Original Paper

Real-World Technology Use among People with Mental Illnesses:

A Qualitative Study

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Abstract

Background: There is growing interest in using technology-based tools to support mental health recovery. Yet, despite evidence suggesting widespread access to technology among people with mental illnesses, interest in using technology to support mental health, and effectiveness of technology-based tools developed by researchers, such tools have not been widely adopted within mental health settings. Little is currently known about how mental health consumers are using technology to address mental health needs in real-world settings outside of controlled research studies.

Objective: This qualitative study examined current practices and orientations toward technology among consumers in three mental health settings in the U.S.

Methods: Ethnographic observations and semi-structured interviews were conducted. Observations focused on if and how technology was salient within the setting and documented relevant behaviors, interactions, and dialogue in fieldnotes. Ethnographic data informed the development of a semi-structured interview that inquired into technology use and interest among consumers (n=15) in a community mental health setting. Fieldnotes and interview transcripts were reviewed and coded by multiple researchers. Key concepts and patterns identified were refined by the research team to develop the main findings.

Results: Ownership of technology, although common, was not ubiquitous and was varied across the sites. Participants had varying levels of awareness regarding the key
capabilities of modern technologies. Participants used technology for many purposes, but there was limited evidence of technology use to support mental health. Technology-based tools specific to mental health were not routinely used although some participants found widely available mobile apps to be helpful in recovery.

Conclusions: Qualitative findings suggest that most but not all clients will be interested in using technology to support mental health needs. The variability in type and quality of technology owned by participants suggests the need to design for a range of functionality in the development of mental health tools. Findings also suggest thinking broadly about using existing platforms and widely available tools to support consumers in mental health recovery.

Keywords
Qualitative Research; Technology; Mental Health
Introduction

The global technology revolution has fundamentally changed how people communicate, access and share information, including health information. There is widespread access to mobile technology among people with mental illnesses in the U.S. and globally [1-5]. Mobile health (mHealth), the provision of health support through mobile devices, is rapidly expanding. More than 318,000 mHealth applications (“apps”) are currently available for download and use; this is nearly double the number of health-related apps available two years ago [6]. However, very few have empirical evidence for their effectiveness [7].

An emerging body of research aimed at developing and testing technology-based tools for people with severe mental illnesses (i.e., schizophrenia, bipolar disorder, and depression), shows promise in delivering strategies for illness management and recovery [8]. Technology-based tools for mental health have been designed for many purposes including symptom assessment [9], self-management of psychiatric symptoms [10], remote sensing of behaviors to predict relapse [11], improving medication management through shared decision making [12], and work support [13].

Despite evidence suggesting widespread access to technology among people with mental illnesses, interest in using technology to support mental health, and effectiveness of technology-based tools developed by researchers, such tools have not been widely adopted within mental health settings. Further, little is known about how mental health consumers are using technology to address mental health needs in real-world settings.
outside of controlled research studies. This qualitative study examined current practices and orientations toward technology among consumers within three mental health settings.

Methods

The study was conducted in multiple mental health settings in the Northeastern U.S. The study sites included a private clinic for young adults with early psychosis with co-occurring addiction (Site 1); a private residential treatment program serving a predominantly older adult population with long-term mental disorders (Site 2); and an academic-affiliated community mental health center serving a broad population with mental illnesses (Site 3). The consumers in these three settings spanned young adults to senior citizens and came from a wide range of socioeconomic backgrounds. The location of the mental health centers included urban and rural settings. Data were collected over one year in which we were engaged with each site for 3-4 months.

This multi-method study combined ethnographic observation and qualitative interviewing. The study was approved by our university’s research ethics committee and participants gave informed consent to participate. Participant observation was the primary method employed in earlier stages of the research in the two residential treatment settings. Ethnographic methods are particularly well-suited for initial explorations into a new area of research. In each of the residential treatment settings, most current consumers and staff were included in the study, i.e., there was no sampling of individuals. Instead, purposive sampling occurred at the site level to include individuals with mental illnesses who could provide insight into use of, and orientations toward, technology. In
these settings, the research team built awareness of the study through Information Sessions in which the research team introduced themselves and provided an overview of the study to consumers and staff. Participants could ‘opt out’ of participating, meaning that the research team would not interact directly with them and or take about their behavior or interactions. No individuals opted out in either setting.

Ethnographic visits were half-day to daylong visits in each site occurring weekly for 3-4 months. During this time, the ethnographic researcher interacted with key stakeholders, including consumers, frontline staff, supervisors, and leadership within the organization, and became familiar with the organizational environment and culture. The potential influence of the researcher on behaviors in the organization was diminished by becoming a regular presence in the setting. During ethnographic visits, the researcher was positioned in the dual role of participant and observer, striving to immerse herself and share in the daily lives of participants while also remaining an ‘outsider’ attentive to the aims of the research [14, 15]. The researcher observed and interacted with mental health consumers and staff in multiple venues, including clinical offices, community-based visits, events and activities, and residential treatment settings. This yielded many opportunities to observe if and how various forms of technology were salient. In addition, informal interviews were conducted with clients and staff that provided a basis for open-ended inquiry about use of, and interest in, technology. Detailed fieldnotes were written following ethnographic visits to systematically document behaviors and interactions in the setting, with particular attention to use of technology and dialogue regarding technology.
As the research progressed, we used the exploratory observations and informal interviews from the ethnography to inform and design more focused research interactions. In the community mental health center, three of the authors ([redacted for review]) conducted brief semi-structured interviews with consumers. Interviews were conducted until the team felt confident that similar ideas and provisional patterns were recurrent in the dataset at which point no additional participants were enrolled. The final sample for the interviews included 15 consumers. Interviews were organized around the following domains: use of technology; interest in technology; technology in mental health services; technology and mental health recovery. Three of the authors ([redacted for review]) conducted interviews in a private office at the community mental health center. Interviews were 15-20 minutes in duration and were audio-recorded and transcribed.

We reviewed and coded fieldnotes and interview transcripts. Qualitative coding is a process of tagging portions of text with a meaningful label [16]. Coding is the “pivotal link” between data collection and interpreting the meaning of qualitative data [16]) We developed qualitative codes from both researcher-driven categories derived from the research aims and interview questions as well as categories that arose through inductive review of the qualitative data. Coding was done iteratively and involved multiple researchers. Key concepts and patterns were identified through continued immersion in the dataset. The research team met regularly to discuss provisional findings and also received feedback via expert review. The team worked collaboratively to refine and reach consensus on the main findings reported in this article.
Results

We found variability by type of technology owned; awareness of, and interest in, technology; and routine uses of technology.

*Technology Owned*

In Site 1, a private mental health treatment center that primarily serves young adults with co-occurring mental illness and substance use disorders, participants typically owned several high-end devices, including luxury brand (e.g., Apple, Samsung) smartphones, tablets, and computers. In contrast, in Site 2, a private mental health treatment center that primarily provides long-term residential care, a few individuals owned modern, high-end devices, but the majority owned outdated technology: e.g., old flip phones tucked away in desk drawers and outdated laptops left uncharged or broken. In Site 3, a community mental health center setting, participants all owned at least one modern device – commonly a smart phone—yet these were typically low-budget, prepaid mobile plans with limited data.

Across all three sites, participants’ access to technology was facilitated or constrained by various factors. In some cases, policies at the organization prevented participants from using technology, especially when substance use challenges were present. For other participants, access to technology was mediated by whether or not family members supported their use of technology. Many family members encouraged using technology, citing reasons ranging from carrying a cell phone for safety to the desire for the participant to develop computer skills. Yet some family members had
dismissed participants’ desire to own technology stating, “You don’t need it.” Finally, access to technology was facilitated or constrained by whether or not the participant had adequate financial resources to purchase and maintain technology.

Awareness of, and Interest in, Technology

In Sites 1 and 3 participants had high awareness of the existence of a wide range of technologies even if, as individuals, they did not own specific devices. They generally were aware of key capabilities and functions of modern technologies (e.g., texting). Similarly, most participants in these two settings expressed interest in learning and using technology generally and to support their mental health.

Technological awareness among participants in Site 2, by contrast, varied. While a few individuals in this setting had high awareness, many others were unaware of existing technologies. For example, several individuals did not know what an iPad was. Similarly, awareness of technological functions was limited in this setting. One older man used the ethnographer’s phone to send his first texts. Interest in technology among participants in Site 2 also varied. Some individuals expressed interest in learning about and using technology. The participant who texted for the first time was quite enthusiastic about the experience. He immediately saw the potential of texting for making his regular communication (currently via letters) with family and friends much easier. But for other participants in Site 2, interest in technology was low as exemplified by these statements: “I’ve lived my whole life without it” and “I don’t want this.”

Routine Uses of Technology
Across all three settings, participants who engaged with technology were using devices for a wide range of purposes. Participants in Site 1 were active and regular users of a range of technology that they used for education, research, communication, social networking, relaxation, and entertainment. For example, participants used online videos to learn new skills such as playing the guitar; others were engaged in formal online college courses. Several participants in this setting enjoyed streaming movies, playing video games, and online shopping. Participants in this setting were all familiar with social media, but varied in their engagement with these platforms. With respect to using technology for mental health-related reasons, this was only observed in one participant who used the alarm on his cell phone as a reminder to take his medication.

In Site 2, the few individuals who regularly engaged with technology used their devices for education, relaxation, and entertainment. Participants who owned functioning computers used the internet to access news, email, and stream movies. A few individuals in this setting used social media to connect with family and friends and a few enjoyed playing video games. Participants were also observed using older forms of technology such as cassette tapes and VHS movies for relaxation and entertainment. No participants in Site 2 were observed or reported using mental health-related technology (e.g., mHealth apps) or used technology for mental health-related reasons such as symptom management.

Participants in Site 3 all actively used technology for a range of purposes, including education, research, social networking, relaxation, and entertainment. As with participants in the other settings, those in Site 3 commonly used the internet for email and to access information, including current events, recipes, weather, and health. Some
participants searched for jobs online. Some participants used social media regularly. Many enjoyed streaming movies and listening to music on their cell phones or laptops. In contrast to the other settings, participants in Site 3 commonly discussed using technology for health and mental health-related purposes. Accessing health-related websites for information was a common practice, as described by this participant:

“I use [my phone] for Internet, looking up prescriptions, I use it for diagnoses…I just google it. And I just type in the type of medicine, or the specific name of the medicine… I look it up for side effects. Basically to see if it coincides with the paper I get through a pharmacy. And like, accidental overdose, any interactions, anything like that. And what exactly the medicine does.”

Others reported using technology for psychiatric symptom management and to support recovery. Although some individuals had tried “mental health apps,” these were not commonly used. Rather, participants reported using widely available and popular apps in ways that supported their mental health. For example, one woman used Instagram every day to access positive affirmations, expressing that this daily practice supported her mental health recovery:

“And it helps. Definitely with my depression. Some with the anxiety. If you really start looking at positive affirmations and really start reading them.”

Similarly, another individual described using Youtube videos to manage panic attacks and to help with sleep:

“I do use a lot of Youtube [videos]. Like I do progressive muscle relaxation when I’m having panic attacks. I also use it for music. To fall asleep to. I’ve had quite a few apps for anxiety and stuff that haven’t worked.
Discussion

Our qualitative research in multiple mental health settings suggests that many but not all clients will be interested in using technology to support their mental health needs. Technology-based mental health education, supports, and interventions should be among the many services offered to clients to enhance their recovery goals.

Despite evidence that individuals with mental illness do own smartphones and other technology, our study illuminates that we should expect – and design for -- a range of technological functionality. Many participants owned outdated devices and/or devices with limited functionality. The low-budget smartphones commonly owned by participants in the community mental health center had limited data plans, which inhibited participants’ ability to download and use mobile apps. mHealth applications in real-world settings will need to take into account such limitations. Current mHealth research may obscure these challenges due to the common practice of providing high-end phones with large data plans to study participants.

In the settings of this study, technology-based tools specific to mental health were not in routine use. We identified some creative uses of widely available apps to support mental health, but our study suggests thinking broadly about existing platforms and not limiting recommendations to mental health specific applications. Because mental health clinicians and clients are relatively naïve about existing mHealth apps as well as generic tools, mental health programs will need to insert expertise, such as a technology navigator [17], to help the two parties find appropriate, effective tools and learn how to use them, at least over the short run.
Qualitative inquiry using multiple methods (ethnographic observations and interviews) in multiple sites over 12 months enhanced the credibility and transferability of our qualitative findings [18]. Yet our study was limited by a lack of ethnic/racial diversity in our sample.

Conclusions

Mental health clients currently use technologies, but not often in service of recovery needs. Future research should examine the use of technology to support mental health clients and clinicians in real-world settings and also among populations less well connected to services.

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Dr. Carpenter-Song designed the study, participated in data collection, supervised qualitative analysis and lead the write-up of the manuscript. Dr. Noel was the main researcher involved in data collection, conducted qualitative coding, and contributed to the interpretation of findings and writing the manuscript. Ms. Acquilano was involved in data collection and contributed to the interpretation of findings and writing the manuscript. Dr. Drake contributed to the interpretation of findings and writing the manuscript. The authors received funding for the research reported in the article from the Natalia Mental Health Foundation and the West Family Foundation. Funders had no role in research activities or reporting of results.
Conflicts of Interest

None declared.
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