noteworthy. The fact that these countries are advantageous and leading nations in terms of technology production, access, and usage indicates that this intense interest in DMH research is a natural and expected outcome.

Limitations and Recommendations

This research is limited to publications obtained by searching for keywords related to digital mental health in the Web of Science and Scopus databases. By using different keywords related to digital mental health, it is possible to examine different aspects of this multidimensional field. Furthermore, the study is limited to English-language scientific articles published on the subject from 2015 to the present. Future studies on this topic could include research conducted prior to 2015, thereby revealing the evolution and trends in the literature over a broader time frame. Furthermore, studies in languages other than English, particularly those conducted in Türkiye, could be included in the analysis process to review the progress of research in Turkiye.

The findings of this study indicate that research focusing on the potential of applications in the field of digital mental health (DMH)—that is, the possible contributions of digital platforms and/or applications to mental health services—is likely to increase in the future. In addition, studies conducted in the DMH field since 2015 have predominantly focused on female participants, adults, mental health conditions related to depression and anxiety, and interventions grounded in Cognitive Behavioral Therapy (CBT). Accordingly, future research examining the advantages, disadvantages, effectiveness, and potential of DMH would benefit from incorporating the experiences of individuals from diverse gender groups and age ranges, as well as those experiencing a wider variety of psychological difficulties. In recent years, the research focus has begun to extend beyond CBT to include other therapeutic constructs, such as emotion regulation, suicide prevention, mindfulness, therapeutic alliance, engagement, rehabilitation, and acceptance. Nevertheless, there remains a clear need for further studies investigating a broader range of counseling approaches and interventions delivered through digital environments. Such research is essential for a more comprehensive evaluation of the advantages, disadvantages, effectiveness, risks, and potentials of digital therapeutic platforms.

Author Contributions

All authors contributed to the planning and writing of the article; they have read and approved the final version of the work. In addition, the first author performed the data collection and statistical analysis.

Ethical Declaration

The authors declare that their work is not subject to ethics committee approval and that the rules established by the Committee on Publication Ethics (COPE) have been followed throughout the entire process.

Conflict of Interest

The authors declare that they have no conflict of interest with any institution or individual within the scope of this work.

Declaration of Generative AI Use

In this article, generative artificial intelligence tools were utilized as follows:

- DeepSeek and ChatGPT were used during the identification of gaps in the literature review process.
- DeepSeek and ChatGPT were used during the determination of keywords in the data sources and research strategies section.
- ChatGPT was used during the evaluation of the suitability of articles selected according to the inclusion and exclusion criteria in the data sources and research strategies section.
- Grok, DeepSeek, and ChatGPT were used during the data analysis stage for writing analytical codes and correcting erroneous codes.
- DeepL and QuillBot were used for translating the manuscript into English and improving English language fluency.
- ChatGPT was used in the preparation of the reference list.

The generative artificial intelligence tools mentioned above did not replace human judgment, expertise, or evaluation. All artificial intelligence technologies were used solely under the supervision and control of the authors. The accuracy, scope, and objectivity of all content generated with the assistance of artificial intelligence were carefully reviewed by the authors, and all sources were verified. All AI-assisted content was revised and adapted to reflect the authors' original contributions, analyses, interpretations, and ideas.

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