



Exploring mental health providers' interest in using web and mobile-based tools in their practices



Stephen M. Schueller^{a,*}, Jason J. Washburn^{b,c}, Matthew Price^d

^a Department of Preventive Medicine, Northwestern University, Center for Behavioral Intervention Technologies (CBITs), United States

^b Department of Psychiatry and Behavioral Sciences, Northwestern University, United States

^c Alexian Brothers Behavioral Health Hospital, United States

^d Department of Psychological Science, University of Vermont, United States

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ABSTRACT

A growing number of Internet sites and mobile applications are being developed intended for use in clinical practice. However, during the development process (e.g., creating features and determining use cases), the needs and interests of providers are often overlooked. We explored providers' interests using a mixed-methods approach incorporating both qualitative and quantitative research methods. A first study used an interview approach to identify the challenges providers faced, tools they used, and any use of computers and apps specifically. Fifteen providers from both the United States and Canada completed the interview and recordings were transcribed and analyzed using a constructivist grounded theory approach. Four primary themes were identified including challenges, potential tools, access and usability. A second study used a brief survey completed by 132 providers at a large healthcare system to explore current use of and potential interest in Internet and mobile technologies. Although many providers (80.9%) reported recommending some form of technology to patients, these were mostly Internet websites that were predominantly informational/psychoeducational in nature. Overall, these studies combine to suggest a strong interest in websites and apps for use in clinical settings while highlighting potential areas (ease of use, patient security and privacy) that should be considered in the design and deployment of these tools.

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1. Introduction

Healthcare is being revolutionized by the rapid development and expanding use of digital health tools. These tools include a diverse repertoire of resources such as information storage and access (e.g., patient portals and electronic medical records), communication (e.g., e-mail, text messaging, and video conferencing), and Internet websites, mobile apps, wearables and sensors aimed to promote behavior change. These tools occupy various places within healthcare systems. Some are patient facing (e.g., self-help websites or self-management apps), others are provider facing (e.g., electronic medical records or clinician support tools), while still others help bridge patient-provider communication (e.g., technology-mediated communication or supported interventions). Given this, various stakeholders are involved in the design, development, funding, deployment, and use of these tools (Schueller et al., 2014). The needs of each of these stakeholders can and should be considered during the process of developing these tools and the services that surround them to ensure successful uptake, use and impact (Wu and Wang, 2005).

For the current investigation, we focus on a specific subset of stakeholders, providers of mental health services. Providers are key stakeholders because they are both end users of these tools and because they are gatekeepers to clinical knowledge whom patients rely on for opinions about clinical resources (East and Havard, 2015). A recent report found over 165,000 health apps were available in public app marketplaces with 29% of disease specific apps targeting mental health (IMS Institute, 2015). The adoption of these apps, however, is quite low, with only 36 apps accounting for nearly half of all downloads. The adoption of apps by patients greatly improves when “prescribed” by providers. Mental health apps, in fact, enjoy the highest “fill rate” (i.e., the rate at which patients download apps that their provider recommends) at 72%, when compared to 55% for medication apps or 48% for fitness apps (IMS Institute, 2015). Thus, understanding providers' interest, including their needs and concerns, is imperative to getting these tools in the hands of patients.

Understanding the perspectives and needs of end users is a common practice in user-centered (Norman and Draper, 1986) and participatory design approaches (Schuler and Namioka, 1993), which have become extremely influential in the process of creating software products (Muller, 2003). In light of these approaches, design work usually begins with a user needs analysis that involves characterizing the end users, understanding their goals and activities, identifying common situations,

* Corresponding author at: Center for Behavioral Intervention Technologies (CBITs), Northwestern University, 750 N Lake Shore Drive, 10th Floor, Chicago, IL 60611, United States.

E-mail address: schueller@northwestern.edu (S.M. Schueller).

and appreciating their requirements and preferences (Booth, 1989). Design work is becoming increasingly common in the mental health space as clinical researchers are adopting techniques such as user-centered design (Bruns et al., 2015; Kelders et al., 2013) and usability testing (Vilardaga et al., 2015) into the development process. Specific recommendations for engaging the relevant stakeholders for mental health practice, such as the patient-clinician-designer framework, provide clear recommendations about how to deal with areas specific to this domain such as recognizing the different evaluations goals of each group (Marcu et al., 2011). More work in this vein, especially from a formative approach, could help provide specific recommendations about what providers want when it comes to technologies to enhance their clinical practice.

Much of the research focused on understanding the capacities, needs, and wants of end users has focused on patients. Extant studies have shown that mental health outpatients have the relevant technological infrastructure to access Internet and mobile interventions. Cell phone ownership in this population meets or exceeds the national average (Campbell et al., 2014; Torous et al., 2014a,b). Many of these phones are smartphones (Torous et al., 2014a,b) although mental health outpatients might be slightly more likely to share phones than the general population (Campbell et al., 2014). Patients also report a willingness to use smartphone apps and texting to promote their treatment and mental health (Campbell et al., 2014; Torous et al., 2014a,b) and text messaging interventions are successful and well-liked (Aguilera and Muñoz, 2011).

Provider input on design may also be critical to ensure adoption; however, limited research is available. A recent study aimed to design a program to help implement an online technological platform into existing treatment resources for perinatal depression and anxiety for a given healthcare system (Baumel and Schueller, 2016). In this study, providers were presented with the online platform and interviewed as to how this platform could complement existing treatment and to identify potential problems with using this platform. Providers emphasized the need to train users of the platform – both those providing support and those receiving support – to ensure quality and safety of care. Furthermore, providers outlined several other necessary safeguards to protect patient safety including levels of acuity for which such care would be inappropriate and providing information that the platform was not appropriate for emergency support or crisis situations. Thus, this study suggests that quality and safety are two important considerations in the design of such systems; considerations that may have been missed if the focus had only been on patients and not providers. Although these providers gave a wealth of information through an in-depth interview, the generalizability of these findings are limited in that it was a small group of providers (five) from a single healthcare system.

In light of this, we were interested in exploring providers' attitudes and interests in using technology in clinical treatment using a mixed-methods approach – both qualitative and quantitative data – in diverse populations. This investigation consists of two studies. The first study was a sample of 'front-line' clinical providers based in the United States and Canada that provided qualitative data as to how applications could address the clinical challenges they encounter. Qualitative methods are useful because they provide detailed information about why a provider might be interested, or even opposed to using technology and highlight key themes to be addressed. The second study was a survey of mental health providers in a large healthcare system. This study produced quantitative information regarding the prevalence of certain attitudes and interests and helps reinforce themes identified through the qualitative study.

2. Study 1 – interview study

2.1. Participants and procedures

Participants were ($N = 15$) mental health providers with a primary position in an outpatient clinical setting that was unaffiliated with a

major health network or hospital system. Such providers were selected because they themselves determine what tools to use in clinical care and are responsible for integrating these tools into their practice. Providers in major health networks are more likely to be involved in national rollouts of specific treatment protocols, receive directives to use specific clinical practices, and have access to a dedicated infrastructure that directs the use of technology (e.g., EMR).

A reputational case sampling approach was used to identify providers (Miles and Huberman, 1994). This approach uses the recommendations of key stakeholders to identify participants. For the current study, directors of nationally accredited training programs were identified as key stakeholders. These individuals were selected based on their ability to identify high quality therapists because of their access to 1) prior graduates of their program and 2) therapists in their area. Inclusion criteria included having greater than 20 h of patient contact scheduled per week, having been in practice at least 2 years since obtaining their license, and being in a community or private practice. Training directors were e-mailed and asked to share with their alumni. Prospective participants completed an internet-based screener to determine inclusion/exclusion criteria and gather descriptive information. A total of 27 providers completed the survey and 15 agreed to be contacted for an interview. The remaining participants could not be reached or declined to participate for a response rate of 56%.

Descriptive information for the obtained sample of $N = 15$ individuals is provided in Table 1. The sample was predominantly female (86.7%), with an average age of 40.6 ($SD = 8.59$). Of note is that the sample had an average of 25.73 h of patient contact per week and spent an average of 10.73 h completing auxiliary support work including notes, billing, paperwork, and contacting other providers to coordinate care per week. Twelve respondents identified themselves as providing cognitive-behavioral therapy, 3 as behavior therapy. No providers reported using apps currently in their practice.

Interviews were conducted via telephone given that participants were located across the United States ($n = 14$) and Canada ($n = 1$) and were audio recorded. Qualitative interviews consisted of 6 questions and were designed to build discussion about challenges faced in clinical practice, tools used in clinical practices, and use of technology in clinical practice broadly. All questions were open-ended with follow-up questions asked as needed to probe specific answers. Mean interview time was 28.02 ($SD = 5.29$) minutes. Interviews were transcribed for coding.

2.2. Data analysis

Coding used a constructivist grounded theory approach (Mills et al., 2006). Two coders, a clinical psychologist and a trained bachelor's level research assistant, reviewed all interviews three times individually. The first review involved reading and listening to all interviews for thematic content. Through several discussions, the coders then identified primary

Table 1
Descriptive statistics for sample in Study 1.

	<i>N</i>	%
Female	13	86.7
Degree		
MSW	1	6.7
Clinical Psychology PhD	10	66.7
RN	1	6.7
Other	3	20.0
	<i>M</i>	<i>SD</i>
Age	40.6	8.59
Numbers of years licensed	9.67	5.81
Hours of patients scheduled per week	27.20	13.77
Hours of patient contact per week	25.73	6.10
Auxiliary hours per week	10.73	5.13
% of clinical time adhered to EBP	81.07	18.47

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