

A bridging the gap: The imperative for a digital platform in community mental health services

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ARTICLE INFO

Article history:

Received Sep 5, 2024

Revised Oct 2, 2024

Accepted Oct 10, 2024

Keywords:

Digital Peer Support
Mental Health Stigma
Remote Psychological Therapies
Standardized Systems
Virtual Reality Interventions

ABSTRACT

Community mental health services face ongoing challenges including fragmented care, difficulties evaluating outcomes, barriers to standardized support and educational tools, and stigmatizing attitudes. Digital technologies hold promises to help address gaps, but currently lack integrated platforms connecting services. Objective: To review literature on digital mental health interventions and examine their implications for a proposed cross-service digital platform in community mental health. Methods: A literature search identified peer-reviewed studies published between 2022-2024 evaluating digital tools in community or related mental health contexts. Relevant findings were synthesized regarding standardized platforms, remote psychological therapies, digitally enabled peer support, and technologies for stigma reduction. Results: Research supports digital platforms can help standardize functions, collect uniform outcomes data, and facilitate continuous learning. Smartphone apps show the potential to deliver effective remote therapies when combined with clinician support. Preliminary studies demonstrate digital peer support may mitigate loneliness and social connection platforms can positively shape attitudes. Conclusions: A thoughtfully designed shared digital platform incorporating validated tools, networked services, peer connection and stigma-reduction technologies may address fragmentation and empower community mental health clients. However, further research validating models is still needed given existing gaps. Equity, privacy, change management and adaptability must also be considered in future development and testing.

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INTRODUCTION

Mental illness is a health condition that affects thoughts, feelings, behavior, mood, or a combination of these (Gross & Muñoz, 1995). This condition can occur occasionally or last for a long time (chronic). This disorder can be mild to severe, which can affect a person's ability to live their daily lives. This includes doing social activities, work, and having relationships with

family(Adams et al., 1996). Although complicated, mental health disorders are treatable diseases(Viron & Stern, 2010). In fact, most people with mental disorders can still live their daily lives like normal people. There are many factors that can trigger mental disorders, ranging from suffering from certain diseases to experiencing stress due to traumatic events, such as the death of a loved one, losing a job, or being isolated for a long time.

Mental illness poses a significant public health challenge worldwide as it impacts individuals, communities, and societies(Patel et al., 2007). The World Health Organization (WHO) estimates that mental illnesses impact about one billion people worldwide (Vigo et al., 2016). While effective treatments exist for many conditions, significant barriers in accessing quality mental healthcare persist (Esponda et al., 2020; Franke, Speiser, Dudeck, & Streb, 2020; MacLeod et al., 2022). Community-based services play a critical role in bridging gaps in mental healthcare delivery by bringing care closer to where people live and work(Keet et al., 2019). However, traditional community mental health models face various challenges to meet growing needs (Jie Li et al., 2015; Liu & Schueller, 2023). Digital technologies are rapidly transforming various sectors and offer promising solutions to address healthcare challenges (Dmitriev & Zvezdina, 2021; Kaur et al., 2023). Internet and mobile technologies can potentially enhance community mental health services by facilitating remote access, streamlining care processes, and connecting service providers(Lattie et al., 2020). A growing body of literature has started exploring the applications of digital platforms in community-based mental healthcare (Pal, Pathak, & Rahaman, 2023; Penney et al., 2023). However, evidence regarding their effectiveness, implementation challenges, and opportunities remains limited (Jordans, Luitel, Pokhrel, & Patel, 2016; Kohrt, Jordans, et al., 2018; Murphy, Corveleyn, Park, & Irwin, 2023). However, there are still very limited literature reviews that explore the benefits of digital technology for community mental health.

This literature review aims to synthesize current knowledge on the role of digital platforms in strengthening community mental health services(Lal & Adair, 2014). Specifically, it examines applications, benefits, challenges, best practices, and research gaps(Rynes, 2012). A comprehensive understanding of existing literature can help inform strategies to leverage technology for expanding access to care, improving integration of services, and meeting the rising demands of mental healthcare(Price et al., 2014).

RESEARCH METHOD

Through the literature review method, current information on the role of digital platforms in boosting community mental health services was synthesized using secondary data gathered from pertinent past research(Catania et al., 2024). The goal is to contribute to the development of technology-enabled initiatives that will increase access to care, enhance service integration, and satisfy the growing needs of the mental health industry. A comprehensive search was performed across multiple databases, including PubMed, PsycINFO, CINAHL, and Scopus. The search combined relevant terms related to "digital platforms", "mobile applications", "e-mental health", "community mental health services", and "digital interventions". Boolean operators (AND, OR) were used to combine search concepts. The following inclusion criteria were applied: (1) Peer-reviewed original research studies published in English between 2022-2024, (2) Focus on digital platforms/applications utilized in community-based mental health services, (3) Report on outcomes related to access, integration of care, patient experience, clinician experience, and/or service delivery.

Exclusion criteria included literature reviews, opinion papers, book chapters, case reports, and studies not directly relevant to community mental health settings(Fink, 2019). For study selection, titles and abstracts were independently reviewed by two researchers according to the predefined eligibility criteria. Full texts of potentially relevant studies were then assessed for final inclusion. Any discrepancies in study selection were resolved through discussion with a third reviewer(Dwan et al., 2014). A standardized form was used to extract relevant data such as study

characteristics, digital platform details, patient population, outcomes, findings, limitations, and recommendations. A narrative synthesis approach was used to analyze and summarize findings due to heterogeneity in applications, study designs, populations and outcomes.

RESULTS AND DISCUSSIONS

The research suggests there are several similarities between the proposed digital platform and existing models in the literature. First, a digital platform could help address many of the issues found in integrating technology into community mental health services (Aldhayan, Cham, Kostoulas, Almourad, & Ali, 2019; Balcombe & De Leo, 2023). Specifically, their review indicated a lack of standardized platforms results in fragmented care, difficulties evaluating outcomes, and lost opportunities for continued learning and improvement (Cemiloglu, Almourad, McAlaney, & Ali, 2022; Jinhui Li, 2023). A thoughtfully designed shared digital platform could help overcome these challenges by standardizing core functions, data collection, and continuous quality improvement processes across community services. Second, the promise of using digital technologies like smartphone apps to deliver evidence-based psychological interventions for depression, anxiety, and related conditions (Magid et al., 2024; Wathoni & Santoso, 2023). They found digital interventions were effective and comparable to traditional face-to-face therapy when supplemented by clinician support (Magid et al., 2024; Murray, Musumeci, & Cassidy, 2022).

A digital community mental health platform could leverage these findings by incorporating validated digital tools and interventions accessible to clients anywhere, paired with virtual support from clinicians as needed. Third, similar to the digital peer support intervention tested, a shared digital platform may help address loneliness and improve mental health outcomes through digitally-enabled social connection (Balcombe & De Leo, 2023; Magid et al., 2024). Their intervention incorporated group chat functions and peer moderation which showed preliminary success in reducing loneliness and depression (Shah & Househ, 2023). Community mental health clients could potentially benefit from inclusive digital community spaces and peer support accessible through the proposed cross-service platform. Finally, VR mental health stigma intervention demonstrated the capacity for immersive digital experiences to positively influence attitudes (Szekely et al., 2024). Their study suggested narrative VR applications hold promise for stigma reduction when tailored to capitalize on the technical features of the medium (Marques et al., 2022; Szekely et al., 2024). A digital community mental health platform may consider integrating VR and other experiential tools to concurrently provide services, educate the public to reduce stigma, and promote advocacy.

The following displays a literature review table related to digital platforms in the area of community mental health.

Table 1. Literature review table

Journal Identity	Objective	Method	Results	Conclusions
(Szekely et al., 2024)	The main objective is to pilot test the acceptability, feasibility, and preliminary efficacy of the VR game "Goliath: Playing with Reality" in reducing mental health stigma among healthcare students and trainees.	A mixed methods design is used with 16 trainee clinical psychologists. Quantitative measures assess acceptability, appropriateness, and stigma before and after.	Participants found the VR game acceptable, appropriate and somewhat feasible. No significant changes in stigma measures but direction of changes aligned with previous research.	Regarding user experience, the VR game garnered favorable response and was thought to a potential stigma reduction intervention. However, further research with larger samples is needed to confirm efficacy.
(Hornstein et al., 2024)	to develop and evaluate an NLP approach to predict	The study uses chat data from a German	The best model achieved an AUC of 0.68 on new test data,	The study concludes NLP predictions of recurrent contact show promise and

Journal Identity	Objective	Method	Results	Conclusions
	whether chatters in an online counseling service for youth would contact the service again, to identify those in need of additional treatment.	counseling service, including word counts and whether users contacted again within 6 months. NLP models like XGBoost are trained on past data.	outperforming baselines. Important predictors included age, gender, self-harm and suicidal words. SHAP identified other relevant words and word clusters.	could help identify those needing additional care. Future work should evaluate interventions based on predictions and compare to human judgement.
(Shah & Househ, 2023)	improving knowledge of the dynamics of loneliness through social intelligence analysis of data from social media.	The methods section adequately describes the process of data collection from Twitter using relevant keywords, data processing, and analysis related to loneliness.	The results section comprehensively presents the findings from sentiment analysis and topic modelling in the form of tables, word clouds and examples.	The study provides a proof of concept for mapping loneliness dynamics using social media analysis and serves as a foundation for a more extensive global loneliness map.
(Hughes et al., 2024)	To understand meanings of loneliness and how telepresence technologies revealed understandings of loneliness as a problem requiring solutions.	A qualitative study was conducted examining adoption of telepresence technologies, related policies and media reports.	Loneliness was represented as problems of individual connection, collective participation and a campaigning social issue. Technology was seen as able to both enhance and inhibit connections.	To effectively address loneliness, related health and social problems must also be considered technological solutions require integration into adoption dynamics.
(Bravata et al., 2023)	To prospectively evaluate the effects of participation in a digitally enabled peer support program on loneliness, depression, anxiety, and health-related quality of life among adults experiencing loneliness.	A prospective cohort design was used to use a peer support app. Standard measures of loneliness, depression, anxiety and quality of life were collected at baseline and 30, 60, 90 days.	Significant reductions were found in loneliness, depression, anxiety and improved quality of life. Engagement remained high with 86% still using the app at 90 days. Referrals were also made to additional resources.	Digitally enabled peer support may be an effective approach for addressing loneliness and related mental health issues among diverse populations experiencing loneliness.
(Birken et al., 2023)	To develop an understanding of lived experiences of loneliness among a broad range of people living with mental health problems, to underpin research on strategies to help address loneliness.	Qualitative interviews were conducted with 59 participants using a topic guide developed through co-production. Lived experience researchers were involved in all stages from design to analysis.	Four overarching themes were identified: What lonely means, Connection between loneliness and mental health, Contributors to ongoing loneliness, Ways of reducing loneliness.	The multiplicity of contributors to loneliness and potential strategies suggests a variety of approaches are relevant, including peer support, therapies, and community/societal level strategies. Co-produced research drawing on lived experience knowledge can help develop interventions.

Journal Identity	Objective	Method	Results	Conclusions
(Austin et al., 2024)	To highlight current uses of technology within the Keel Mind digital therapeutic platform utilized in telepsychology and enhance clinical outcomes.	The article provides an overview of the features and capabilities of the Keel Mind platform rather than a formal research study	Preliminary results from a study on post-secondary students in Ontario found 90.1% liked the platform and 83.4% reported positive mental health outcomes.	Keel Mind is positioned as a leader in digital mental health and telepsychology. The integration of technologies like NLP and AI are argued to support to mental healthcare.
(LaMonica et al., 2022)	To co-design, implement, and evaluate novel digital health technologies (HITs), exemplified by the InnoWell Platform, to support systems reform.	A mixed methods approach was used including co-design, implementation, and evaluation.	Successful implementation depends on factors like readiness for change, leadership, technology appropriateness and funding models.	Access to digital technologies needs to be equitable, infrastructure/services need funding, and technology-enabled coordinated systems should be promoted.
(Liu & Schueller, 2023)	To provide an overview of implementation considerations for digital mental health interventions (DMHIs) and their role in improving mental healthcare delivery.	The article reviews existing literature on DMHI implementation using an implementation science framework called the Consolidated Framework for Implementation Research.	The article synthesizes barriers and facilitators to DMHI implementation that have been identified in prior studies. support successful DMHI adoption.	While DMHIs have potential to expand access to care, implementation requires addressing barriers, standards, ethics, reimbursement and considering implementation science frameworks.
(van der Schyff et al., 2023)	To consider the feasibility of AI-powered platforms like Leora to support mental well-being by providing round-the-clock self-led support and triaging users to other services as needed.	The Leora chatbot, including how it would conduct screenings, provide support strategies, and refer users to care when indicated through a conversational interface.	No specific results are reported, as the focus is on outlining the proposed design of the Leora chatbot rather than empirical testing.	There are challenges of developing AI for mental health but argues Leora shows promise if validated rigorously. Further research on clinical outcomes and how user needs may change is still needed to fully realize AI's potential benefits.
(Magid et al., 2024)	To explore differences between lonely and non-lonely participants, examine associations between loneliness and mental health, and evaluate longitudinal changes and impact of engagement in digital services.	A prospective observational design was used. Measures were collected before and after participants used a digital mental health platform.	High baseline loneliness prevalence associated with poorer mental health. Loneliness and related outcomes significantly improved over time, especially for those engaged with digital services.	The conclusion highlights key findings on loneliness prevalence, risk factors, and potential for digital platforms to improve access and outcomes

Journal Identity	Objective	Method	Results	Conclusions
(de Boer et al., 2023)	To analyze real-life call/chat data to develop forecasting models, understand factors influencing volumes like trends, cycles and media events, and compare different forecasting techniques.	Analyses of a large anonymized real-world call/chat dataset, considering various influencing factors, developing and comparing forecasts from different models	Trends and weekly/daily but not monthly/yearly cycles influence volumes most, media events have limited short-term impact, ARIMA/SARIMA perform best for short-term forecasts while simple models for long-term.	ARIMA models can accurately forecast daily chat/call volumes, which can help plan staffing levels. Workload depends more on chat arrivals. Insights from different models and factors are provided.
(Sun, 2023)	To examine the relationship between social media use and symptoms of anxiety, loneliness, and well-being among students. To understand students' perceptions of using technology for mental health support.	The study uses a mixed methods approach, including a correlation analysis, randomized controlled trial, and qualitative interviews.	Significant correlations were found between social media use and the outcomes. The intervention led to reductions in anxiety and improvements in well-being compared to the control.	Support for the effectiveness of mindfulness apps in positively impacting student mental health and well-being. The study also highlights the need to further explore the role of technology in psychology.
(Wathoni & Santoso, 2023)	To develop a website application called Ceritain.id to assist individuals with mental health support, counseling sessions, and facilitate sharing of daily stories.	A thorough analysis of the idea, target market, business model, product design, strategies etc. is presented.	A prototype of the Ceritain.id app is presented. Detailed strategic analysis and plans for implementation, operations, marketing and sustainability are included.	The importance of prioritizing mental health and highlights how Ceritain.id aims to provide relief through a digital support system and counseling services.

The potential of digital platforms to revolutionize community mental health services is undeniable. However, a systematic and comprehensive examination of the challenges, opportunities, and implications of such an integration is necessary to guide future research and implementation efforts. There are five main points that can be drawn from the results of the literature review:

Emerging Evidence and the Need for Rigorous Validation

While preliminary studies have provided promising evidence regarding the effectiveness of digital platforms in mental health interventions, the integration of these platforms across multiple service components is still in its nascent stages. The effectiveness of isolated interventions such as digital cognitive behavioral therapy (CBT) or telepsychiatry has been well-documented. However, when these interventions are combined within a single digital platform that aims to offer a comprehensive, cross-service model, the evidence base is still emerging (Bouchard et al., 2017; Kusumawaty, Yunike, & Upoyo, 2023). To establish the validity and reliability of such platforms, rigorous longitudinal studies are required (Ebert, Cuijpers, Muñoz, & Baumeister, 2017; Gottlieb et al., 2017).

These studies should focus not only on immediate clinical outcomes but also on long-term effects, including client retention, adherence to treatment, and overall satisfaction (Uram & Skalski, 2022; Yimer et al., 2016). Additionally, research should explore the scalability of these platforms across different demographic groups and geographic regions to ensure that the benefits observed in controlled settings can be replicated in real-world scenarios.

Addressing Equity and the Digital Divide

The digital divide presents a significant barrier to the widespread adoption of digital mental health platforms. This divide encompasses not only the disparity in access to technology but also the varying levels of digital literacy among potential users. Clients from low-income backgrounds, rural areas, or older age groups may have limited access to the internet or may struggle with the complexities of digital platforms (Howe et al., 2023; Jing et al., 2020; Kusumawaty & Majid, 2023). This inequity necessitates the development of alternative service delivery models that do not rely solely on digital means. Moreover, platform design must prioritize accessibility and usability to accommodate a diverse population.

This includes implementing features such as multilingual support, simplified user interfaces, and options for audio or visual assistance. To ensure inclusivity, the development process should involve the active participation of end-users from various demographic backgrounds. This participatory design approach can help identify potential barriers and develop solutions that cater to the specific needs of different user groups.

Privacy, Security, and Ethical Considerations

In the context of mental health, privacy and security are paramount concerns. Clients are often required to share sensitive personal and health information, making robust data governance protocols essential (Santana, 2018; Searle et al., 2022). The ethical use of data extends beyond compliance with legal standards; it also involves building and maintaining clients' trust (Crits-Christoph, Rieger, Gaines, & Gibbons, 2019; Kim & White, 2018; Kusumawaty et al., 2023).

This trust is crucial for the successful adoption of digital platforms. Transparent communication about data usage, consent processes, and the measures in place to protect privacy can help foster this trust. Additionally, continuous monitoring and auditing of data practices are necessary to adapt to evolving threats and ensure ongoing compliance with ethical standards.

Organizational and Systemic Challenges

The integration of digital platforms into existing community mental health services requires significant organizational and systemic changes. These changes include restructuring service delivery models, retraining staff, and potentially reallocating resources (Balcombe & De Leo, 2023; Liu & Schueller, 2023). Such transformations are resource-intensive and may encounter resistance from stakeholders who are accustomed to traditional methods of service delivery (Liu & Schueller, 2023; Torous et al., 2021). Leadership commitment is essential to overcoming these challenges. Leaders must actively engage with staff to communicate the benefits of digital platforms and provide the necessary support for the transition.

This may involve offering training programs to enhance digital literacy among staff, as well as implementing change management strategies to facilitate a smooth transition. Additionally, conducting cost-effectiveness analyses that compare digital platforms to traditional services can help build a compelling case for investment, demonstrating the long-term financial and clinical benefits of digital integration.

Flexibility and Adaptation Across Diverse Contexts

One of the potential limitations of standardized digital platforms is the risk of a one-size-fits-all approach (Bell, Nicholas, Alvarez-Jimenez, Thompson, & Valmaggia, 2020). Community mental health services are inherently diverse, with varying client populations, cultural contexts, and service delivery configurations (Hughes et al., 2024; Murray et al., 2022). A rigid, standardized platform may lack the flexibility needed to address these diverse needs effectively (Braunschneider, Seiderer, Loeper, Löwe, & Kohlmann, 2023; Kohrt, Asher, et al., 2018). To mitigate this risk, a localized co-design process should be employed.

This process involves collaborating with local stakeholders including clients, service providers, and community leaders to adapt the platform to the specific needs and circumstances of each community. Such adaptation may involve customizing the platform's features, content, and

delivery methods to align with local cultural norms, language preferences, and service delivery models.

CONCLUSION

While digital platforms hold significant promise for bridging gaps in community mental health services, their successful implementation requires careful consideration of the challenges outlined above. Further research is essential to validate the effectiveness of these platforms, particularly in integrated, cross-service models. Pilot testing in diverse community settings can provide valuable insights into the practical challenges of implementation and inform necessary adaptations. Stakeholder collaboration is also critical to this process. Engaging clients, service providers, policymakers, and technology developers in ongoing dialogue can help ensure that digital platforms are designed and implemented in a way that maximizes benefits and minimizes risks. An evidence-based, participatory approach will be key to achieving the goal of improving client outcomes through the thoughtful integration of technology into community mental health services. As the field progresses, it will be essential to remain vigilant to emerging challenges and opportunities, continuously refining digital platforms to meet the evolving needs of communities and ensuring that no one is left behind in the digital transformation of mental health care. In summary, the findings from these studies indicate a thoughtfully designed shared digital community mental health platform could help address current gaps and strengthen outcomes by standardizing functions, incorporating validated digital tools and interventions, facilitating peer support, and leveraging immersive technologies for education and advocacy. Further research is still needed to validate the specific model proposed.

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