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Challenges and Opportunities in Internet-Mediated Telemental Health

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The use of technology to provide remote psychological assessment and intervention services is growing rapidly. Remote assessment, treatment, training, and consultation options, particularly those provided via the Internet (e.g., videoconferencing, self-help Web sites, handheld devices), have the potential to increase access to high-quality psychological services. Despite the promise of these technologies, a variety of clinical, ethical, and logistical challenges accompany the remote delivery of such services. Among these challenges are issues involving security, competence, the therapeutic alliance, usability, and technical difficulties. We elucidate some of the challenges posed by these technologies and suggest preliminary recommendations for psychologists considering their use.

Keywords: telemental health, remote treatment, distance treatment, technology, Internet

Psychologists have developed effective treatments for a wide range of problems, yet most individuals struggling with psychopathology do not receive the treatment they need (Grant et al., 2005; Kohn, Saxena, Levav, & Saraceno, 2004). Specialist mental health providers can be difficult to find in metropolitan and especially in rural areas of the United States. Even when high-quality care is geographically available, people with psychopathology may have difficulty accessing it because of logistical barriers such as limited transportation, physical disability, scheduling difficulties, and limited finances (Olfson et al., 2000). Moreover, many are reluctant to seek care because of anxiety-linked fears of leaving home, traveling, and interacting with unfamiliar people (i.e., the therapist) or concerns over stigmatization (Olfson et al., 2000).

An urgent issue in mental health care today is how to increase access to psychological services for individuals who are unable or unwilling to use such services. Over the past several years, technological advances in Internet-based communication have occurred at a rapid and continually evolving rate, creating the potential to make psychological services more convenient and accessible to consumers. In this article, we describe some of the technologies currently being used, as well as various challenges and opportunities that accompany their use.

Internet-based services can be provided using several technological platforms, including Web sites, videoconferencing applications, and hand-held devices. Advantages of these technologies include their ease of access and increasingly widespread use. Remote treatments allow individuals who are unable or unwilling to seek in-person treatment to obtain services while located at a preferred place such as their home, workplace, or even hotel room if traveling. Long-distance treatment also saves travel-related time and money.

Preliminary studies examining the effectiveness of remote psychological treatment have produced varying results. Although research findings to date are generally encouraging, caution must be exercised when interpreting results because most studies contain small sample sizes, have an uncontrolled or nonrandomized research design, or both. Additional research will increase understanding of which types of remote treatments are effective for specific disorders.

Internet-Based Self-Help Web Sites

Internet-based self-help programs typically consist of interactive Web site modules to be completed independently by an individual.

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Modules may consist of psychoeducational reading materials, videos, behavioral activities, quizzes, monitoring forms, and the assignment of homework. Web site content can be dynamically generated and tailored to the patient on the basis of input typed into the Web site. For example, negative cognitions that are entered into a site can subsequently be displayed to the patient during Socratic questioning exercises (Berger, Hohl, & Caspar, 2009). Contact with a psychologist or other mental health care provider may range from no contact to limited contact through e-mail, telephone, or in-person meetings.

Research has demonstrated that Internet-based self-help Web sites can be helpful for reducing symptoms for a variety of disorders, including panic disorder with agoraphobia (Bergström et al., 2010; Carlbring, Bohman, et al., 2006; Carlbring et al., 2005; Farvolden, Denisoff, Selby, Bagby, & Rudy, 2005; Kiropoulos et al., 2008; Nordgreen et al., 2010), social anxiety disorder (Berger et al., 2009; Carlbring, Furmark, Steczko, Ekselius, & Andersson, 2006; Carlbring et al., 2007; Kiropoulos et al., 2008; Titov, Andrews, & Schwencke, 2008; Titov, Andrews, Schwencke, Drobny, & Einstein, 2008), posttraumatic stress disorder (PTSD; Klein et al., 2009; Litz, Engel, Bryant, & Papa, 2007), and depression (Andersson et al., 2005; Christensen, Griffiths, Korten, Brittliffe, & Groves, 2004; Clarke et al., 2005; Perini, Titov, & Andrews, 2009). Internet-based self-help Web sites have also been used to deliver behavioral health interventions, such as for smoking cessation (Etter, 2005; L. H. G. Swartz, Noell, Schroeder, & Ary, 2006) and promotion of physical activity (Spittaels, De Bourdeaudhuij, & Vandelanotte, 2007). Furthermore, several randomized controlled trials comparing in-person treatment with Internet-based self-help treatments have demonstrated that self-help Web sites produce results comparable to in-person treatments (Bergström et al., 2010; Carlbring et al., 2005; Kiropoulos et al., 2008). Several studies have also demonstrated that posttreatment improvements from Internet-based self-help treatments are maintained at follow-up (Carlbring et al., 2005; Carlbring, Nordgren, Furmark, & Andersson, 2009; Titov, Andrews, Johnston, Schwencke, & Choi, 2009).

Videoconferencing

Videoconferencing therapy involves real-time video and audio transmission between individuals in different physical locations. Individuals can make private videoconferencing calls and converse while viewing the other party on their screen. The required equipment typically includes a computer, Web camera, and broadband connection. The use of videoconferencing through mobile phones and through Internet-enabled TV is also expanding rapidly (O'Brien, 2011). In another model, several Veteran Affairs medical centers provide long-distance treatments by having patients travel to community-based outpatient clinics nearby the patients' homes to receive videoconferencing treatment using a system of monitors that connect through secure LAN connections (Tuerk, Yoder, Ruggiero, Gros, & Acierno, 2010).

Numerous studies have used videoconferencing to provide remote mental health services. Videoconferencing has been successfully used to treat PTSD (Frueh et al., 2007; Germain, Marchand, Bouchard, Guay, & Drouin, 2010; Tuerk et al., 2010), social anxiety disorder (Yuen et al., 2010), panic disorder with agoraphobia (Bouchard et al., 2004), obsessive–compulsive disorder (OCD; Himle et al., 2006), anxiety in cancer patients (Shepherd et al., 2006), and depression in adolescents and children (Pesämaa et al., 2004). Randomized controlled trials have found that videoconferencing treatment is as effective as in-person treatment for childhood depression (Nelson, Barnard, & Cain, 2006) and a variety of problems in a community counseling center (Day & Schnider, 2002). Preliminary research has found that patients are generally satisfied with videoconferencing treatment (S. Simpson, 2009; Yuen et al., 2010).

Handheld Devices

The telephone is another medium through which to provide long-distance treatments to patients. Telephone counseling and support have commonly been used to treat tobacco and nicotine dependence (S. H. Swartz, Cowan, Klayman, Welton, & Leonard, 2005). Research has supported the use of telephone-based therapy to treat OCD (Lovell et al., 2006; Taylor et al., 2003; Turner, Heyman, Futh, & Lovell, 2009), depression (Lynch, Tamburrino, & Nagel, 1997; Mohr et al., 2005; Mohr, Hart, & Marmar, 2006; Mohr, Hart, & Vella, 2007; Ransom et al., 2008), insomnia (Bastien, Morin, Ouellet, Blais, & Bouchard, 2004), and obesity (Befort, Donnelly, Sullivan, Ellerbeck, & Perri, 2010; Donnelly et al., 2007; Sherwood et al., 2006; VanWormer et al., 2009). The dramatic growth in the number of individuals owning mobile handheld devices, such as mobile cell phones, provides additional opportunities to enhance remote treatment. Eighty-five percent of U.S. adults currently own a cell phone (Zickuhr, 2011). Mobile phones are more portable and less cumbersome than computers and provide opportunities for the patient to engage in behavioral exercises in various locations in the real world, with the therapist observing or listening and providing feedback.

Furthermore, an increasing number of individuals are using their mobile phones (i.e., smartphones, which afford advanced computing and Internet connectivity) to access the Internet. A recent study found that 38% of U.S. adults currently access the Internet by mobile phone (Zickuhr, 2011), and technology analysts have predicted that the mobile phone will be the primary tool for connecting to the Internet by 2020 (Anderson & Rainie, 2008). Most smartphones already offer videoconferencing capability, which is rapidly becoming a standard feature. With more recent mobile smartphones, such as the iPhone and Droid-based devices, individuals or companies can use the application programming interface to develop third-party applications ("apps") that can be downloaded and installed onto phones for easy access. Apps can provide users with self-help programs, such as sophisticated ways to conduct self-monitoring (e.g., caloric intake, hair-pulling), or offer real-time coaching (e.g., relaxation training).

Access to Technology

The financial costs for providers and patients to obtain or access the technology for remote treatment can range from just a few dollars to thousands of dollars. A large number of Americans already own computers and pay for Internet and telephone services, leading to minimal or no additional expenses for the required technology. Seventy-six percent of adult Americans already own a computer (Zickuhr, 2011). More than three-quarters of Americans now have Internet access in their homes (Horrigan,

2008), with an increasing number (63% in 2009; Horrigan, 2009) adopting broadband (i.e., high-speed) Internet connections.

However, a substantial proportion of individuals with psychological difficulties still do not have access to high-speed Internet or to a computer, and 21% of Americans do not identify themselves as Internet users (Horrigan, 2009). Therefore, certain remote treatments may be unavailable to individuals without Internet access. However, it is worth noting that rural and low-income Americans display the largest recent growth in broadband connectivity (Horrigan, 2009). In addition, individuals without basic Internet or telephone services may have the option of going to a family member's or friend's home to use the technology or to a public library, some of which have private rooms with Internet-connected computers that can be reserved.

Security, Confidentiality, and Privacy-Related Issues

The security of electronic information is a major issue that comes to mind when considering telemental health. Treatment frequently involves the exchange of written materials between therapists and patients (e.g., homework forms). Methods to increase the security of these exchanges include password protection of documents and encryption technologies, such as secure socket layers, to establish an encrypted link between a Web server and a browser (Midkiff & Wyatt, 2008).

Although advances have been made in the efficiency of electronic transmissions, the security of these modes of communication cannot be 100% guaranteed. To date, there are no statistics on the overall prevalence of security breaches consequent to telehealth (Bennett, Bennett, & Griffiths, 2010). Mental health providers should fully disclose to patients any privacy risks associated with Internet-based communication. Additionally, in our own work, we find it important to inform patients and research participants of the user policies of any third-party applications. For instance, Skype's current user policy allows Skype to collect profile information (e.g., country of residence), electronic identification data (e.g., cookies, Internet provider addresses), and information about usage of Skype (e.g., bandwith, traffic to and from Skype Web sites) for customer service and quality improvement purposes. Users should be aware that personal information is collected by the Skype application and may be shared with Skype's group companies, carriers, and partner service providers (e.g., wi-fi access service providers).

Competence

Also germane to the delivery of Internet-mediated psychotherapy is the issue of competency in a remote setting. Online therapists may be limited in their ability to observe the patients' appearance and behaviors. For example, current videoconferencing applications cannot capture body odor or pupil dilation, and the limited camera view may not fully display body language such as eye contact, fidgeting, leaning, posture, and subtle facial expressions. Although limited access to such cues is a topic that merits further research, in the absence of compelling data to the contrary, one should not assume that such limitations will necessarily adversely impact assessment and treatment efforts, particularly given the promising findings to date on the effectiveness of Internet-mediated treatment.

With both remote and in-person treatments, psychologists need to be competent to handle psychopathology of varying degrees of severity. It is possible that individuals with more severe difficulties may be more willing to seek treatment online than in person (Yuen et al., 2010). Seeking treatment typically involves making a phone call to set up the appointment, leaving home and traveling to the therapist's office, sitting in the waiting area with other patients, and then speaking to the therapist, who is initially a stranger. This process may seem overwhelming for individuals with severe symptoms who stay inside their homes to avoid anxiety. For example, a common feature among individuals with PTSD, panic disorder, OCD, social anxiety, and depression is that many will avoid public places where other people are present. Remote treatment removes some of these barriers, and individuals with severe anxiety or depression may be more willing to speak to a therapist from inside the security of their own home. Although attending therapy sessions in person can be a form of exposure or behavioral activation in and of itself, these patients may not initially be willing to travel to a professional's office. During remote treatment, therapists can orient patients to the treatment model (e.g., exposure or behavioral activation) and have patients engage in therapeutic behavioral activities both in session and out of session for homework. The implications are that providers offering remote treatments should be prepared to work with patients with greater psychopathology and handle the resulting difficulties and potential crises that may occur.

Remote Exposure Therapy

Several clinical issues surrounding Internet-based intervention can be illustrated by considering exposure-based treatments for anxiety disorders. Remote exposure therapy that involves regular therapist contact will be partially limited by what exercises can be conducted during treatment sessions. For in-person behavioral treatment of anxiety disorders, many therapists use in-session exposure exercises by physically bringing the patient to a specific location related to the patient's fears, such as bringing a patient with OCD to a public restroom and having him or her touch the toilet seat. A disadvantage to remote treatment is that in-session exposure exercises are limited to scenarios that can be completed through the technology medium being used. Nevertheless, therapists can be creative in using technology to assist in conducting therapeutic behavioral assignments, including exposure exercises. For example, the therapist may have the patient touch the toilet seats in his or her own house during the session.

In our own research using Skype videoconferencing to treat social anxiety disorder, patients successfully engaged in exposure during sessions by practicing social situations (e.g., initiating conversations with strangers, group conversations at a party, public speeches) with confederate role players seated in front of a Webcam in the same room as the therapist. Patients reported increases in anxiety when first engaging in the exercise and then subsequent habituation on repeated exposure (Yuen et al., 2010). These in-session exposures were gateways to the patients engaging in more difficult real-life exposures for homework.

In another of our treatment studies of social anxiety disorder, we successfully treated patients with exposure therapy in the online virtual environment called Second Life (Yuen et al., 2010). Using avatars (i.e., graphical characters), patients met with their thera-

pists in a virtual therapy room and practiced social situations with confederate role players (who controlled their own avatars) in virtual environments, such as bars and work conference rooms. Communication occurred through headsets whereby patients could speak to and listen to their therapist and the role players. Participants in this study also experienced a rise in anxiety during exposure and then subsequent habituation. Both the Skype videoconferencing and Second Life virtual environment studies demonstrated success in efficacy, user acceptance, and feasibility in these remote behavioral treatments.

Another method of achieving remote in-session exposure is to have patients bring their laptop or mobile phone to a public location to complete an exposure while the therapist observes or listens. In some scenarios in which it is not feasible for the therapist to accompany the patient in person to an exposure scenario (e.g., work situation, family gathering), remote treatment may actually provide a major advantage over traditional in-person treatment in allowing the patient and therapist to remain connected before, during, and after the exposure. For example, a patient may connect to his or her therapist through a mobile phone and then practice assertiveness skills in his or her actual workplace, allowing the therapist to listen in and then provide feedback immediately thereafter. In addition, the therapist may assign a wide range of non–therapist-guided exposure exercises in outside locations for homework.

Therapist–Patient Relationship

The nature and quality of the therapist–patient relationship may be different in a remote treatment setting than in an in-person environment (Jerome & Zaylor, 2000). For example, patients may have limited contact with a mental health care provider when using a self-help Web site. For some patients, reading self-help modules with limited therapist interaction may be insufficient to motivate them to engage in behavioral exercises, such as behavioral activation and exposure, especially for those with greater levels of impairment. Incorporating direct conversations with therapists (e.g., via periodic telephone calls) into a self-help Web site treatment program may increase adherence and result in greater motivation and accountability to complete homework exercises (Andersson et al., 2006, 2007). Future research can explore how treatment adherence is affected when patients engage in self-help programs with or without regular contact with a therapist who can help tailor treatment to a specific individual. In addition, a stepped-care model can offer patients self-help interventions as the first line of treatment and then offer additional services for those who require further treatment.

The quality of communication between therapist and patient will vary depending on the mode of remote communication that is used. Modes that offer visual communication (e.g., videoconferencing) may enhance the therapeutic relationship by allowing the therapist to observe the patient's behaviors and assess his or her social skills. Furthermore, making eye contact and viewing encouraging body language from the therapist may lead patients to feel more comfortable and enhance self-disclosure. However, as noted earlier, a Webcam will typically capture only a limited view of the patients' and therapists' body language and facial expressions, depending on video quality and position of the camera. Therefore, therapists should recognize the limitations of nonverbal communication through videoconferencing.

Some preliminary research has suggested that remote interventions do not negatively affect the therapeutic relationship. Research has shown that patients receiving remote therapy can feel a strong alliance with their therapist (Bouchard et al., 2004; Cook & Doyle, 2002). For example, no significant differences were found in quality of therapeutic alliance when cognitive–behavioral therapy for PTSD was delivered in person rather than through videoconferencing (Germain et al., 2010). Findings from several studies have suggested that some patients prefer videoconferencing to in-person treatment because they feel more comfortable revealing personal information in a remote environment (Himle et al., 2006; Jerome & Zaylor, 2000; J. Simpson et al., 2001). Despite these encouraging preliminary findings, additional research is needed to clarify under what conditions the therapeutic relationship is positively or negatively affected relative to in-person treatment. Furthermore, the specific type of therapy and the role of the therapist will likely moderate the impact of the therapeutic relationship on treatment outcome.

Technological Problems

It is inevitable that technological difficulties will sometimes arise with remote treatments. Some technical problems, such as incorrect video or sound configurations, are the result of human error, underscoring the importance of properly training therapists and patients in the correct usage of the computer application and equipment, as well as how to troubleshoot technical problems. Other technical difficulties, such as poor sound and video quality, are the result of poor Internet connections or disturbances within the application itself, highlighting how the quality of the hardware and software can affect the quality of treatment. Wireless Internet, as opposed to cable or DSL, may lead to lower quality connections, depending on the quality of hardware being used, signal strength, and distance between the router and the computer. The impact of technical difficulties may result in the inability to complete the therapy session, feelings of frustration, difficulty hearing, disruption to the flow of the session, and wasted time.

Mental health providers can take steps to reduce the technical difficulties experienced during remote treatments. Training for therapists and patients in setting up the application and troubleshooting technical difficulties can substantially reduce the frequency of technical problems resulting from both human and non–human error. In our own practice of Internet-mediated therapy, we have found it useful to provide patients with illustrated step-by-step instructions, as well as to schedule a pretreatment remote meeting to teach patients how to use the application and troubleshoot technical problems. Therapists should recognize that technical difficulties will inevitably occur and allow for adequate time to troubleshoot such problems. Technical difficulties during sessions can be expected to decrease as therapists and patients gain familiarity with and skill in the applications (Yuen et al., 2010). Technical problems that arise from slow Internet connections can be improved by using non–wireless Internet connections, closing nonessential applications, and rebooting the computer immediately before the session. The use of higher quality Webcams and headsets can also improve the audio and visual quality.

It is also helpful for the therapist to encourage patients to verbalize any technical difficulties they experience; otherwise, the therapist may not realize that the patient is unable to adequately see or hear parts of the therapy session. Self-help Web sites should provide instructions to patients about whom to contact for technical assistance. Both hardware (e.g., computers, Internet connectivity) and software (e.g., applications) can be expected to continue to improve rapidly in quality and speed, and as this newer technology becomes more accessible to the general public, certain technical difficulties will decrease, leading to smoother therapy sessions with fewer interruptions. For example, videoconferencing through mobile phones has grown more popular at the same time as smartphones and wireless networks have grown more advanced in their ability to efficiently handle heavy video traffic (O'Brien, 2011).

Application Development and Maintenance

Another issue worth consideration relates to the development and maintenance of technology applications. For example, self-help Web sites can be costly to develop and maintain, in terms of both time and money. Monetary costs include hiring a team of programmers to create the Web site and paying for a service to host the Web site. Web site development involves several phases, including needs assessment, design, development, testing, and evaluation. After the Web site is released, it will require additional maintenance, such as content updates, responses to user inquiries, technical support to users, and coding updates to address technical problems. Web sites that are not properly maintained face ethical and legal liability because they run the risk of providing out-of-date information or leaving users who started the intervention without the ability to complete the treatment program because of insufficient guidance or technical support.

Usability, which refers to the user's experience in interacting with the application, may have a significant impact on the success of a remote treatment. Applications that are difficult or frustrating to use may affect the patient's motivation and ability to continue using the Web site and engage in the treatment (Lenert et al., 2003). Several published studies of self-help Web sites have described how usability testing led to an improved user experience (Ferney, Marshall, Eakin, & Owen, 2009; Hinchliffe & Mummery, 2006; Leslie, Marshall, Owen, & Bauman, 2005; Stoddard, Augustson, & Mabry, 2006; Taualii, Bush, Bowen, & Forquera, 2010). Usability issues can be identified through formal usability testing, which involves recording and analyzing the experience of representative participants using the application. Focus groups, which involve demonstrating an application and collecting feedback from representative users, can also uncover usability issues (Kinzie, Cohn, Julian, & Knaus, 2002).

Remote Psychological Assessment

Technology also provides opportunities for remote psychological assessment. Some psychological assessment measures (e.g., self-report symptom checklists) are particularly conducive to electronic delivery. Structured clinical interviews can be conducted using technologies such as videoconferencing applications. Other types of assessment are a greater challenge to deliver remotely, such as a thorough mental status exam that assesses qualities such as gait, posture, body tics, and personal hygiene. Potential advantages of conducting psychological assessment remotely include greater honesty in self-report (Davis, 1999), greater outreach (Buchanan, 2002), and increased convenience and efficiency. However, the psychometric properties of most psychological assessment instruments have not been established via remote delivery (Buchanan, 2002). Furthermore, making self-report instruments available online raises ethical and legal issues (e.g., copyright violations if the measures are copied by lay individuals).

Long-Distance Clinician Training

Internet-based technologies can also be used to assist with providing remote training and supervision to psychological service providers, particularly for those who do not have in-person access to specialized experts or training programs. Remote training opportunities for providers will subsequently increase the accessibility of specialized treatments to patients. For example, CPT*Web* (http://cpt.musc.edu) is an online training course in delivering cognitive processing therapy for PTSD; a similar program, TF-CBT*Web* (http://tfcbt.musc.edu) is a training course in trauma-focused cognitive–behavioral therapy (Cohen, Deblinger, & Mannarino, 2006).

Web site–based education allows front-line providers to participate in clinical trainings at the location and time of their choosing, without having to travel to in-person trainings. However, clinicians using online training programs will likely have questions or concerns that need to be addressed by a live person. Therefore, users of online training programs are encouraged to supplement their training with regular supervision by experienced professionals. Supervision can also be conducted remotely, particularly through the use of phone and videoconferencing.

Conclusions

Using technology to provide remote interventions is becoming an increasingly feasible and convenient method of disseminating psychological treatments to patients in need. Technologies that are currently taken for granted did not exist, or were far less widely used, just a few years ago. As new technology continues to evolve and become more accessible to the general public, so do the opportunities for psychologists to expand delivery of high-quality treatments to a growing population that is eagerly embracing innovative and more expedient modes of communication. When technology is used efficiently, it can be more convenient and cost-effective for both consumers and providers. Additionally, because technology makes high-quality mental health treatment more accessible, it has the potential to foster healthy competition and subsequently raise the market standard of psychological services.

Telemental health also presents psychological service providers with a wide range of clinical, technical, and ethical challenges. Despite these challenges, psychologists can take steps to provide high-quality remote services and assist patients in making informed decisions about remote treatment participation. Moreover, the preliminary literature has suggested that remote treatments can be as effective and acceptable as in-person treatments in many cases.

Telemental health is still in its early stages and continues to evolve and become more widely used by psychological service providers. Guidelines for acceptable and ethical practice continue to be debated and are expected to become more defined over the next decade. More research is needed to assess the effectiveness of remote treatments and to explore possible moderators of treatment outcome. We hope that the American Psychological Association and other governing bodies (e.g., state licensure boards) will use the growing database of empirical findings (rather than clinical lore or supposition) to inform guidelines that balance patient protection with the imperative of taking full advantage of technological developments to disseminate high-quality psychological services.

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