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The impact of digital interventions on stress levels in caregiver of people with mental disorders: A systematic literature review

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Abstract

Background: Informal caregivers of people with mental disorders (ODGJ) often experience complex and multidimensional burdens, including psychological stress, emotional exhaustion, and limited access to professional support. With technological advances, digital interventions have begun to be utilized as an innovative approach to alleviate caregiver burden. However, evidence regarding the effectiveness and characteristics of these interventions remains scattered and has not been systematically analyzed.

Purpose: To systematically review and analyze the effectiveness and characteristics of digital interventions in alleviating the psychological burden of informal caregivers of people with mental disorders

Method: A systematic review using PRISMA guidelines. Articles were searched using three databases: PubMed, ScienceDirect, and Scopus. A total of 332,609 articles were identified (PubMed $n = 27,118$; ScienceDirect $n = 305,460$; Scopus $n = 31$), then selected based on inclusion and exclusion criteria. The variables analyzed were digital interventions (web, mobile, or a combination) and caregiver psychological outcomes (stress, anxiety, and depression levels). The research instrument used the PICO framework. The analysis was conducted using thematic qualitative methods. Each article was assessed using the JBI critical appraisal tools.

Results: Twelve articles met the inclusion criteria and were of good methodological quality. Results indicated that most digital interventions—whether mobile app-based, web-based, or telehealth-based—were effective in reducing caregiver stress, improving mental well-being, and enhancing caregiving skills. Technology-based interventions were generally well-received and considered practical and flexible, although not all were proven superior to traditional approaches.

Conclusion: Digital interventions have a positive impact on caregivers of patients with mental illness in terms of psychological aspects and caregiving competency. Policy support and integration of digital services into the mental health system are important recommendations for the future.

Keywords: Caregiver Burden; Digital Intervention; Mental Health; Stress.

INTRODUCTION

Mental disorders are a global health problem that impacts not only the individual but also their families as primary caregivers. Caregivers often face psychological, physical, and social stress due to the high burden of caregiving (Tristiana, Triantoro, Nihayati, Yusuf, & Abdullah, 2019). Caregivers' inability to manage stress and high emotional distress can compromise the quality of care provided to patients with mental disorders. Persistent psychological burdens, such as anxiety, emotional

exhaustion, and the risk of burnout, pose serious challenges for caregivers in their daily lives. These conditions not only affect the caregiver's own mental health but also directly impact the effectiveness of care and interpersonal relationships with patients. This issue raises the need for innovative and accessible interventions, one of which is through digital approaches (Liu, Zhang, Ahmed, Shahid, Wang, Wang, & Guo, 2021).

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Digital interventions have become a solution that has begun to be adopted in recent years, particularly after the COVID-19 pandemic accelerated the transformation of technology-based healthcare services. Digital technology offers flexibility, accessibility, and cost-effectiveness in supporting caregiver mental health. Apps, online modules, telehealth, and educational platforms have been used to improve caregivers' knowledge, skills, and confidence in caring for people with mental disorders. Several studies have shown that this digital approach is effective in reducing stress, anxiety, and emotional burden in caregivers through the provision of structured information, stress management skills training, and virtual social support (Gleeson, Lin, Koval, Hopkins, Denborough, Lederman, & Alvarez-Jimenez, 2023b). However, previous research indicates that there are few systematic reviews comprehensively mapping the effectiveness of this intervention. Therefore, it is important to comprehensively examine the impact of digital interventions on the psychological well-being of caregivers of people with mental disorders (ODGJ), such as stress, anxiety, emotional exhaustion, and caregiving burden, through a systematic literature review.

The problem of caregivers' low ability to cope with stress can be associated with the risk of burnout, depression, and even violence against the people they care for. Continuous caregiving without adequate support can lead to a heavy caregiver burden, impacting quality of life and interpersonal relationships with patients. Conventional interventions such as face-to-face therapy are often limited by time and available resources. Therefore, digital approaches are a potential alternative. Evidence-based interventions through digital technology can provide educational content, self-paced exercises, and ongoing peer support spaces aimed at reducing caregiver stress, anxiety, and emotional burden. This is what drives the need for a systematic review of digital intervention studies to see their impact on caregiver psychological distress (Zhou, Bai, Wan, Qin, He, & Xie, 2024).

The chronology of the widespread use of digital technology to support caregivers began with the pandemic, which forced healthcare services to shift to online models. Health organizations and

educational institutions developed various digital resources for caregivers in the form of apps, webinars, online forums, and educational modules. Early studies showed that caregivers found it helpful in obtaining relevant information, reducing feelings of isolation, and increasing their confidence in caregiving. However, not all caregivers experienced optimal benefits, as limited digital literacy and internet access remain barriers. Therefore, a systematic review is needed to identify the characteristics of the most effective digital interventions. The results can guide the development of technology-based policies or programs (Naslund, Bondre, Torous, & Aschbrenner, 2020).

Various digital intervention strategies implemented globally have shown a positive impact on improving caregiver capacity, particularly in caregiving skills and emotion management. For example, the REACH VA and SMART-Caregiver apps have successfully increased the self-efficacy of caregivers with dementia and mental health disorders through a mobile-based, self-paced approach that reduces stress and anxiety. These activities also provide a reflective space for caregivers to evaluate their caregiving experiences. This increased confidence is also supported by interactive features and personalized feedback. However, the effectiveness of these interventions has not been fully measured comprehensively in the context of people with mental health issues (ODGJ). Therefore, a systematic literature review was conducted to summarize the existing evidence scientifically and objectively (Boots, de Vugt, van Knippenberg, Kempen, & Verhey, 2014).

The solution offered through this review is to develop an evidence-based digital intervention model proven effective in reducing anxiety, stress, and emotional distress in caregivers of people with mental health issues. This review aims to identify the types of interventions used, the digital media or platforms utilized, the duration of the interventions, and their impact on the caregivers' psychological well-being. Furthermore, this review will evaluate the methodological quality of research conducted in various countries. It is hoped that the study results can be used as a basis for developing policies and interventions in Indonesia, given the limitations of conventional services. This study is also important in

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informing mental health stakeholders about technology-based approaches. With its systematic approach, this study makes a scientific contribution to supporting family-based mental health (Lou, Tang, Lau, Lum, Fong, Ko, & Kwok, 2021).

Over the past decade, developments in information technology have driven innovation in mental health services, including in supporting caregivers. Digital interventions such as eHealth, telepsychiatry, and online therapy are increasingly being implemented to reduce caregiver burden by improving health literacy, providing psychosocial support, and providing access to professional services online (Alvarez-Jimenez, Nicholas, Valentine, Liu, Mangelsdorf, Baker, Gilbertson, O'Loughlin, McEnery, McGorry, Gleeson, & Cross, 2025; Kaewwanna, Bhatarasakoon, & Kitsumban, 2023). Although many forms of digital interventions have been developed, evidence regarding their effectiveness in reducing caregiver burden for people with mental disorders remains limited and inconsistent. This inconsistency is due to significant variations in intervention design, program duration, the technology media used (such as mobile apps, educational videos, or telecounseling), and differences in the characteristics of the caregivers studied.

Furthermore, many studies used different outcome measures, such as self-efficacy, stress, burnout, or quality of life, making direct comparisons between studies difficult. Some studies also lacked adequate controls or had small sample sizes, thus reducing external validity. Cultural differences, digital literacy levels, and social support across regions also influence reported intervention outcomes. Therefore, a systematic review is needed to more comprehensively screen and evaluate the quality and effectiveness of various forms of digital interventions. Most studies focus more on the physical condition of patients, while caregivers face unique challenges in caring for patients with mental illness.

Based on this explanation, this study was designed to conduct a systematic literature review of studies on digital interventions that impact the psychological well-being of caregivers of people with mental illness, such as stress, anxiety, emotional burden, and overall mental well-being. This approach

aims to collect, analyze, and synthesize the latest scientific evidence from various countries and backgrounds. The systematic review method was chosen because it provides a comprehensive overview and filters the literature with high methodological standards. This study is expected to provide a comprehensive understanding of global trends and recommendations for locally adaptable interventions, allowing research to focus not only on the type of intervention but also on patient characteristics, cultural context, and long-term effectiveness. Therefore, the study results can be used to develop digital-based caregiver support programs for people with mental disorders (ODGJ) in Indonesia.

RESEARCH METHOD

This study is a systematic literature review conducted using the steps outlined by Page (2021) to identify, evaluate, and synthesize findings from various studies examining the impact of digital interventions on the psychological health of caregivers of people with mental disorders (ODGJ), such as stress, anxiety, and caregiving burden. This approach was carried out systematically and transparently to avoid selection bias and ensure the quality of the evidence reviewed. The review process adhered to the PRISMA 2020 reporting standards (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). This design was chosen because it allows for objectively combining and comparing results from various studies. The primary goal is to summarize the available evidence comprehensively and in-depth.

Data were obtained from three international electronic databases: PubMed, Scopus, and ScienceDirect. The search strategy used keywords structured using Boolean operators such as "digital intervention" OR "e-health" OR "mHealth" AND "caregiver" OR "family caregiver" AND "mental illness" OR "mental disorder" OR "psychiatric disorder" AND "stress." The search was limited to articles published within the last 10 years (2015–2025), written in English or Indonesian, and with full access to the full text. The search process was conducted systematically and documented according to the PRISMA flowchart.

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The inclusion criteria used in article selection included: primary studies with quantitative designs (quasi-experimental, RCT, true experimental) evaluating the impact of digital interventions on anxiety in caregivers of people with mental disorders (ODGJ); articles that mentioned anxiety-related outcomes; articles available in full text and peer-reviewed. Exclusion criteria included review articles; and studies focused on patients without involving caregivers.

The selection process was conducted through four stages according to the PRISMA diagram: Article identification by searching articles from the three databases and extracting them into Zotero software to remove duplications. Screening, which involved sorting titles and abstracts to ensure they align with the topic and inclusion criteria. Eligibility, which ensured that articles that passed the screening were consistent with the content. Articles

that met all criteria were included in the final analysis. The search and screening process was conducted according to the PRISMA guidelines (Figure 1). In the initial stage, a total of 332,609 articles were obtained from three major databases: PubMed (n = 27,118), ScienceDirect (n = 305,460), and Scopus (n = 31). All articles were then screened based on title and abstract to eliminate those irrelevant to the research focus. After the initial selection process, duplicate articles were checked, and the remaining articles were reviewed in full text.

The analysis was conducted using narrative synthesis, grouping findings based on the type of digital intervention, indicators of impact on caregivers, and geographic and cultural context. Furthermore, methodological quality was assessed using the Critical Appraisal Tool from the Joanna Briggs Institute (JBI), tailored to the study type.

RESEARCH RESULTS

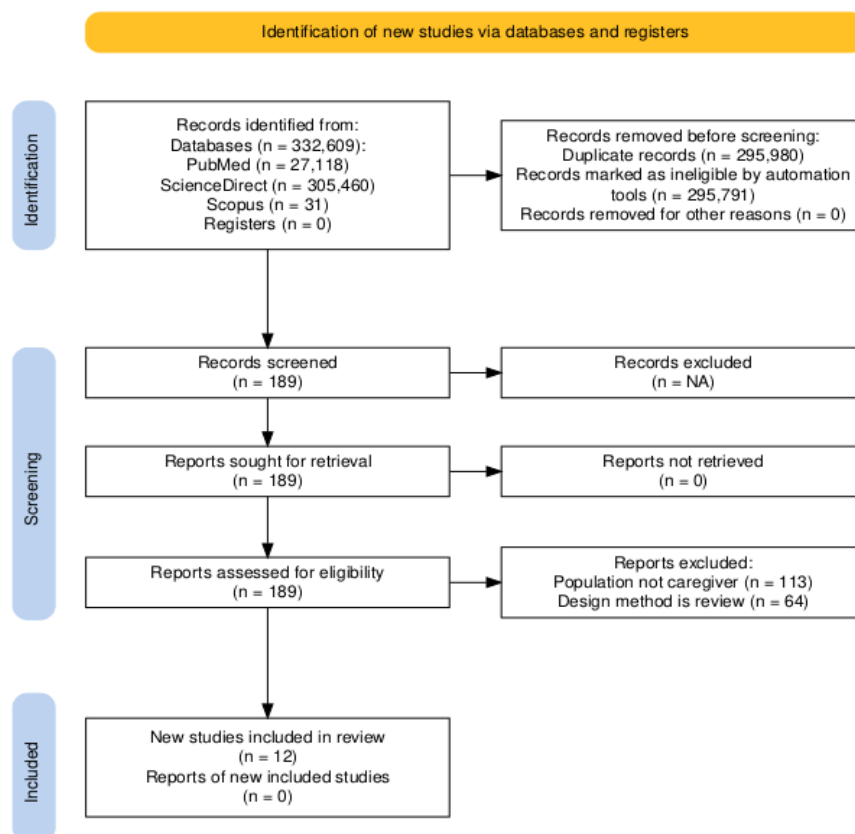


Figure 1. PRISMA Flow Diagram

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Table Research Results Synthesis Matrix

(Author, Year) Country	Population	Intervention	Main Results
(Gleeson et al., 2023a) Australia	164 caregivers (family members)	Intervention Name: Altitudes (Web-based application based on a digital platform) Intervention Components: 1. Online psychoeducation and interactive therapy 2. Social networking features with expert moderators 3. Peer moderation (mutual support among caregivers) Duration: The study was reviewed for 12 months.	The statistical test results showed $p = 0.022$ ($p < 0.05$) after 12 months. First Episode Psychosis (FEP) patients from families using Altitudes had fewer emergency department (ER) visits than the control group. This demonstrates the potential benefits of digital interventions for patient stability, although the effect on caregiver self-efficacy was not statistically significant between groups.
(Buck et al., 2023) USA	32 participants (informal caregivers)	Intervention Name: Bolster (Mobile Health Intervention) Intervention Components: 1. Psychoeducation 2. Communication training 3. Guidance on accessing health services 4. Support 5. Chat feedback Duration: 7 days (1 week)	The results showed a significant decrease in caregiver distress with Cohen's $d = 1.77$. Changes in the disease condition were observed, and negative emotions were decreased.
(Lobban et al., 2020) UK	800 family caregiver participants	Intervention Name: REACT (Relatives Education and Coping Toolkit) Intervention Components: 1. Evidence-based education 2. Online emotional support 3. Healthcare support Duration: The study lasted 24 weeks, with learning time approximately 50.8 minutes.	The results showed a decrease in stress levels, but no significant difference. The REACT application increased user satisfaction due to its safety, convenience, and acceptability.

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(Author, Year) Country	Population	Intervention	Main Results
(Fuller-Tyszkiewicz et al., 2020) Australia	183 informal caregivers (family, close friends)	Intervention Name: StressLess (Mobile-based self-paced psychological intervention application) Intervention Components: 1. Psychoeducation through text, video, audio, and graphics 2. Interactive modules 3. Problem-solving 4. Module tracking feature Duration: 5-week study with one module per week	This application has been shown to be effective in reducing stress and depression in caregivers and improving emotional well-being when caring for family members with physical or mental disabilities.
(Sin et al., 2020) UK	360 family member caregivers (parents, spouses, siblings)	Intervention Name: COPe-support (Carers for People with Psychosis e-support) through a Canvas web-based virtual learning environment Intervention Components: 1. Psychoeducation 2. Caregiver health promotion 3. Interactive forum 4. Emotional and technical support Duration: 12-month study	The results indicate that COPe-support can improve caregivers' mental well-being and enhance their experience of comprehensive caregiving.
(Gureje et al, 2020) Nigeria & Ghana	307 family caregivers	Intervention Name: COSIMPO (Collaborative Shared Care) Intervention Components: 1. Two-way collaboration between spiritual and traditional care 2. Monitoring 3. Symptom recording 4. Pharmacological intervention Duration: 6-month study	The study showed that the Collaborative Shared Care (CSC) intervention significantly reduced PANSS scores from 107.3 to 53.4, compared to the control group (67.6; $p < 0.0001$). Reductions also occurred in the positive, negative, and general symptom subscales. This intervention proved cost-effective and only caused minor side effects in five participants. Participation rates were also high, with 93% of participants completing the six-month follow-up. CSC has been shown to be effective and feasible to implement in resource-limited settings.

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(Author, Year) Country	Population	Intervention	Main Results
(Bucci et al., 2024) UK	172 family caregivers	Intervention Name: Actissist (a smartphone application based on cognitive behavioral therapy). Intervention Components: 1. Multimedia content 2. Automatic notification schedule 3. Questions and answers based on cognitive, emotional, and behavioral assessments. Duration: 12 weeks	Actissist proved feasible, safe, and well-accepted, but did not demonstrate superiority over a symptom-monitoring app (ClinTouch) in reducing psychotic symptoms in patients with early psychosis over a 12-week period. These results underscore the importance of using active controls and the challenge of demonstrating the additional benefits of technology-based digital interventions over symptom-monitoring platforms to facilitate caregiver care.
(Elgán et al., 2016) Sweden	140 caregivers (children)	Intervention Name: Grubbel (Group-Based Digital Intervention) Intervention Components: 1. Online group sessions facilitated by a professional 2. CBT-based 3. Educational modules 4. Social support Duration: 5-8 weeks	Grubbel is a feasible online group intervention that is well-received by participants. There is evidence of improved mental health (reduced depressive symptoms) and improved coping strategies and quality of life in intervention users compared to controls..
(Chiang, et al, 2019) Taiwan	60 caregivers (patient's immediate family)	Intervention Name: Telecare provided during discharge planning Intervention Components: 1. Monitoring the patient's condition at home 2. Telephone care counseling 3. Transition theory-based intervention Duration: 1-month study	Telehealth-based transitional care and discharge planning have positive impacts on: Reducing caregiver burden, Improving stress management, and Improving family functioning. This intervention has been shown to be effective during the first 30 days after hospital discharge.

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(Author, Year) Country	Population	Intervention	Main Results
(Budiono et al., 2021) Indonesia	64 caregivers (patient's family)	Intervention Name: Telecare provided during discharge planning Intervention Components: 1. Monitoring the patient's condition at home 2. Telephone care counseling 3. Transition theory-based intervention Duration: 1-month study	The results show that telecare has a positive impact in terms of: Reducing caregiver burden, Improving stress management, Improving family functioning, and Good acceptance of the intervention by participants.
(Ferré-Grau et al. 2021) Spain	152 caregivers (family or relatives without training)	Intervention Name: Smartphone Application Intervention Components: 1. Problem-solving and self-actualization 2. Prosocial behavior 3. Self-control 4. Personal satisfaction Duration: 28 days of intervention use	The app-based intervention program analyzed in this study was effective in promoting positive mental health and reducing caregiver burden, while achieving high levels of user satisfaction. This study provides evidence that a mobile app-based intervention program can be a useful tool for improving the well-being of nonprofessional caregivers.
(Biliunaite et al., 2021) Lithuania	63 caregivers (family and spouse)	Intervention Name: Internet-Delivered Cognitive Behavioral Therapy (ICBT) Intervention Components: 1. Interactive module content 2. Media via an easily accessible platform 3. Counseling by a therapist Duration: 8 weeks	The results of the study showed a decrease in caregiver burden, a decrease in depression and stress, and it was found that most participants felt satisfied when using this platform.

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DISCUSSION

Articles that did not meet the inclusion criteria were excluded from the analysis. After going through the article selection process, 12 articles were analyzed. Next, the articles that met these criteria were critically analyzed using the Critical Appraisal Tool from the Joanna Briggs Institute (JBI) to assess the methodological quality and validity of the research results. Based on the JBI assessment results, the critical appraisal results showed that most studies were strong in the use of technology-based interventions and valid reporting of results, but weak in blinding and concealment. Some studies also had small sample sizes, thus limiting statistical power. Nevertheless, all studies were clinically relevant and demonstrated the great potential of digital interventions for the well-being of caregivers of people with mental disorders (ODGJ). Controlled Trials (RCTs) and the JBI Checklist for quasi-experimental studies. The assessment results indicated that the majority of articles had good to excellent methodological quality, supporting the validity of this systematic review.

The duration of digital interventions varies across studies, ranging from as short as 7 days to as long as 12 months. Most studies ranged in duration from 4 to 12 weeks. The study by Buck et al. (2023) implemented the Bolster intervention for only 7 days, but it demonstrated a significant reduction in caregiver distress. Meanwhile, the StressLess intervention by Fuller-Tyszkiewicz et al. (2020) was conducted over 5 weeks, with one module delivered each week in phases.

The intervention implemented by Biliunaite et al. (2021) involved an 8-week ICBT program involving online therapist support. Several other studies used a 12-week duration, such as the Actissist app (Bucci, Berry, Ainsworth, Berry, Edge, Eisner, & Haddock, 2024), which provides automatic notifications and CBT-based exercises. Longer-duration studies were conducted by Gleeson et al. (2023a) and Sin et al. (2020), each for 12 months, demonstrated a more comprehensive and sustainable approach, although some studies did not show significant differences compared to control groups over the long term.

Based on the method of use, digital interventions in several studies were found to primarily rely on smartphone app platforms, web-based online

modules, and telecare via remote communication such as telephone or video calls. App-based interventions such as StressLess, Bolster, and Actissist are designed for self-administration with automatic notification features, educational multimedia, and user progress monitoring. Meanwhile, online platforms such as COPE-support, REACT, and Grubbel offer discussion forums, evidence-based psychoeducation, and emotional support among caregivers through professionally facilitated groups.

Telecare interventions such as those implemented by Chiang et al. (2019) and Budiono et al. (2021) emphasize post-hospitalization support via telephone, combined with patient education and symptom monitoring, and strengthening family functioning. Other studies have also integrated Cognitive Behavioral Therapy (CBT) components into online modules, such as ICBT and Grubbel, which allow caregivers to access coping and emotional management training through a cognitive behavioral therapy approach without face-to-face interaction.

Overall, the study results indicate that flexible intervention duration and practical, accessible technology-based methods are important factors in the effectiveness of digital interventions on the psychological health of caregivers of people with mental illness. Adaptive use of technology, both independently and with assistance, has been shown to support the reduction of stress, anxiety, and emotional burden among caregivers in various mental health service contexts.

Various digital interventions have been shown to be effective in reducing stress levels in caregivers of people with mental illness. A study in USA demonstrated a significant reduction in distress with Cohen's $d = 1.77$ after using the Bolster app for just 7 days (Buck, Wingerson, Whiting, Snyder, Monroe-DeVita, & Ben-Zeev, 2023). Similarly, the StressLess app, evaluated by Fuller-Tyszkiewicz et al. (2020), significantly reduced symptoms of stress and depression after five weeks of independent training. Grubbel, an online group-based intervention from Sweden, was also successful in reducing depressive symptoms and improving coping (Elgán, Kartengren, Strandberg, Ingemarson, Hansson, Zetterlind, &

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Gripenberg, 2016). Furthermore, the COPE-support program has been shown to improve overall mental well-being in caregivers caring for patients with psychosis (Sin, Henderson, Cornelius, Chen, Elkes, Woodham, & Gillard, 2020). Overall, most research supports the effectiveness of digital interventions in reducing caregiver psychological burden.

Caregiver acceptance of digital technology was generally very good in almost all the studies reviewed. Sutudy in Australia reported that caregivers using Altitudes were satisfied with its ease of access and interactive features (Gleeson, Koval, Zyphur, Lederman, Herrman, Eleftheriadis, & Alvarez-Jimenez, 2023a). Study in Ghana found that caregivers showed high interest in digital interventions, despite being in a resource-limited country (Larsen, Agorinya, Beaulieu, Sottie, Buck, Obeng, & Ben-Zeev, 2025). Interventions such as eight weeks of therapist-guided ICBT also demonstrated high levels of user satisfaction (Biliunaite, Kazlauskas, Sanderman, Truskauskaitė-Kuneviciene, Dumarkaitė, & Andersson, 2021). The stand-alone StressLess app continues to achieve high engagement rates due to its engaging interactive modules (Fuller-Tyszkiewicz, Richardson, Little, Teague, Hartley-Clark, Capic, & Hutchinson, 2020). In general, technology designed with user-friendly interfaces and professional support is positively received by caregivers.

Of the twelve articles analyzed in this review, only one study explicitly incorporated traditional approaches into its intervention (Gureje, Appiah-Poku, Bello, Kola, Araya, Chisholm, & Seedat, 2020). The study evaluated the Collaborative Shared Care (COSIMPO) program, which involves collaboration between traditional or spiritual healers and primary healthcare workers in treating patients with psychosis. This approach was deemed effective because it significantly reduced psychotic symptoms and increased caregiver participation in patient care. This intervention was also proven to be cost-effective and relevant in areas with limited access to formal healthcare services.

Eleven other studies used digital interventions through smartphone apps, web platforms, telehealth, or CBT-based modules. These digital interventions were proven effective in reducing stress, anxiety, and caregiving burden in caregivers of people with

mental disorders (ODGJ) with varying durations and delivery methods. Digital interventions demonstrated several advantages, including flexible access, cost-effectiveness, and the ability to adapt to individual needs. However, these interventions also have disadvantages, such as dependence on technology, the need for adequate digital literacy, and limited direct emotional connection. Traditional interventions, such as collaboration with spiritual leaders or alternative medicine, have advantages in terms of local cultural acceptance, emotional closeness, and the relevance of spiritual values, especially in communities that still believe in non-medical practices. However, this approach also has drawbacks, including a lack of scientific basis, potential clinical risks, and limited reach and standardization of services.

Studies show that digital interventions are superior to, or at least equivalent to, traditional approaches in many cases. Research in Taiwan confirmed that telehealth-based discharge planning resulted in a significant reduction in caregiver burden in the first 30 days compared to standard care (Chiang, Lee, Chang, & Cheng, 2019). Study in Australia also showed that Altitudes significantly reduced the frequency of ER visits for FEP patients; this advantage was not achieved in the control group (Gleeson et al., 2023a). However, in some cases, such as REACT, the effectiveness results were not significantly different from the traditional approach, but still resulted in higher user satisfaction (Lobban, Akers, Appelbe, Chapman, Collinge, Dodd, & Williamson, 2020). Study in UK noted that the Actissist app was not superior to symptom-monitoring apps, but was still safe and feasible to use (Bucci et al., 2024).

Overall, the study results indicate that digital interventions are more dominant and widely researched in a global context, while traditional approaches are rarely systematically integrated, despite their significant potential in certain cultural contexts. Therefore, the integration of digital and traditional approaches can be a future strategy that is adaptive and responsive to the psychosocial needs of caregivers of people with mental disorders in various regions.

The role of informal caregivers, namely families, in caring for individuals with mental disorders is

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crucial, yet often overlooked in the mental health care system. Caregivers often experience emotional distress, physical exhaustion, and chronic psychological stress due to the burden of prolonged caregiving (Buck et al., 2023). In this context, digital interventions present a promising innovative solution for reaching caregivers quickly and efficiently. Digital technology enables access to psychoeducation, emotional support, and skills training anytime and anywhere. Various countries have developed digital applications and platforms to assist caregivers, including mobile apps, web-based platforms, and smartphone-based interventions (Gleeson et al., 2023a). This reflects the growing recognition of the importance of caregiver support in the care of mental health patients.

One of the key findings of this review is the effectiveness of digital interventions in reducing stress in caregivers. A demonstrated that the Bolster app significantly reduced distress in just one week (Buck et al., 2023). Similar results were found in Australia, where the StressLess app significantly reduced symptoms of stress and depression (Fuller-Tyszkiewicz et al., 2020). In study of the Grubbel intervention, also reported a reduction in depressive symptoms in adolescents and young adults with parents with mental illness (Elgán et al., 2016). Furthermore, COPe-support, developed in UK, was shown to improve the overall mental health of caregivers (Sin et al., 2020). Thus, digital interventions can be an effective tool to support caregivers' emotional well-being.

Digital interventions not only impact mental health but also help improve caregiver skills. Apps like Bolster provide communication training, healthcare guidance, and app-based feedback (Buck et al., 2023). REACT and COPe-support include evidence-based educational modules and interactive discussion forums that equip caregivers with problem-solving skills (Lobban et al., 2020; Sin et al., 2020). Grubbel integrates a CBT approach, which has been shown to improve coping strategies in young caregivers (Elgán et al., 2016). Meanwhile, ICBT in Lithuania provides intensive cognitive therapy-based support that strengthens stress management (Biliunaite et al., 2021). This program demonstrates that structured digital learning can enhance caregivers' competencies in their roles.

Most of the digital interventions reviewed demonstrated high levels of acceptance by caregivers. Study in Australia reported that caregivers found Altitudes convenient and helpful due to its user-friendly interface and professional support (Gleeson et al., 2023a). Study in Ghana showed that despite limited infrastructure, caregivers still expressed high interest in digital technology for supporting patients with early psychosis (Larsen et al., 2025). The therapist-led ICBT intervention also received positive responses in terms of user satisfaction and ease of access (Biliunaite et al., 2021). The StressLess app successfully maintained user engagement thanks to its engaging and flexible features (Fuller-Tyszkiewicz et al., 2020). This suggests that caregivers' openness to technology is quite high, especially when interventions are designed with good accessibility and contextual relevance.

When comparing digital interventions with traditional approaches, many studies have shown comparable or superior results. Research by Chiang et al. (2019) revealed that telehealth-based discharge planning resulted in reduced caregiver burden and improved family functioning compared to conventional methods. Gleeson et al. (2023a) also noted that families using Altitudes had lower ER visits than the control group. However, not all studies demonstrate absolute superiority; for example, Bucci et al. (2024) found that the Actissist app was not significantly more effective than ClinTouch. Nevertheless, Actissist was still deemed safe, feasible, and well-accepted. This underscores the importance of selecting digital interventions with consideration for the specific context and goals of caregiving.

Some components of digital interventions have been shown to be more effective in producing positive impacts on caregivers. Psychoeducation, communication training, and support forums have been consistently shown to improve caregiver well-being (Sin et al., 2020; Buck et al., 2023). Multimedia features, module progress tracking, and the integration of professional support are also important elements of apps like StressLess and Grubbel (Fuller-Tyszkiewicz et al., 2020; Elgán et al., 2016). Cognitive-behavioral theory-based approaches, such as those in ICBT, offer an effective method for

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caregiver cognitive restructuring (Biliunaite et al., 2021). Duration and intensity also play a role, with interventions lasting at least four weeks tending to yield stronger results. Therefore, the effectiveness of digital interventions depends on the comprehensiveness of the components and active user engagement.

The results of this systematic review provide important implications for the development of family-based mental health policies. Digital interventions can be integrated as part of the service system to reach caregivers more widely, especially in remote areas. The Ministry of Health can adopt telehealth models like those used in Taiwan and Indonesia to streamline discharge planning services (Chiang et al., 2019; Budiono, Kantono, Kristianto, Avanti, & Herawati, 2021). Furthermore, training of healthcare workers in managing digital apps for caregivers needs to be facilitated to expand reach and effectiveness. Financial and regulatory support for mental health technology innovation is also needed to ensure sustainable access to these interventions. Expanding this access will significantly improve the quality of life for caregivers and the outcomes of patients with mental illness.

CONCLUSION

The systematic review reveals that digital interventions effectively reduce stress in caregivers of individuals with mental illness. Mobile apps, interactive websites, and internet-based cognitive therapy enhance emotional well-being, alleviate psychological strain, and assist in managing negative emotions. Interventions like COPE-support and Bolster show considerable reach and flexibility. However, their effectiveness can vary based on caregivers' technological literacy and social support. While some caregivers find these interventions helpful, others do not perceive significant advantages over traditional methods. Future digital intervention development should prioritize local context, cultural relevance, and continuous support.

The study advocates for the integration of these interventions into standard care, especially in underserved areas, alongside caregiver involvement in design and evaluation. Ongoing research through diverse, long-term trials is essential for assessing sustained effectiveness and improving digital literacy among caregivers.

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REFERENCES

- Alvarez-Jimenez, M., Nicholas, J., Valentine, L., Liu, P., Mangelsdorf, S., Baker, S., Gilbertson, T., O'Loughlin, G., McEnery, C., McGorry, P. D., Gleeson, J. F., & Cross, S. P. (2025). A national evaluation of a multi-modal, blended, digital intervention integrated within Australian youth mental health services. *Acta Psychiatrica Scandinavica*, 151(3), 317-331.
- Biliunaite, I., Kazlauskas, E., Sanderan, R., Truskauskaitė-Kuneviciene, I., Dumarkaitė, A., & Andersson, G. (2021). Internet-based cognitive behavioral therapy for informal caregivers: randomized controlled pilot trial. *Journal of medical Internet research*, 23(4), e21466.
- Boots, L. M. M., de Vugt, M. E., van Knippenberg, R. J., Kempen, G. I. J. M., & Verhey, F. R. (2014). A systematic review of Internet-based supportive interventions for caregivers of patients with dementia. *International journal of geriatric psychiatry*, 29(4), 331-344.
- Bucci, S., Berry, N., Ainsworth, J., Berry, K., Edge, D., Eisner, E., & Haddock, G. (2024). Effects of Actissist, a digital health intervention for early psychosis: A randomized clinical trial. *Psychiatry research*, 339, 116025.
- Buck, B., Wingerson, M., Whiting, E., Snyder, J., Monroe-DeVita, M., & Ben-Zeev, D. (2023). User-centered development of bolster, an mHealth intervention for early psychosis caregivers: needs assessment, prototyping, and field trial. *JMIR Mental Health*, 10, e50522.
- Budiono, W., Kantono, K., Kristianto, F. C., Avanti, C., & Herawati, F. (2021). Psychoeducation Improved Illness Perception and Expressed Emotion of Family Caregivers of Patients with Schizophrenia. *International Journal of Environmental Research and Public Health (IJERPH)*. 18(14):7522.
- Chiang, C. H., Lee, W. C., Chang, Y. C., & Cheng, C. Y. (2019). Telecare and discharge planning to support family caregivers of heart failure patients: A randomized trial in Taiwan. *Journal of Telehealth and Telecare*, 25(3), 168-177.

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A systematic literature review

- Elgán, T. H., Kartengren, N., Strandberg, A. K., Ingemarson, M., Hansson, H., Zetterlind, U., & Gripenberg, J. (2016). A web-based group course intervention for 15-25-year-olds whose parents have substance use problems or mental illness: study protocol for a randomized controlled trial. *BMC Public Health*, 16(1), 1011.
- Ferré-Grau, C., Raigal-Aran, L., Lorca-Cabrera, J., Lluch-Canut, T., Ferré-Bergadà, M., Lleixà-Fortuño, M., & Albacar-Riobóo, N. (2021). A mobile app-based intervention program for nonprofessional caregivers to promote positive mental health: Randomized controlled trial. *JMIR mHealth and uHealth*, 9(1), e21708.
- Fuller-Tyszkiewicz, M., Richardson, B., Little, K., Teague, S., Hartley-Clark, L., Capic, T., & Hutchinson, D. (2020). Efficacy of a smartphone app intervention for reducing caregiver stress: randomized controlled trial. *JMIR mental health*, 7(7), e17541.
- Gleeson, J. F., Koval, P., Zyphur, M., Lederman, R., Herrman, H., Eleftheriadis, D., & Alvarez-Jimenez, M. (2023a). A randomized controlled trial of moderated online social therapy for family carers of first-episode psychosis patients in a specialist treatment setting. *Schizophrenia Research*, 255, 203-212.
- Gleeson, J., Lin, A., Koval, P., Hopkins, L., Denborough, P., Lederman, R., & Alvarez-Jimenez, M. (2023b). Moderated online social therapy for carers of early psychosis clients in real-world settings: cluster randomized controlled trial. *JMIR Mental Health*, 10(1), e47722.
- Gureje, O., Appiah-Poku, J., Bello, T., Kola, L., Araya, R., Chisholm, D., & Seedat, S. (2020). Effect of collaborative care between traditional and faith healers and primary health-care workers on psychosis outcomes in Nigeria and Ghana (COSIMPO): a cluster randomised controlled trial. *The Lancet*, 396(10251), 612-622.
- Kaewwanna, W., Bhatarasakoon, P., & Kitsumban, V. (2023). Effectiveness of internet-based psychosocial interventions on psychological distress, expressed emotion, and knowledge about psychosis among family caregivers of people with schizophrenia: a systematic review protocol. *JBIM Evidence Synthesis*, 21(4), 789-795.
- Larsen, A., Agorinya, J., Beaulieu, A., Sottie, E. Q., Buck, B., Obeng, K., & Ben-Zeev, D. (2025). Digital health for early psychosis in Ghana: patient and caregiver needs and preferences. *Schizophrenia*, 11(1), 5.
- Liu, C., Zhang, L., Ahmed, F., Shahid, M., Wang, X., Wang, Y., & Guo, J. (2021). Family care, economic stress, and depressive symptoms among Chinese adults during the COVID-19 outbreak: difference by urban and rural areas. *Frontiers in psychiatry*, 12, 700493.
- Lobban, F., Akers, N., Appelbe, D., Chapman, L., Collinge, L., Dodd, S., & Williamson, P. (2020). Clinical effectiveness of a web-based peer-supported self-management intervention for relatives of people with psychosis or bipolar (REACT): online, observer-blind, randomised controlled superiority trial. *BMC psychiatry*, 20(1), 160.
- Lou, V. W., Tang, J. Y. M., Lau, G. K. K., Lum, T. Y. S., Fong, K., Ko, R. W. T., & Kwok, T. K. (2021). Effectiveness of a two-tier family-oriented intervention in enhancing the family functioning and care capacity of the family caregivers of stroke survivors: protocol for a randomized controlled trial. *JMIR research protocols*, 10(5), e16703.
- Naslund, J. A., Bondre, A., Torous, J., & Aschbrenner, K. A. (2020). Social media and mental health: benefits, risks, and opportunities for research and practice. *Journal of technology in behavioral science*, 5(3), 245-257.
- Sin, J., Henderson, C., Cornelius, V., Chen, T., Elkes, J., Woodham, L. A., & Gillard, S. (2020). COPE-support-a multi-component digital intervention for family carers for people affected by psychosis: study protocol for a randomized controlled trial. *BMC psychiatry*, 20(1), 129.
- Tristiana, R. D., Triantoro, B., Nihayati, H. E., Yusuf, A., & Abdullah, K. L. (2019). Relationship between caregivers' burden of schizophrenia patient with their quality of life in Indonesia. *Journal of Psychosocial Rehabilitation and Mental Health*, 6(2), 141-148.
- Zhou, Y., Bai, Z., Wan, K., Qin, T., He, R., & Xie, C. (2024). Technology-based interventions on burden of older adults' informal caregivers: a systematic review and meta-analysis of randomized controlled trials. *BMC geriatrics*, 24(1), 398.

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