Exploring contextual factors impacting the implementation of and engagement with a digital platform supporting psychosis recovery: A brief report

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Abstract

Individuals with schizophrenia often demonstrate poor engagement in treatment and challenges with illness self-management. App4independence (A4i) is a digital health platform that was developed with the purpose of addressing the aforementioned challenges. While digital interventions can support patient care, there is a paucity of research on implementing such interventions in clinical settings. To describe the contextual factors that impacted the implementation of and engagement with A4i across three different clinical implementation sites, a descriptive approach, guided by implementation science frameworks, was employed to understand how people, culture, process, and technology impacted the implementation of A4i. Descriptive statistics were used to present user engagement data across each site implementation. Additionally, the lessons learned from each implementation were described narratively. Overall, 53 patients were onboarded to A4i in Context 1, 8 in Context 2, and 65 within Context 3, with retention rates over 90 days of 100%, 100%, and 96%, respectively. The adoption, engagement, and sustained use of the A4i platform varied across each implementation site and were affected by implementation strategies within the sociotechnical domains of people, culture, process, and technology. Despite differences in implementation processes, engagement with A4i remained consistently high. Customized educational materials, digital navigators, and technical support served as facilitators in the adoption of A4i.

Lay summary

Digital health tools like, App4independence (A4i), have the potential to support people with schizophrenia spectrum disorders in self-managing and engaging in their care. Although it is known that digital tools can support mental health care, there is a lack of knowledge on how best to implement these digital tools into clinical care. Given this, the following brief report aims to describe factors that affected the implementation of A4i across three different clinical settings. An implementation science framework was used to compare and contrast the implementation of A4i across the various clinical settings. Specifically, the impact of people, culture, process, and technology on each implementation was described. Overall, it was found that there were differing rates of engagement with the A4i app across each clinical setting. Higher engagement was found when peer support workers or clinicians were involved in the use of A4i with their clients. In each setting, having a clear implementation plan, creating personalized educational materials, and providing timely and appropriate technical support, facilitated the implementation of the A4i digital platform.

Keywords: digital health; implementation science; schizophrenia spectrum disorders; behavioral health; mobile health; consumer health; digital navigators

Implications

Practice: Integrating digital health interventions into mental health clinical practice is achievable, requiring a culture of innovation within the clinic or organization, in addition to leadership support, clinician champions, and novel digital navigator roles.

Policy: Effective implementation of digital health interventions into mental health care settings must consider contextual factors, such as people, culture, process, and technology, which may impact user engagement adoption, and integration into practice.

Research: Future research on the implementation of similar digital health interventions in other mental health care settings is needed to examine the contextual factors that impact implementation and the best practices to implementing these novel interventions.
Introduction

Schizophrenia is a chronic mental health condition that includes a number of adverse symptoms, often resulting in challenges engaging in treatment, social isolation, and reduced community functioning [1, 2]. People with schizophrenia often have limited access to community-based supports and resources that foster illness self-management [3]. Moreover, clinical services and treatments for schizophrenia spectrum populations are commonly hindered by the illness complexity [4, 5]. For instance, schizophrenia spectrum disorders are heterogeneous with diverse common comorbidities across both mental [6] and physical health conditions [7], often requiring a personalized approach. Additionally, illness complexity paired with system inequities (i.e. stigma, limited access to specialized services, low income) contribute to longer durations of untreated illness and higher levels of inconsistent engagement and disengagement with treatment [8]. The challenges of supporting and treating schizophrenia spectrum populations also contribute to frequent, lengthy, and costly hospital readmissions and poor functional outcomes [9].

In an effort to address some of the illness self-management and adherence challenges that schizophrenia spectrum populations experience, digital mental health interventions have been described as one potential solution to support this population [10, 11]. Digital mental health interventions facilitate access to a broad scope of specialized information with the ability to tailor these strategies to the individual [12]. Furthermore, they have the potential to extend access to specialized strategies and skills beyond the confines of in-person treatment delivery and can reduce barriers to care [13], especially for marginalized populations [14]. While there have been advancements made in the development and validation of consumer digital health interventions such as mobile apps and digital platforms, the integration and implementation of these interventions into patient and clinician workflows remains more novel [15, 16].

Given this, the following brief report aims to describe the contextual factors that impacted the implementation of and engagement with a digital health intervention, namely App4Independence (A4i) [17], to support the schizophrenia and psychosis recovery process across three different clinical sites.

Methods

Intervention

A4i is an empirically evaluated digital platform that consists of:

1. A mobile app for patients to receive evidence-based psychoeducation, track their behavioral health, access an auditory hallucination detector tool, which assists users in deciphering between an environmental noise and auditory hallucinations, and engage with their peers through an anonymous peer newsfeed, along with,
2. A connected clinician/case manager portal with dynamic risk flagging and patient wellness indicators aimed at the coordination of care and engagement of patients.

Through the app, participants can track their daily self-reported mood, sleep, goal progress, and medication adherence. A summary of this information is visualized and sent to clinicians monthly via email. Clinicians can also view this report anytime by logging into the portal. A4i has undergone preliminary robust feasibility testing [3] prior to the parallel randomized control trial (RCT) [17], clinical validation, and implementation projects described below.

Study design

A descriptive study design was employed to describe the implementation of A4i across three different clinical sites. The implementation sites were convenience sites with whom the research team had established affiliations with or connections to. The clinical sites varied with regards to their study design and methodology, however, the A4i implementation process and approach remained relatively consistent across each context. The three implementation sites are described in Table 1.

In each context, participants were provided with access to the same A4i app and dashboard version. In Contexts 1, patients were required to have their own smartphone device and data plan to enroll into the RCT, however, in Contexts 2 and 3, patients without access to a smartphone device and/or data plan were provided with one. Furthermore, patients were able to download the app on their smartphone, so long as their smartphone operating system was iOS 11 for Apple users and 8.0 for Android users.

Data collection and analysis

A framework analysis using a modified Simplified Sociotechnical Model [18] was used to discuss the similarities and differences of each site implementation of A4i within the domains of people and culture, process, and technology. Sittig and Singh’s [19] sociotechnical model for studying health information technology in complex adaptive healthcare systems was also used to glean lessons learned.

Clinician and patient engagement with A4i across the three implementation sites were captured using the A4i data analytics platform (i.e. click rate, scroll rate, and post frequency). App engagement was measured by the total number of daily interactions in a patient’s first 30 and 90 days of using A4i. Clinician and patient experience data were captured through brief surveys and semi-structured interviews. Engagement rates and visualizations were calculated across each site using descriptive statistics in R version 4.2.2. Moreover, Kruskal–Wallis test was conducted to assess whether the median number of posts varied across clinics in both times frames. Qualitative findings from interviews with clinicians and patients in implementation Contexts 2 and 3 were analyzed using a directed content analysis approach [20].

Ethics approval

All contexts received organizational or ethical approval. Context 1 received research ethics approval from the CAMH Research Ethics Board (REB #028/2020). Context 2 received ethics approval from the CAMH Quality Projects Ethics Review Board (QPER #019/2021). Context 3 received organizational approval to pilot the app, whereby A4i was selected as part of their “Help at Hand” innovation program. All participants in each context provided informed consent.
Table 1 Description of each A4i implementation context

<table>
<thead>
<tr>
<th>Context 1</th>
<th>Study design</th>
<th>Fully remote, 2-year (Jan 2021–Jan 2023) RCT</th>
</tr>
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<tbody>
<tr>
<td>Study setting</td>
<td>The RCT took place at the Centre for Addiction and Mental Health (CAMH), a teaching hospital located in Toronto, Ontario Canada. Participants from various clinics at CAMH, external community mental health programs, and national schizophrenia societies and agencies were invited to participate in the RCT.</td>
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<tr>
<td>Participants</td>
<td>Patients—Individuals living with schizophrenia spectrum disorders, over the age of 18, have access to a smartphone, have access to a data plan and/or home Wi-Fi, and reside within Canada.</td>
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</tr>
<tr>
<td>Implementation approach</td>
<td>Patients interested in participating in the pilot were provided educational materials and training on how to use A4i app by a non-blinded research staff. Once enrolled in the trial, the non-blinded research staff provided ad hoc support to trial participants, and also monitored engagement within the app (i.e. monitoring and reviewing posts on the A4i newsfeed).</td>
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<tr>
<td>Incentives to participate</td>
<td>Patient participants were compensated for the time spent in pre- and post-assessments ($60.00 CAD each time) and were compensated up to an additional $25.00 CAD to cover any potential data overage charges based on participant self-report.</td>
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<thead>
<tr>
<th>Context 2</th>
<th>Study design</th>
<th>16-month (Nov 2021–Mar 2023) Feasibility Pilot Program</th>
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<tbody>
<tr>
<td>Study setting</td>
<td>This pilot took place at a CAMH Outpatient Comprehensive Treatment clinic. This clinic provides services to individuals with chronic schizophrenia, with or without substance use, who are living in West and East Toronto, Ontario, Canada, community catchment areas.</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>Patients—Individuals over the age of 18, living with chronic schizophrenia and/or other related psychosis disorders, and receiving care at the CAMH outpatient comprehensive treatment clinic. Clinicians—CAMH clinicians (i.e. nurses, recreational therapists, psychologists, social workers, etc.) who provide direct patient care.</td>
<td></td>
</tr>
<tr>
<td>Implementation approach</td>
<td>Clinicians interested in participating in the pilot were provided with educational material (i.e. informational flyer, guidebook) about the A4i platform by a digital navigator [21]. The digital navigator supported onboarding of the clinician by (i) setting up their account on the dashboard, (ii) providing a live walk through of the dashboard and the app features, and (iii) supporting clinicians in setting up their patient’s profile on the dashboard. Clinicians reached out to their patients and supported recruitment of interested patient participants. Following this, patient onboarding commenced. The digital navigator supported the patient in downloading the app, logging into their account, navigating the app, and setting up their user profile. Both the clinician and patient participants were free to use the A4i platform however they felt best suited their care or clinical workflows. During the pilot, the digital navigators monitored engagement with the app, provided ad hoc support and education to participants, and conducted check-ins, through informal interviews and brief surveys, with participants to gather user experience feedback.</td>
<td></td>
</tr>
<tr>
<td>Incentives to participate</td>
<td>Patients without access to a smartphone and/or data plan were provided one. Participants did not receive monetary compensation related to their use of the app.</td>
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</table>

<table>
<thead>
<tr>
<th>Context 3</th>
<th>Study design</th>
<th>6-month (Nov 2021–April 2022) Peer Support Worker Led Pilot Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study setting</td>
<td>This pilot program took place at Riverside University Health System (RUHS) Outpatient Community Health Clinics in California, USA. The RUHS community health clinics offer mental health and support services for those experiencing and/or at-risk for institutionalization, homelessness, incarceration, or psychiatric in-patient services.</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>Patients—Individuals over the age of 18, living with chronic schizophrenia and/or other related psychosis disorders, and receiving care at RUHS community health clinics. Clinicians—RUHS clinicians (i.e. nurses, psychologists, social workers, case managers, etc.) who provide direct patient care.</td>
<td></td>
</tr>
<tr>
<td>Implementation approach</td>
<td>Peer support workers within the RUHS community health clinic led and facilitated the implementation of the A4i platform. Clinicians who were interested in participating in the pilot were invited to participate in group information sessions. These information sessions outlined the pilot scope and highlighted features of the A4i platform. Following this, clinicians who agreed to enroll in the pilot referred patients to participate. Both patients and clinicians were provided with a welcome package consisting of A4i “swag,” educational materials such as a brochure and a comprehensive guidebook outlining how to use each feature of the app. Peer support workers conducted participant onboarding to A4i, set-up user profiles, and supported navigation of the platform. Both the clinician and patient participants were free to use the A4i platform however they felt best suited their care or clinical workflows During the pilot, the peer support workers conducted ad hoc check-ins with users; monitoring engagement, providing technology and educational support, and gathering pilot data through user experience surveys and interviews.</td>
<td></td>
</tr>
<tr>
<td>Incentives to participate</td>
<td>1) Patients received $50 USD, per assessment completed with their clinician, with a maximum of $200 USD provided if all assessments had been completed. Participants did not receive monetary compensation related to their use of the app. 2) Patients without access to a smartphone and/or data plan were provided one. The smartphone devices were pre-programmed with the A4i app.</td>
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</table>
Results
Engagement with A4i

Table 2 demonstrates the total number of participants in each context and further illustrates differences in engagement with the A4i platform over a 30- and 90-day period. Context 2 had the lowest number of participants enrolled overall due to the small size of the feasibility pilot and Context 3 had the highest number of enrolled participants. With regards to participant engagement with A4i, engagement, and retention was measured by determining the total number of app interactions (i.e. newsfeed posts, newsfeed scrolls, newsfeed refreshing, app navigation, mood or sleep quality rating, setting reminders, drafting notes, etc.) within the patient participant's first 30 and 90 days of using A4i. Overall, Contexts 1 and 2 (different settings within a mental health hospital) demonstrated the highest rates of retention over a 30- and 90-day period; however, engagement data revealed participants in Context 3 (peer support workers supported implementation) were using A4i more consistently and on a regular basis compared with the other sites.

Patient engagement and interaction with the app also differed depending on whether the patient used A4i with or without their peer support worker or clinician. In Context 1, it was found that the median number of participant interactions with A4i was 99 over 30 days and 127 over 90 days (Table 2). Conversely, in Contexts 2 and 3, interactions over a 30- and 90-day period were much higher, with median interactions in Context 2 being 116 and 380, respectively, and median interactions in Context 3 being 164 and 362, respectively. Moreover, when comparing differences in engagement over 30 versus 90 days, there is greater variability and spread in participant engagement as the length of time in which the participant is using the app increases. Across the contexts, it was observed that the median number of patient posts to the newsfeed was higher in Contexts 2 and 3 compared with Context 1. The results of the Kruskal–Wallis test support this observation and yield statistically significant results for both the 30-day period ($P = .0059$) and the 90-day period ($P = .0221$), indicating that the median post activity differs among the three clinics. Note the median was used to account for variations in sample sizes. Differences in patient engagement for patients using A4i with and without a clinician are further demonstrated in Fig. 1.

In Contexts 2 and 3, qualitative findings from user experience surveys and semi-structured interview were captured. In Context 2, 4 clinicians and 4 patients participated in a 30-minute interview and in Context 3, 10 clinicians participated in a 1-hour interview. Overall, general perceptions of the app in both contexts were positive. For instance, peer support workers and clinicians expressed A4i’s positive impacts on clinical care, where the app supported improvements to patient–clinician communication (Context 2), aided in goal setting and achievement (Contexts 2 and 3), and helped to structure the clinical consult (Contexts 2 and 3). Similarly, some participating patients voiced how the app invoked a sense of community and supported patients in feeling more confident in participating in their care (Context 2). Specifically participating patients felt they could discuss their condition more openly with their clinician (Context 2) and others utilized the app-generated mood and sleep data reports to guide their conversations with their clinicians (Context 2).

Despite the aforementioned benefits of A4i, challenges in engaging with the platform were brought forth by both clinicians and patients. For instance, clinicians reported limited and infrequent use of the A4i clinician portal (Contexts 2 and 3), where clinicians described how they would review the app with the patient during the clinical encounter rather than monitoring the clinician portal (Contexts 2 and 3). Furthermore, clinicians described some challenges in incorporating A4i into their clinical workflow; primarily due to competing priorities and high caseloads (Context 2). Some clinicians and patients stated that some technical glitches and bugs within the app deterred them from engaging with the app more consistently (Contexts 2 and 3). Patients also noted that sending more notifications and reminders to engage with the app would have been helpful to sustain use (Context 2).

Comparing and contrasting implementation

The end-user engagement, perceptions, and experiences with the A4i platform varied across contexts and were likely affected by implementation strategies within the following three domains.

People and culture

In all three clinical contexts, the patient population consisted of individuals with schizophrenia spectrum disorders.

<table>
<thead>
<tr>
<th>Implementation context</th>
<th>Context 1</th>
<th>Context 2</th>
<th>Context 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period of use</td>
<td>30 days</td>
<td>90 days</td>
<td>30 days</td>
</tr>
<tr>
<td>Number of patient participants enrolled</td>
<td>58</td>
<td>58</td>
<td>9</td>
</tr>
<tr>
<td>Number of patient participants engaged</td>
<td>54</td>
<td>56</td>
<td>9</td>
</tr>
<tr>
<td>Retention rate$^a$</td>
<td>93%</td>
<td>96%</td>
<td>100%</td>
</tr>
<tr>
<td>Total number of interactions with the A4i app</td>
<td>6955</td>
<td>12 282</td>
<td>1408</td>
</tr>
<tr>
<td>Mean interactions</td>
<td>128</td>
<td>219</td>
<td>156</td>
</tr>
<tr>
<td>Median interactions</td>
<td>87</td>
<td>125</td>
<td>92</td>
</tr>
<tr>
<td>Mean number of newsfeed posts per user</td>
<td>6</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Median number of newsfeed posts per user</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

$^a$ Retention refers to engagement with the app within the first 30 or 90 days. A user is classified as “engaged” if they have used the app at least once within the specified time period. Users who were engaged during the specified time period and chose to drop out of the study were still considered engaged.
who were able to comprehend English and were over the age of 18. The participants in these contexts were demographically diverse across gender, race, and socioeconomic status.

The team structure and roles varied across contexts. In Context 1, patient participants were supported in using A4i by clinical research staff, trainees, and volunteers. In this context, patients were eligible to use A4i with or without the support of their clinician and were compensated for assessments. Context 2 was supported by digital health and mental health researchers, project managers, and digital navigators. The digital navigators supported recruitment, onboarding, and education, and provided ad hoc technical support. In this context, clinician participation with patients was required, and no financial incentive was provided. Within Context 3, peer support workers led and implemented the program. Peer support workers supported the recruitment, onboarding, and education of participants. They also worked closely with a team of researchers, program managers, and clinical staff to collaboratively implement A4i. In all contexts, corresponding implementation staff were provided with an overview of the A4i platform, training on how to use the platform, and training on how to implement the platform.

Related to organizational culture and buy-in across the implementation contexts, there was an overall interest by clinicians and patients in using digital interventions to augment care services. Digital innovation is a strategic priority for CAMH (Contexts 1 and 2), and mobile health apps and other digital health tools are commonly used to complement clinical care. RUHS, the setting for Context 3, as well strives to incorporate innovative practices into the services delivered, by frequently leveraging technologies to augment care process.

Process
All site implementations followed a similar process, beginning with recruiting participants, training, and onboarding, and monitoring participant use of A4i.

Recruitment of participants in Context 1 was conducted at CAMH and community organizations across Canada. In Contexts 2 and 3, participants were recruited from specific clinics within the respective sites. Across contexts, teams used flyers, posters, newsletters, e-mail distribution lists, and presentations to engage potential participants on a rolling basis.

As part of each site implementation, various education, onboarding, and training materials were developed to support participants in using A4i. In all contexts, participants were provided customized materials (i.e. guidebooks, videos, posters, pamphlets, etc.) and received an in-person or virtual walk through of A4i. Due to the remote nature of Context 1, education and training sessions were provided to participants via videoconferencing by research staff. In Contexts 2 and 3, education and training sessions were led by a digital navigator or peer support worker. In Context 2, an implementation toolkit was developed to support the implementation of A4i in other clinical settings at CAMH.

Although the feedback loop in Context 1 was quite structured, ongoing qualitative feedback from all A4i users (through e-mail, phone calls, and in-person meetings) was collected through Contexts 2 and 3.

Technology
While all eligible participants were required to own a smartphone and have a data plan in Context 1, smartphones and/or data plans were provided to patients in need within Contexts 2 and 3 by technology specialists and digital navigators (Context 2) or peer support workers (Context 3). Providing patients with a smartphone and/or data plan in these contexts...
also supported recruitment and participating in the corresponding pilot programs.

Discussion and Implications

The findings highlight that although people, culture, processes, and technology considerations varied across each implementation site, engagement with the A4i digital health intervention was consistently high over a 30- and 90-day period. In consideration of the contextual factors that impacted each site implementation, lessons learned from the implementations are summarized below.

Concerning people involved in implementation, digital navigators [21] and research staff, across the three contexts, were critical to implementing the A4i platform. The digital navigators supported clinicians in embedding the A4i platform into clinical care, specifically being responsible for the technical aspects of using the A4i platform. This allowed clinicians to solely focus on providing clinical care as opposed to juggling and navigating both the technical and clinical components of A4i. Moreover, there was a positive impact of clinicians and peer support workers using A4i alongside clients. As demonstrated by the higher rates of engagement in Contexts 2 and 3, having clinicians and peer support workers actively involved in the use of A4i in partnership with clients, supported engagement and adoption. A limitation of this paper includes the small sample size in Context 2, making comparison between sites difficult and not adequately powered.

The culture of the environment was also important for implementation. In all contexts, innovative approaches to augment care provision and services were encouraged and well received by senior leadership, clinicians, and patients within the respective organizations. This innovative culture positively impacted each context's availability of time, resources, and clinician and patient willingness to adopt a digital health intervention.

In each context, a clear implementation plan and process were developed. This involved developing educational resources and embedding digital navigators into each site implementation as resources for clinicians and patients using A4i. Implementation supports included brochures, videos, posters, and guidebooks, customized for each context. In Contexts 2 and 3, digital navigators facilitated drop-in educational sessions for clinicians and patients to maximize recruitment and onboarding efforts.

External Rules, Regulations, and Pressures included the ongoing COVID-19 pandemic, which limited in-person interaction with clinics in Context 2. This reliance on virtual communication, compounded with the health human-resource crisis, limited clinic recruitment efforts since caseloads were heavy and the appetite for external initiatives was reduced. Given this, support from clinician champions and early adopters of A4i was a key recruitment driver within this context. Moreover, Contexts 1 and 3 had larger financial incentives tied to participation. Hence, recruitment numbers were higher.

Findings regarding Human Computer Interface suggested that low digital literacy did not impact patients' willingness to use the tool, engage with it, and integrate it effectively into care across all contexts. While some clinicians had anticipated that patients with lower digital literacy would have lower engagement with the app, this implementation identified that providing patients with the appropriate technical support and education sustained engagement. Additionally, technical issues arose in each implementation context (i.e. forgotten passwords, app glitches/bugs), these issues did not preclude participant use of A4i. A limitation that should be noted within our paper is the study self-selection bias, across both patients and clinicians who were approached and opted into or out of each of the three implementation sites. It is likely that digital literacy of clinicians or incentives such as cell phones and/or data plans for clients could have impacted participation, all characteristics which should be measured and studied systematically in future studies (in addition to other digital engagement-related factors such as age, gender, race, socioeconomic status).

Finally, lessons learned from Context 3 regarding workflow and communication included incorporating A4i instructions into practical day-to-day items (e.g. laminated handout in bookmark form) for ease of access. Users also connected over different features that they found most helpful and expressed interest in continuing with the application following completion of the program. Previous research has demonstrated similar factors affecting the implementation of digital interventions for individuals with psychosis, including facilitators such as attitudes and beliefs about interventions, accessibility, and adaptability of interventions, as well as barriers (e.g. insufficient resources, finances, and staff time) [22].

Conclusion

This brief report discussed the implementation of a single digital health intervention across three contexts, using an implementation science approach to comparison. Although variations existed across the domains of people, culture, process, and technology, engagement with the A4i platform remained consistently high over the initial period. Customized educational materials, digital navigators, and ongoing technical support were facilitators in ensuring the successful adoption of the A4i intervention.

Author Contributions

All authors contributed to the study conception and approved the final version of the manuscript. I.K. and L.S. determined the framework for description of the approach and data presentation, synthesized and drafted content, along with contributing content for Context 2. J.D., W.Z., and S.J. provided content on Contexts 1 and 3. S.L. conducted the statistical analysis and provided user engagement data. Authors N.B. and L.T.G. edited the report. S.K. designed the study approach and oversaw each project. I.K. and L.S. share first authorship.

Conflict of Interest

Kidd, CAMH as an organization (employer of Kidd, Kassam, Sequeira, D’Arcy, Tackaberry-Giddens, and Boparai), and MEMOTEXT (employer of Zhou, Luo, and Junaid) have commercial interests in the A4i technology.

Funding

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Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All site implementations received organizational or ethical approval. Context 1 received research ethical approval from the CAMH Research Ethics Board (REB #028/2020). Context 2 received ethical approval from the CAMH Quality Projects Ethics Review Board (QPER #019/2021). Context 3 received organizational approval to pilot the app, whereby A4i was selected as part of their “Help at Hand” innovation program. All participants in each site implementation provided informed consent.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Welfare of Animals

This article does not contain any studies with animals performed by any of the authors.

Study Registration

This study was not formally registered.

Analytic Plan Pre-Registration

The study analysis plan was not formally registered.

Data Availability

De-identified data from this study are not available in a public archive. De-identified data from this study can be made available (in accordance with institutional REB standards) by emailing the corresponding author.

Analytic Code Availability

Analytic code used to conduct the analyses presented in this study are not available in a public archive. They may be available by emailing the corresponding author.

Materials Availability

Materials used to conduct the study are not publicly available.

References