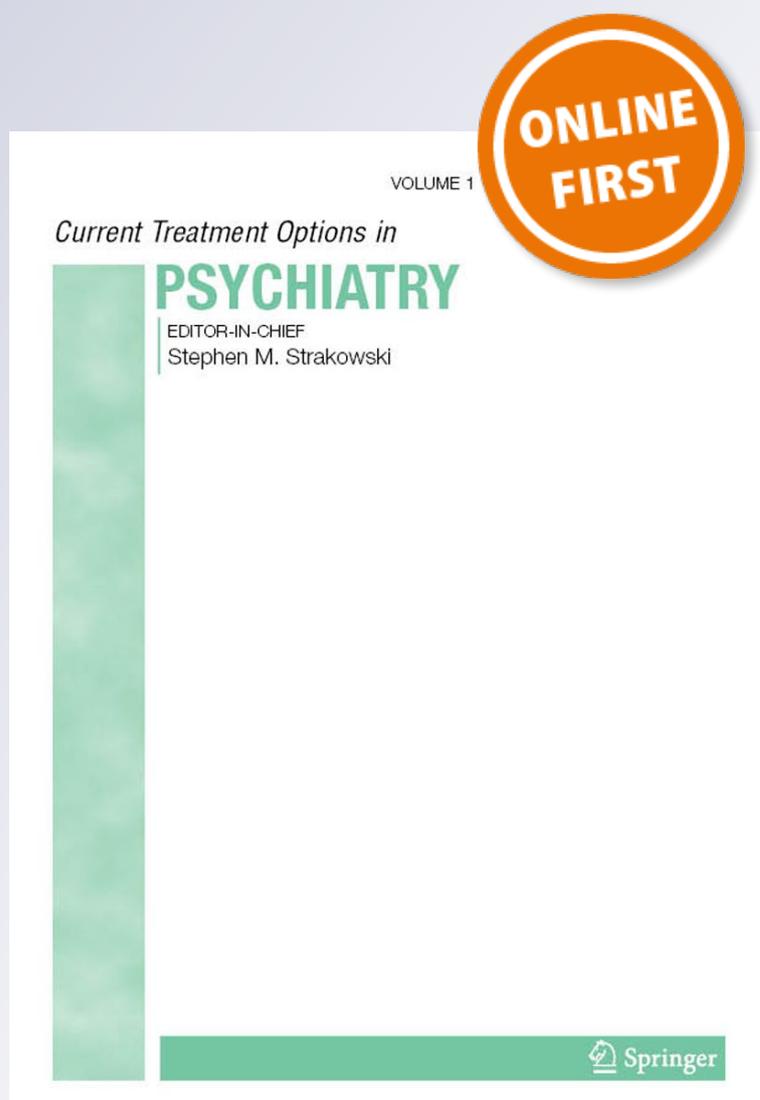# *The Future of Peer Support in Digital Psychiatry: Promise, Progress, and Opportunities*

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VOLUME 1

Current Treatment Options in
PSYCHIATRY

EDITOR-IN-CHIEF
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The Future of Peer Support in Digital Psychiatry: Promise, Progress, and Opportunities

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Abstract

Purpose This selective review highlights promising findings and future opportunities relevant to digital peer support services. This review considered literature published in peer-reviewed scholarly journals within the past 36 months.
Recent findings Digital peer support spans multiple technology modalities: peer-delivered and smartphone-supported interventions, peer-supported asynchronous technology, artificial peer support, informal peer-to-peer support via social media, video games, and virtual worlds. Digital peer support is an emerging area of research that shows promise in improving mental health symptoms, medical and psychiatric self-management skill development, social functioning, hope, and empowerment.
Summary As the science of peer support in digital psychiatry advances, peer support specialists will likely have an increasingly important role in the mental health

workforce—from providing evidence-based, fidelity-adherent interventions to expanding their reach to vulnerable populations and communities.

Introduction

Peer support is recognized internationally as an essential mental health service for people learning to cope with or manage symptoms of a mental health condition and/or substance use disorder [1]. These individualized or group-based support services are provided by a peer ("peer support specialist") whom has a lived experience of a mental health condition and/or substance use disorder. Peers receive specialized training and education grounded in the recovery model of mental health care [2], which highlights the importance of promoting the "key principles of respect, shared responsibility, and mutual agreement of what is helpful" [3] in service delivery. Peer support services have been instrumental in augmenting traditional mental health treatment for decades [4]. For example, peer support services have shown improvements in patient engagement, medical outcomes [4–6], self-management techniques [5, 7], patient activation, quality of life, physical activity, and medication adherence [6]. Along with the influx of digital mental health services changing the way psychiatric care is delivered by traditional providers (i.e., psychiatrists, psychologists, and social workers), peer support specialists are using technology to deliver peer support services.

Although peer support services have been traditionally provided in person, peer support is increasingly being offered via social media [8, 9], video games [10], asynchronous technologies (i.e., peers in combination with technologies) [11–13], or artificially, via avatars [14] and chatbots [15]. With mobile and online technologies, peers are able to easily reach service users and colleagues [8, 9] as well as augment traditional, face-to-face clinical services [8]. Peers are also involved in the development and testing of digital peer support services. For example, peers working in equal partnership with academic researchers developed and tested a smartphone-based medical and psychiatric self-management intervention for people with mental health conditions and chronic physical health conditions [13, 16•].

This selective review features developments in the research literature on digital peer support services. Here, we examine the research literature and highlight promising findings and future opportunities relevant to digital peer support services. This selective review considered literature published in peer-reviewed scholarly journals within the past 36 months.

Progress and opportunities in digital peer support services

Traditional peer support services (e.g., face-to-face) have been associated with increased levels of hope, empowerment, self-care [7], health-related quality of life [6], and reduced depressive and psychotic [7] symptoms. Peer support is grounded in six social and behavioral theories [17•] including social support [18], experiential knowledge [19], helper therapy principle [20], social learning theory [21], social comparison theory [22], and self-determination theory [23]. The enhancement of face-to-face peer support services with digital technologies has shown promise for broadening the reach of community mental health services [24]. The following describes recent findings in the area of digital peer support.

Peer-supported asynchronous technology

Asynchronous technology assists peer support specialists and service users in communication with one another without the need for correspondence to occur at the same time [25]. For example, a text message is an asynchronous form of technology while a videoconference is a synchronous form of technology, as communication between two parties needs to happen simultaneously [25]. Below we highlight three examples of peer-supported asynchronous technologies.

Computerized programs

An example of a peer-supported asynchronous technology intervention is the CommonGround program. CommonGround provides a means for shared-decision making to occur between service users and mental health providers [11, 26]. CommonGround encourages service users to complete an assessment of their health on a computer kiosk with support from peer support specialists, resulting in a computerized report that identifies areas of focus for discussion between service users and psychiatric care providers [11, 26], including self-advocacy statements [27•]. In a series of fully powered randomized control trials, CommonGround has shown improvement in shared decision-making [11, 26], self-reported symptoms, and attitudes toward recovery in service users with a lived experience of mental health conditions [12].

Smartphone apps

Most peer support specialists own and use smartphones, and they also see the promise in using smartphones to deliver services [28]. Peer support specialists are using text messaging features on smartphones to offer peer support [29], illness self-management, coping skills training, and social skills training [13]. A promising peer-delivered and smartphone-supported self-management intervention, "PeerTECH", significantly improved psychiatric self-management in people with a lived experience of a mental health condition in a small proof of concept study, $n = 8$ [13]. PeerTECH also showed improvements in quality of life, hope, medical self-management skills, empowerment, and self-efficacy to manage chronic health conditions [13].

Trained peer-to-peer interactions via social media

Peer support specialists are also using Facebook to provide evidence-based psychotherapy to address emotional concerns in people with a lived experience of a mental health condition [30]. Through the use of a web-based document that offered text suggestions to guide discussions, peers were trained to provide evidence-based, fidelity-adherent psychotherapy to other peers. This type of peer-to-peer interaction on Facebook has been associated with decreased rates of anxiety in a pre/post study with a sample of 40 people with a lived experience of a mental health conditon [15, 30].

Informal peer-to-peer support

Informal peer-to-peer support, also referred to as patient-facilitated networks or patient networks, is defined as a support provided in a mutual relationship

between people with similar life experiences. For example, informal peer-to-peer support can instinctively happen among people who attend a group, in person or virtually. Informal peer-to-peer support does not require accreditation or training—rather people with a similar lived experience of a mental health condition define peer-to-peer interactions. Below we highlight examples of informal peer-to-peer support provided through social media platforms, videogames, and in virtual worlds.

Patient-facilitated networks via social media

Social media has been used by people with mental health conditions to offer informal peer-to-peer support to one another [31]. There are publicly available support groups on Facebook for people with mental health conditions [9, 32] and options to publish personal videos on YouTube [8] to seek support. Informal peer-to-peer support has shown to increase levels of social support [33], self-esteem, and self-efficacy [34]. These publicly available social media support groups bring attention to issues such as service users' right to privacy of their data. A recent cross-sectional online survey examined service users' who use Twitter and their perceptions of the privacy risks of using social media, $n = 90$ [35]. Service users reported concerns about losing their jobs, being stigmatized or judged, negatively impacting relationships, and increasing vulnerability to hostility or being emotionally hurt by other users [35]. HIPAA-compliant patient-facilitated networks aim to protect service user privacy. However, publicly available social media sites continue to present privacy risks that may impact the candor of informal peer-to-peer interactions and limit the effectiveness of these services.

Video games

Video games could potentially be useful in the delivery of peer support. Video games provide a virtual environment for peer-to-peer interactions by encouraging audio and text exchanges between gamers in different geographic locations and time zones. As such, peer-to-peer interaction via video games may offer an opportunity for peer-to-peer social and psychological support [10]. Additionally, another benefit is the wide scale use of video games—as such, there is a high likelihood of using this modality to reach a large audience. Video games are emerging as a possible platform for health promotion. One study reported the feasibility and acceptability of physical health promotion using the Kinect™ for Xbox 360 in older adults with schizophrenia in a pre/post study, $n = 15$ [36]. Another study examined Internet video game play among service users with schizophrenia in a pre/post study, $n = 81$, and found symptom reduction [37]. More studies are needed to analyze the feasibility and acceptability of video games for peer-to-peer interactions among people with a lived experience of a mental health condition and the role video games can have in facilitating peer-to-peer interactions.

Virtual peer support

Virtual worlds combine the advantages of virtual reality's three-dimensional immersive perceptual environments with the connectivity and peer support offered by social networks [38]. Similar to the social learning theory [21], virtual

worlds support health behavior change by the Proteus effect, in which users can incorporate new behaviors into their daily routine after watching their personal avatar perform the same actions (*note*: avatars in this role are controlled by the user, not artificial intelligence) [39]. Virtual peer support may be particularly useful for people with limited mobility and people living in rural environments, with limited mental health services. Geographically isolated adults with mental health conditions can share their lived experiences and offer hope and support to one another all while in a virtual environment. Virtual reality has been found to impact social skills training in people with a lived experience of schizophrenia in a small pre/post study, $n = 12$ [40] and facilitate rehabilitation and vocational rehabilitation training for people with a lived experience of schizophrenia [41–43]. However, the feasibility, acceptability, and effectiveness of this type of technology in relation to virtual peer support is not known and a potentially meaningful technology to explore.

Artificial peer support

Artificial peer support is defined as peer support that is provided by a computer program using artificial intelligence—not by a human. Artificial peer support can take the form of computer-generated text messages, avatars, etc. Artificial peer support is a promising opportunity for the future of digital peer support but also presents unique ethical challenges, such as privacy concerns, reduction in autonomy, stigmatization, lack of human contact, deception, dependency, and affordability [44–48]. Also, one viewpoint argues that technologies are intended to compensate for human deficiencies, not function as a replacement for human action, relations, and meanings [49]. The adoption and application of these technologies should be carefully considered and analyzed with regard to peer support specialists' perceptions and service users' perceptions. Below, we discuss two different artificial peer support approaches: peer avatars and automated chatbots.

Peer avatars

Avatars can be utilized to form a peer-like interaction in a virtual space. An avatar is a digital representation of an individual (i.e., user). For example, programs such as Soskitrain utilize avatars to facilitate social skills training for people with a lived experience of schizophrenia over the course of eight weeks [14]. Soskitrain results indicate proof-of-concept and significant improvement in self-reported negative symptoms, social functioning, and social anxiety, $n = 12$ [14]. The key feature of avatars is the ability to form social connections similar to that of a peer support specialist, serving the roles of companion and coach [50–53]. The application of these technologies has been primarily through teleoperation (i.e., a human controls the avatar remotely), but advancements in artificial intelligence and machine learning could enable autonomous operation in the future [54].

Automated chatbots

Peer support will one day be provided through automated chatbots [15]. A chatbot is an artificial intelligence system that generates a human-like audio or text response to a service user [55]. Computer-generated peer support text

messages are sent to service users on a social media platform [15]. These computer-generated peer support text messages are designed to support individuals who are experiencing stress [15]; however, to our knowledge, limited research exists in this area. Automated chatbots use artificial intelligence to (1) process text messages using natural language processing and can classify text messages from service users into categories of problems, (2) select support strategies, and (3) generate responses [15].

Challenges facing digital peer support services

Digital peer support services face similar challenges experienced by the entire field of digital psychiatry—the need for additional scientifically rigorous proof-of-concept studies to validate digital psychiatry programs [56]. Despite investment in innovation and the promise of technology to redesign the mental health system—many digital psychiatry efforts (not only digital peer support services) are developed by industry with commercial interests and made available to the public with inaccurate claims of rigorous scientific evidence of their effectiveness [57]. Partnering with mental health researchers and industrial developers to evaluate promising digital peer support platforms may lead the field to a better understanding of effective uses of technology for people with mental health conditions. In addition to partnering with the industry to advance the science of peer support in digital psychiatry, other promising means of implementing effective mental health technologies include the use of participatory research techniques in the development of digital peer support interventions, developing fidelity-adherent digital peer support services, and addressing misinformation in peer-to-peer digital interactions.

Need for the inclusion of empirically supported participatory research techniques

Scientists are increasingly collaborating with people with mental health conditions to bring new ideas to digital psychiatry [58]. However, a recent systematic review of digital peer support interventions found that few digital health intervention studies utilized empirically supported participatory research techniques to develop interventions [56]. An empirical approach specifically developed for peer support specialists and scientists, the Academic-Peer Support Specialists Partnership [16•], presents a framework for how to include peer support specialists as equals with scientists to inform the development, testing, and implementation of peer-delivered mobile health interventions in community settings. The framework highlights principles and methods essential to best practices in community-based, multidisciplinary health intervention research in digital psychiatry, including shared ownership, empowerment, and social justice [16•]. Utilizing empirically supported techniques contributes to research feasibility, acceptability, rigor, and relevance to service users' and peer support specialists' real-world needs and concerns [59]. Investment in training scientists on the importance of participatory research and empirically supported methodology can enhance collaboration efforts.

Need for fidelity-adherent digital peer support services

Many peer support programs lack standardized approaches to training and clearly defined skill sets, roles, and functions [60]. Among a national survey

of peer support specialists ($n = 291$), "peer support" was the predominant service provided by peers [60]. Routine (non-digital) peer support has shown to increase individuals' hope, sense of personal control, ability to make positive changes, and decrease psychiatric symptoms [7]. Despite these benefits, routine peer support does not adhere to evidence-based practices and protocols that ensure fidelity and systematically monitor outcomes. Digital technology has the potential to overcome these fundamental limitations of routine peer support by providing real-time guidance in fidelity-adherent delivery of peer-delivered and technology-assisted interventions. Preliminary evidence suggests the feasibility of using mobile technologies [13] and social media [30] to guide fidelity-adherent intervention delivery. As peer support specialists are not clinicians [61], a balancing act between providing peer support services and evidence-based services is necessary to advance the field.

Addressing misinformation in peer-to-peer digital interactions

Misinformation can be created and distributed quickly through the digital world (e.g., social media), resulting in an extensive impact on communities [62]. Social media has often been criticized for distributing misinformation on health issues [63]. As such, there is also a potential for misinformation via informal peer-to-peer interactions. This is especially important for informal peer-to-peer interactions, as people in these roles are not trained and accredited peer support specialists; rather, they are individuals that share a similar lived experience. Exposure to misinformation could be reduced via health monitoring by trained peer support specialists or traditional mental health clinicians. Another option is health monitoring using artificial intelligence and natural language processing to detect misinformation [63]. The acceptability of human or artificial health monitoring needs to be examined among service users as monitoring interactions may be negatively interpreted by service users as a psychiatric surveillance system that could lead to involuntary contact with the mental health and justice systems.

The future of digital peer support services

This selective overview of recent findings relating to peer support in digital psychiatry suggests several areas for development, research, and implementation.

Technology may support peer support specialists' own recovery

Technology may also function as an assistive technology tool or device for the peer support specialists, themselves, trained and hired to deliver the digital psychiatry services. Assistive technology can enable individuals with mental health conditions and various disabilities to take care of their basic needs, live independently, participate in community activities, and engage in gainful employment or other structured work [64]. Assistive technology can provide structure and prompts to assist with time management and goal completion [65]. For example, smartphone applications can offer help to prepare people to carry out their work through an individualized database of work tasks, reminders of work schedule, and can connect in real-time to a live or virtual job

coach. Promoting and expanding the provision of assistive technology services to peer support specialists can facilitate the entry or re-entry by this group into integrated, competitive employment settings including interdisciplinary mental health clinics and programs.

Given that digital psychiatry services offer 24/7 access in and outside of work hours, such electronic systems might enhance workplace relationships and overall job satisfaction especially for peer support specialists experiencing an otherwise isolated personal life. The utilization of such technologies might also decrease the need for on-site job coaches and offer new options for autonomous, less stigmatizing, and inexpensive job supports [65]. With the rapid advances in technology-based services, the methods and applications of such programs will need to be thoroughly investigated in both mental health service recipients and peer support providers. Future research should focus on examining the use of assistive technology tools for peer support specialists and specify guidelines for merging them with vocational rehabilitation and training programs in community-based mental health settings.

Digital peer support services may have a population impact

Technological innovation and devices continue to have a profound impact on human societies from simple tools (e.g., hunting tools, weapons, and agriculture) and machines (e.g., industrial revolution) to artificial intelligence (e.g., avatars and virtual worlds). The relation between humans and technological innovations has shaped identities, meanings, and our environment [66]. Technologies act as a mediator between the person and the world, thus making the world more accessible. Digital peer support also has the potential to make mental health services more accessible to hard-to-reach, vulnerable populations such as people with mobility issues (i.e., homebound older adults) and communities such as rural communities that lack trained mental health providers.

Implementation science can support population health

Uptake and maintenance of ongoing engagement with mental health technologies remains a challenge in digital psychiatry. Implementation science is a study of methods and strategies to facilitate the uptake of effective interventions into practice. Implementation science is particularly important to support the uptake and wide-scale dissemination of digital peer support innovations. Including both implementation scientists and peer support specialists on research teams can facilitate the examination of implementation factors using established implementation models such as the Academic-Peer Support Specialist Partnership for digital health [16•]. The Academic-Peer Support Specialist Partnership has shown that integrating peer support specialists' perspectives provided additional insights on implementation not considered by scientists [16•].

Conclusions

Digital peer support is a *promising* approach to augment, not replace, traditional mental health care. As the science of peer support in digital psychiatry advances beyond proof-of-concept studies, peer support specialists will likely have an increasingly important role in the mental health workforce—from providing

evidence-based, fidelity-adherent interventions to expanding their reach to impact vulnerable populations and communities.

Compliance with Ethical Standards

Conflict of Interest

Karen L. Fortuna, Maria Venegas, Emre Umucu, George Mois, Robert Walker, and Jessica M. Brooks declare no conflict of interest.

Human and Animal Rights and Informed Consent

This article does not contain any studies with human or animal subjects performed by any of the authors.

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The authors, researchers at Dartmouth College, Brown

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