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Certified Peer Specialists' Perspective of the Barriers and Facilitators to Mobile Health Engagement

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Abstract

This study examined certified peer specialists' perceptions of the barriers and facilitators to mobile health (mHealth) engagement. A total of 267 certified peer specialists from 38 states completed an online survey. Of this sample, 74 certified peer specialists completed open-ended questions. Data were analyzed from the 74 respondents who responded to open-ended questions. Certified peer specialists identified previously unidentified facilitators including the augmented use of certified peer specialists in combination with mHealth to improve engagement. One emerging theme identified was the belief that mHealth interventions may promote social isolation if not designed appropriately. Certified peer specialists *appear to prefer* using tablets instead of smartphones. Integrating certified peer specialists' perspectives of barriers and facilitators to mHealth engagement may promote initial and sustained mHealth engagement among consumers with serious mental illness. Future research using implementation science frameworks should examine these previously identified barriers and facilitators to mHealth engagement as correlates and/or predictors of engagement among service users.

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Disclosure of potential conflicts of interest

All the authors report there are no conflicts of interest.

Research involving Human Participants and/or Animals

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.

Informed consent

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

Keywords

Serious mental illness; mHealth; peer support; implementation science

The use of mobile health (mHealth), such as smartphone-based interventions, has modernized and innovated mental health care and services for consumers with serious mental illness (SMI) (i.e., people diagnosed with schizophrenia spectrum disorder, bipolar disorder, and persistent, refractory major depressive disorder). Among people with SMI, mHealth interventions have led to improved illness self-management, relapse prevention, adherence to medications and/or treatment, and provided psychoeducation, recovery support, symptom monitoring, and promoted health and wellness (Naslund, Marsch, McHugo, & Bartels, 2015). As the landscape of mental health services delivery is transforming the way services are provided—one constant remains the same—sustained mHealth engagement among people with SMI is difficult (Naslund, Marsch, McHugo, & Bartels, 2015).

Research has examined engagement factors among people with SMI by using both qualitative (Barnes, Simpson, Griffiths, Hood, Craddock, & Smith, 2011; de Leeuw, Splunteren, & Boerema, 2012; Depp, Mausbach, Granholm, et al., 2010; Poole, Simpson, & Smith, 2012; Todd, Jones, & Lobban, 2013; Proudfoot, et al., 2007) and quantitative (Jain, Singh, Koolwal, Kumar, & Gupta, 2015; Ben-Zeev, Davis, Kaiser, Krzsos, & Drake, 2013) methods. This literature has described distinctive barriers that adults with SMI encounter when attempting to engage in mHealth interventions. Barriers to device ownership have included affordability, lack of interest, lack of necessity, inability to use a phone (Ben-Zeev, Davis, Kaiser, Krzsos, & Drake, 2013), and poor signal (Jain, Singh, Koolwal, Kumar, & Gupta, 2015). Barriers to device use that have been identified include environmental barriers such as safety and privacy concerns (Barnes, Simpson, Griffiths, Hood, Craddock, & Smith, 2011; de Leeuw, Splunteren, & Boerema, 2012; Poole, Simpson, & Smith, 2012; Anttila, Välimäki, Hätönen, Luukkaala, & Kaila, 2012); physical barriers such as technical issues (Anttila, Välimäki, Hätönen, Luukkaala, & Kaila, 2012; de Leeuw, Splunteren, & Boerema, 2012; Poole, Simpson, & Smith, 2012; Todd, Jones, & Lobban, 2013); psychosocial barriers such as the need for inclusion of human support (Poole, Simpson, & Smith, 2012); concerns about the impact of psychological state on mHealth intervention use (Barnes, Simpson, Griffiths, Hood, Craddock, & Smith, 2011; Proudfoot et al., 2007; Todd, Jones, & Lobban, 2013); mobile phone literacy (Anttila, Välimäki, Hätönen, Luukkaala, & Kaila, 2012; Poole, Simpson, & Smith, 2012); and concerns about telling people what the smartphone was used for (Depp et al., 2010).

Currently, research on understanding mHealth engagement has been conducted with consumers with SMI (Barnes, Simpson, Griffiths, Hood, Craddock, & Smith, 2011; Ben-Zeev, Davis, Kaiser, Krzsos, & Drake, 2013; Jain, Singh, Koolwal, Kumar, & Gupta, 2015; Poole, Simpson, & Smith, 2012; Proudfoot et al., 2007; Todd, Jones, & Lobban, 2013), nurses (Anttila, Välimäki, Hätönen, Luukkaala, & Kaila, 2012), and formal and informal caregivers (de Leeuw, Splunteren, & Boerema, 2012). Emerging mHealth interventions are incorporating certified peer specialists as interventionists in services delivery (Fortuna, et al. in press; Fortuna et al., 2017). However, to our knowledge, few studies have considered the

perception of certified peer specialists in understanding mHealth and may be asked to use mHealth interventions for their own care and the care of others.

Certified peer specialists are individuals who have both a mental health diagnosis, are in recovery, and are trained and accredited by a state or accrediting organization to provide Medicaid reimbursable services (Solomon, 2004). Certified peer specialists as both consumers of mental health services and an emerging workforce of mHealth interventionists (Fortuna et al., 2017; 2018abcd) would be particularly skilled at articulating and understanding factors that impact engagement in mHealth interventions in their dual expert-consumer role. This study examined certified peer specialists' perceptions of the barriers and facilitators to mHealth engagement.

Methods

An online survey was developed to assess certified peer specialists' perception of the barriers and facilitators of mHealth engagement among adults with SMI. The survey was developed with input from certified peer specialists. For the purposes of this study, we defined mHealth as tablets and smartphone applications. A total of 12 survey items were designed to assess certified peer specialists' perception of what makes a smartphone or tablet difficult to use. Examples of possible non-mutually exclusive answers included "cost of the smartphone", "reading is hard to do on a smartphone", "typing on a smartphone is hard", "I would lose my smartphone", "I don't understand how to use a smartphone", and "I am not interested in a smartphone". Possible responses included "yes", "no", or "not sure".

Qualitative data was organized around three follow-up, open-ended questions: "does anything make using a smartphone hard?" and "does anything make using a tablet hard?". Finally, certified peer specialists were asked a final open-ended question, "what would encourage consumers you work with to use a smartphone App daily to practice taking care of themselves--like dieting and exercising?" Their responses to the three open-ended questions were systematically recorded and analyzed in the same form as qualitative interviews.

To be eligible for the study, respondents needed to: (1) have finished a state accredited training program and received a peer support certification, (2) be a United States resident, and (3) be at least 18 years or older. From February 2018 to April 2018, respondents were recruited and invited to participate in the online survey through announcements posted on websites, e-mail lists, and newsletters affiliated with certified peer specialist organizations. At the time of survey closure, 289 participants started the survey. However, a total of 22 respondents (<10%) were excluded from the final dataset due to missing data, resulting in a sample size of 267 participants. A total of 267 respondents completed survey questions. Of these individuals, 74 responded to the open ended questions. Data were analyzed from the 74 respondents who responded to open-ended questions.

Upon receiving exemption status and approval from the [blinded for review] Institutional Review Board to conduct this study, respondents were recruited to participate in the online survey. Prior to starting the survey on Qualtrics, respondents read an informed consent

statement that provided details on the study's purpose and assurance that any level of participation was voluntary in nature. Respondents were informed that the data collected would be confidential and anonymous (i.e., we did not require the reporting of any personally identifiable or sensitive information). Finally, respondents were told that the survey would require about 20 minutes to complete before deciding whether to provide their consent. Respondents were not compensated for participation.

Data analysis

Data analyses were performed using the Statistical Package for the Social Sciences, Version 22 (IBM Corp., 2015). Descriptive statistics (i.e., frequencies and percentages) were used to describe the demographic characteristics of the respondents.

Using thematic analysis, we organized and analyzed the qualitative, open-ended data responses. The first two authors developed a codebook that included *a priori* researcher-driven codes (Martin & Turner, 1986). Barriers to and facilitators of engagement in mHealth interventions were organized into two broad themes — *intervention characteristics* (i.e., features of the intervention that may impact engagement such as the perceived benefit of the intervention and cost of the intervention) and *characteristics of individuals* (i.e., characteristics of individuals that may impact engagement such as beliefs about the mHealth intervention).

In order to include diverse perspectives in the process, the codes were first discussed among the group of researchers and then additional codes and operational definitions were added to the codebook (Martin & Turner, 1986). The final codes were applied to all qualitative data responses, and the first two authors sorted the codes and clustered the codes into overarching themes. Based on thematic analysis, the first and second author summarized these themes that were representative of the different codes (Braun & Clarke, 2006). Within-group consensus or disagreements were assessed to check for reliability and validity.

Results

A total of 267 respondents completed quantitative survey questions. Of these individuals, 74 responded to the open ended questions. Data were analyzed from the 74 respondents from 18 states who responded to open-ended questions. The mean age of respondents included in the data analysis was 50.9 years ($SD=12$ years), with a range of 21 to 77 years. Most of the respondents identified as female (80%; $n=59$) and Caucasian (77%; $n=57$); the majority (66%; $n=49$) were currently employed at least part-time or full-time as a certified peer specialist. Of those who felt comfortable disclosing their mental health diagnoses ($N=43$), 30.2% of respondents reported a diagnosis of major depressive disorder, 25.5% reported bipolar disorder, 20.9% reported post-traumatic stress disorder, 9.3% reported alcohol/substance use disorder, and 13.9% reported schizophrenia spectrum disorder.

There were a total of 96 non-mutually exclusive open-ended responses. Specifically, 70 responded to “does anything make using a smartphone or tablet hard?”, 66 responded to “does anything make using a tablet hard?”, and 30 responded to “what would encourage consumers you work with to use a smartphone App daily to practice taking care of

themselves---like dieting and exercising?” Of these, 16 responses were excluded for being irrelevant. A total of 80 open-ended responses were analyzed from 74 certified peer specialists from 18 states.

We identified seven final codes relating to the overarching themes on barriers to and facilitators of mHealth engagement. Each of the seven codes were classified into one of the two themes. The themes included *intervention characteristics* (i.e., affordability; formal training; connectivity; peer support [emerging]) and *characteristics of individuals* (i.e., physical and psychological barriers to mHealth engagement; beliefs and preferences; mHealth interventions may promote social isolation [emerging theme]). Although data could be classified into more than one domain, we opted to assign qualitative text to the “best fit” domain.

See Table 2 for selected quotes.

Intervention Characteristics

Affordability.—The most prevalent theme in this domain represented peer specialists’ view that the cost of smartphones and data plans deterred mHealth engagement. “Affordability” was defined as the ability to purchase smartphones and data plans, either through government subsidy or personal income. For example, certified peer specialists stated that “*lower costs of smartphones [would] encourage participation*” and “*government subsidies [are needed] for smartphones—not flip phones.*”

Formal training.—The second most prevalent theme within this domain represented peer specialists’ view on the issue that formal training would promote mHealth engagement. Certified peer specialists offered distinct mHealth training topics. For example, certified peer specialists recommended “*education on how to get an email address password and use email and texts contacts.*”

Connectivity.—The third most prevalent theme within this domain represented peer specialists’ view on the issue of Internet connectivity as a barrier to engagement in mHealth. Certified peer specialists suggested that location impacted connectivity. For example, certified peer specialists indicated that “*poor signal in many areas (rural areas, my office is in the basement)*” impacted engagement.

Peer support (emerging).—Peer specialists reported that the inclusion of certified peer specialists may promote a human connection in a mHealth intervention and promote engagement. Certified peer specialists offered ideas on how to include peers in mHealth interventions. For example, certified peer specialists recommended “*peer support text messages for those with mental health and physical health issues*”.

Characteristics of Individuals

Physical and psychological barriers to mHealth engagement.—The most prevalent theme within this domain was physical and psychological barriers to mHealth engagement, presented as two subcategories including physical barriers (e.g., “*phone so hard*”

to navigate and see”) and psychological barriers (i.e., “[problems] hearing voices” or an actual and symptomatic-driven fear of data breach”).

Beliefs and preferences.—The second most prevalent theme within this domain was beliefs and preferences that act barriers or facilitators to mHealth engagement. For example, a respondent reported that “*I am change averse - using a flip phone*”(barrier) and “*I much prefer using a tablet than a smartphone*” (facilitators).

mHealth interventions may promote social isolation.—An emerging theme identified included peers’ belief that mHealth interventions could potentially exacerbate social isolation if not engineered thoughtfully. For example, a respondent reported that “*when you use an app, you are alone unless the app is purely to get people together, it isolates.*”

Conclusions and Implications for Practice

This study examined the perceptions of certified peer specialists regarding barriers to and facilitators of mHealth engagement. The most frequently reported barrier to engagement was the affordability of the phone and the dataplan. Certified peer specialists identified previously unknown facilitators including mHealth interventions designed for people with SMI could improve engagement by including certified peer specialists in combination with mHealth. One emerging theme identified was the belief that mHealth interventions may promote social isolation if not designed appropriately. Certified peer specialists *appear to prefer* using tablets instead of smartphones.

Despite government programs offering free phones and data plans and the rising use of smartphones among people with SMI (Glick, Druss, Pina, Lally, & Conde, 2016)-- affordability is still an issue. Advances for how Medicaid and Medicare reimburse clinicians for mHealth are vital to scale engagement in mHealth. One popular program is SafeLink, which is a government program that offers phones and wireless services free of cost for eligible Medicaid recipients. Potentially, certified peer specialists, mental health providers, and consumers are not aware of these programs or there are other barriers to accessing SafeLink. For example, income restrictions, state reimbursement restrictions, or poor connectivity may influence accessibility. Researchers and clinicians can potentially access SafeLink services for eligible consumers to facilitate research studies or evidence-based mHealth-delivered clinical care. As consumers may have an mHealth delivery preference – smartphone or tablet—both options should be available through government programs. As Medicaid and Medicare continue to reimburse for a larger number of mHealth services annually, specific barriers to accessing programs like SafeLink for consumers should be identified, addressed, and reevaluated.

mHealth interventions designed for people with SMI could improve engagement by including certified peer specialists in combination with mHealth. This is consistent with the findings suggesting that peer support might be a human factor that promotes the use of smartphone-based interventions among consumers with SMI (Fortuna et al., 2018c). Peer support could be embedded into the mHealth intervention such as interventions like

PeerTECH (Fortuna et al., 2017). Another option would be for interventions to integrate peer support with a sequential, multiple assignment, randomized trial design to evaluate a stepped care model for mHealth interventions. For example, consumers who show early warning signs of suboptimal engagement can be re-randomized to receive peer support in an effort to make the mHealth intervention more effective and engaging for them. Exploring the role of peer support in combination with future mHealth interventions can elucidate the impact of peer support on mHealth engagement.

An emerging theme identified included certified peer specialists belief that mHealth interventions may promote social isolation. A higher proportion of people with SMI report feeling socially isolated compared to people without SMI (Adams, Sanders, & Auth, 2004; Badcock, et al., 2015; Cacioppo, Hughes, Waite, Hawkey, & Thisted, 2006), which in turn is linked to an increased risk of mental and physical health issues (Shankar, McMunn, Banks, & Steptoe, 2011). Consistent with the goal of community integration for people with SMI, we posit mHealth interventions could potentially act as an augmented intervention component—not the primary services for people with SMI whom are at-risk for social isolation and loneliness. As this was identified as an emerging theme, exploring reports of social isolation among consumers involved in mHealth interventions is needed to explain this perspective.

Several limitations should be considered when interpreting the results of the current study. First, because of the use of an online survey in which only people with Internet access could complete the survey, the generalizability of the study is restricted. The respondents who visited the survey website may be more comfortable with technology, more financially stable, and/or more educated. Second, the self-reported nature of an online survey may lead to reporting bias. However, in order to collect data from a large sample of certified peer specialists—prior research has used online surveys to obtain a represented sample (Fortuna et al., 2018a; Salzer, Schwenk, Brusilovskiy, 2010). Third, we are not able to report an accurate recruitment rate because the online survey was sent to approximately 1,500 certified peer specialists and we do not know how many potential participants read the advertisements for the study. In addition, the majority of the respondents in this study were female certified peer specialists, with males markedly underrepresented. This is not the typical composition of a sample of individuals with SMI—yet this is the demographic composition of certified peer specialists. Fourth, we used a three-item Likert scale “yes”, “no”, or “not sure”. While this is an improvement over a dichotomous scale, this three-item scale may not fully represent the range of responses. Finally, contextual environmental of our findings is not known. Thus, for implementation purposes, generalizing findings to specific organizations is not possible. However, these findings can be used for pre-implementation in developing mHealth interventions and designing for engagement.

In conclusion, this study advances our current knowledge of barriers and facilitators that may impact mHealth engagement. Certified peer specialists identified previously unidentified facilitators including the augmented use of certified peer specialists in combination with mHealth to improve engagement, personal beliefs and preferences, and mHealth interventions may promote social isolation. Integrating certified peer specialists’ perspectives of barriers and facilitators to mHealth engagement may promote initial and

sustained mHealth engagement of consumers with SMI. Future research using implementation science frameworks should examine these previously identified barriers and facilitators to mHealth engagement as correlates and/or predictors of engagement among service users.

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Table 1

Sociodemographic Characteristics of Study Participants Whom Completed Qualitative Responses (N=74)

Characteristic	n (%) or M (SD)
Age, years	
Mean (<i>SD</i>)	50.9 (12)
Range	21–77
Sex, n (%)	
Female	59 (80)
Race, n (%)	
Caucasian	57 (77)
Black/African-American	8 (10.8)
Hispanic or Latino	4 (5.4)
Asian	2 (2.7)
Other	3 (4.1)
Primary mental health disorder, N=43 n (%)	
Major depressive disorder	13 (30.2)
Schizophrenia Spectrum Disorders	6 (13.9)
Bipolar disorder	11 (25.5)
Post-Traumatic Stress Disorder	9 (20.9)
Alcohol/Substance Use	4 (9.3)
Personality Disorder	2 (1)
Other	12 (5.8)

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Table 2
 Certified Peer Specialists' Perspective of the Barriers and Facilitators to Mobile Health Engagement (N=74)

	Facilitators	Barrier
Intervention Characteristics		
Affordability	(+) "lower costs of smartphones [would] encourage participation" and "government subsidizes [are needed] for smartphones—not flip phones."	(-) "Limited data due to cost"; "cost"; "monthly expense with the use of the phone"
Formal training	(+) "clear short courses on using a smartphone"; "classes to help them fix things as they come up" and "education on how to get an email address password and use email and texts contacts etc. must show mental health consumers exactly how smartphone will benefit them. They also must understand what they CANNOT use the smartphone for."	(-) "I need help keeping up with technology"; "The smart phone is so powerful, but I am old school and haven't learned to take advantage of it."
Connectivity		(-) "Poor signal in many areas (rural areas, my office is in the basement)"; (-) "Not as fast as other methods of accessing the internet [TABLET]"; (-) "Internet connection"; (-) "The one I have is very slow and now it is not connected to my mobile phone so I cannot use it. [TABLET]"
Peer support: A human factor to promote mHealth engagement	(+) "peer support text messages for those with mental health and physical health issues", "real connection--- The older the peer, the more need for a real person connection", and "assess person's preference about including real person in interventions as social challenges are current for some."	
Characteristics of Individuals		
Physical and psychological barriers to mHealth engagement		(-) "phone so hard to navigate and see" and "difficulty with the strain on the eyes when using in low light conditions and age- related [problems] seeing text and hearing voices") and psychological barriers (i.e., [problems] hearing voices"); (-) "some are fearful of internet risks such as Identity theft" and "not believing the CIA and NSA has tapped their phone or tablet".
Beliefs and preferences	(+) "I much prefer using a tablet than a smartphone"; (+) "laptop and smart phone enough [TABLET]"; (+) "at times it is not necessary [TABLET]"	(-) "I am change averse - using a flip phone"; (-) "Size not as convenient as smartphone size [TABLET]"
mHealth interventions may promote social isolation		(-) "WHEN YOU USE AN APP, YOU ARE ***ALONE***. Unless the app is purely to get people TOGETHER, it ISOLATES"