Psychiatr Q (2006) 77:335–342
DOI 10.1007/s11126-006-9019-6

ORIGINAL PAPER

Telepsychiatry and e-Mental Health Services: Potential for Improving Access to Mental Health Care

Kaye L. McGinty, M.D. · Sy Atezaz Saeed, M.D. · Scott C. Simmons, M.S. · Yilmaz Yildirim, M.D.

Published online: 23 August 2006

Abstract Reforming mental health care is a focus of many ongoing initiatives in the United States, both at the national and state levels. Access to adequate mental health care services is one of the identified problems. Telepsychiatry and e-mental health services could improve access to mental health care in rural, remote and underserved areas. The authors discuss the required technology, common applications and barriers associated with the implementation of telepsychiatry and e-mental health services.

Keywords: Telepsychiatry · E-mental health · Interactive videoconferencing · Mental health care access · Mental health care

Introduction

Access to adequate mental health services is still problematic in many parts of the United States, especially rural areas. The New Freedom Commission on Mental Health highlighted these problems and called for a transformation of the mental health care delivery system in the United States. This transformed system would be focused on building resilience and facilitating recovery [1]. One way to address these identified disparities would be promoting the use of telepsychiatry and e-mental health services.

Telepsychiatry is the delivery of psychiatric services over distances, especially via interactive videoconferencing. E-mental health relates to mental health services provided through any form of electronic medium, most commonly Internet or telephone [2]. The development of telepsychiatry has been driven by multiple factors including efforts to improve access to mental health services, to improve quality of care, to provide more community-based

K. L. McGinty, M.D. (✉) · S. A. Saeed, M.D. · Y. Yildirim, M.D.
Department of Psychiatric Medicine, Brody School of Medicine at East Carolina University, Greenville, NC 27834, USA
e-mail: mcgintyk@ecu.edu

S. C. Simmons, M.S.
Telemedicine Center at East Carolina University, Greenville, NC 27834, USA

services and to integrate psychiatric services with other medical services, especially primary care [3]. Telepsychiatry and e-mental health provide expanded opportunities for clinical care, administration, education and research in mental health disciplines.

Indeed, the pivotal role of telepsychiatry in transforming the U. S. mental health system was articulated by the New Freedom Commission on Mental Health [1]. The report stated: "telehealth and e-health technologies hold great promise for improving access to mental health care in many rural, remote, and other underserved areas (p. 81)." The commission went further to include this recommendation: "Recommendation 6.1: Use health technology and telehealth to improve access and coordination of mental health care, especially for Americans in remote areas or in underserved populations (p. 79)."

Technology

Telepsychiatry primarily involves interactive audiovisual conferencing systems over high-capacity (high-bandwidth) networks. The central component of interactive telepsychiatry is the codec (coder/decoder), which provides the requisite compression and decompression, and synchronization of audio and video signals. Most often, a codec is a separate device (appliance), but personal computer (PC)—based codecs are increasingly employed as their capabilities improve. A codec is required at both the patient and consultant ends of the system. A typical telepsychiatry setup also includes a video camera, microphone, speakers (or headset), and one or two displays (monitors) at each end of the system. Often, separate displays or a picture-in-picture (if one display) are used to enable participants to see both outgoing (preview) and incoming video. Another consideration is pan-zoom-tilt control of video cameras. This allows the consulting mental health professional to remotely control his or her view of the patient's site or locally control the view that is being transmitted to the patient. Although not formally documented in the literature, some mental health professionals have used this capability to zoom in on themselves when an important point is discussed or zoomed out to be less threatening in certain situations.

Historically, interactive telepsychiatry applications have used point-to-point network connections, usually as full or fractional T-1 or Integrated Services Digital Network (ISDN) circuits. However, the rapid diffusion of Internet and Ethernet networks has led to the development of videoconferencing systems that can work over these types of networks, i.e. Internet Protocol (IP) networks. Most interactive telepsychiatry applications use a minimum of 384 kbps bandwidth, regardless of whether dedicated circuits or IP networks are used. If the telepsychiatry application uses IP networks, then security must be ensured – this can be accomplished by using encrypted codecs or by setting up a virtual private network (VPN) and/or virtual local area networks (VLAN). The principal advantage of IP networks is that they can be shared by multiple applications, e.g. Internet access, e-mail, LAN, etc., given that the aforementioned security solutions are employed. This means that the telecommunications (network) costs can be shared, or considered a sunk cost (i.e. not an additional cost to the telepsychiatry application).

Applications

Telepsychiatry has many applications including clinical care delivered via various consultation models, programmatic/administrative consultation, education/training, and research. Points of service are variable including outpatient clinics; hospital emergency rooms;

patients' homes; group homes; nursing homes; homeless shelters; hospices; schools; forensic facilities [4] and on the battlefront [5]. The various applications for telepsychiatry and examples of points of service will be explored further. E-mental health applications are emerging and will be mentioned as applicable.

There are various types of psychiatric consultation used in telepsychiatry to deliver clinical care including direct patient care with patients referred to the psychiatrist, the consultation care model with the primary care physician as the principal provider of mental health services, and the collaborative care model with the mental health services provided jointly by the primary care physician and psychiatrist. Hilty and colleagues [6] have described the use of telepsychiatry in providing consultation services and found the satisfaction of the primary care physicians improved over time. The points of service for clinical care with telepsychiatry consultation are limitless as described in the previous paragraph and have been used with every age group of patients [7].

Psychological services have also been provided via telemedicine. Psychometric assessments using interactive videoconferencing have been studied by various authors with mixed results [8]. Some of the problems encountered include lack of direct eye contact, poor sound quality, difficulties hearing instructions and image clarity. Most descriptions of remote psychological therapy have used a hybrid form of delivery with a face-to-face assessment followed by an interactive videoconference treatment. Simpson and colleagues [9] reported that the majority of patients rate high levels of satisfaction with this type of therapy delivery. Computer systems are widely used now to assist in assessment, history taking, diagnostic interviewing, consumer health education and some forms of behavioral modification. However, the evidence for the efficacy or feasibility of online therapy is limited compared to the interactive videoconferencing applications for mental health problems [10].

Programmatic consultation refers to groups who are served by the consultant through actual observation and participation. Telepsychiatry offers many opportunities to provide consultation to programs that are difficult to access geographically or logistically in a typical workday. Programmatic consultation is directed toward broader organizational change in hopes of improving the care provided. Broder [11] described programmatic consultation in Canada to eleven child and adolescent psychiatric treatment programs. She noted the importance of consistent group attendance; usefulness of the adult learning concepts; and the need to empower the group to identify goals and solve problems.

Educational and training initiatives have been delivered using telemedicine including patient and family education [12], continuing provider education [12, 13], undergraduate and graduate medical education [14, 15] and clinical supervision [16]. These initiatives are further strengthened by the use of the Internet for educational and training purposes. Telepsychiatry can be particularly useful to supervise trainees [15] and for continuing education of professionals at distant sites. This educational mission has been considered important by many telepsychiatry programs due to the importance of reducing isolation, as well as improving knowledge and job satisfaction for mental health care staff located in rural or remote areas. In Australia, telepsychiatry has allowed psychiatry and psychology trainees to access supervision through videoconferencing allowing them to take advantage of the rich experience of rural psychiatry while continuing to receive quality supervision [15]. Faculty at the University of California at Davis has developed telepsychiatry curricula, training for consultations, selective rotations, advanced required rotations and elective research rotations for psychiatry and family medicine/psychiatry residents. The curriculum is divided into a regular module for the second year residents and an advanced module for fourth year residents with the goal of helping them acquire knowledge to prepare for their telepsychiatry clinical

experience [14]. Continuing education programs using telemedicine are becoming more common. Psychiatric educational programs were delivered to community mental health workers and primary care physicians via interactive videoconferencing as part of a US National Rural Health strategy [13]. This format was seen as satisfying educationally, reduced provider isolation and allowed for more time available for patient care [12, 16, 17]. Teshima [18] described the continuing education program at the University of Toronto for child mental health professionals that included 53 sessions on 15 topics from 2002 to 2005. The program evaluations concluded that telepsychiatry conferences are an appealing educational experience for providers; seminars can be delivered successfully via videoconferencing to multiple and diverse distant sites; and seminars can be delivered according to the principles of effective continuing education models.

Research applications in telepsychiatry include reliability studies, clinical outcome studies, patient and provider satisfaction studies, cost-effectiveness studies and integrating and organizing telepsychiatry into daily practice. Several studies have evaluated the reliability of telepsychiatric services [7]. Patients of all ages have been studied and these studies compared telepsychiatry interventions with in-person care, or telephone care. A wide range of psychiatric disorders were reliably diagnosed with high interrater reliability [7]. Hilty and colleagues [19] reviewed the clinical outcome studies and the data indicates telepsychiatry may improve outcomes or stabilize patients with chronic courses. However, Demiris and colleagues [20] reported that only 4.7% of telemedicine studies were randomized and therefore the results could be in question. Overall patient satisfaction with telepsychiatry has been very high [7]. Several themes have emerged from the research studies including that most patients speak freely and rate the experience with the specialist positively [21]; patients prefer services with visual cues rather than telephone services alone [21]; and children [22, 23], adolescents [24], adults [7], and geriatric patients [25] appear to be equally satisfied with telepsychiatry. There are few studies on provider satisfaction with telepsychiatry. Provider satisfaction with telepsychiatry has had mixed reviews with some noting a positive experience and others noting problems with the process and quality of the interpersonal relationship [23, 26]. Interestingly, rural providers had significantly higher satisfaction than suburban or urban providers. Hailey and colleagues [27] report that published cost-effectiveness studies of telepsychiatry are suspect because the quality of the data is suboptimal and little information has been collected in a systematic, controlled, prospective fashion. When considering costs it is recommended that direct and indirect costs should be collected for patients, clinics, providers, and society at large. Integrating and organizing telepsychiatry into daily practice is a major challenge for the near future and McLaren and colleagues [28] suggest that research examining the human- and change-management issues that have to be overcome is sorely needed.

Potential barriers to the dispersion of telepsychiatry

Although telepsychiatry and e-mental health offer a tremendous promise, implementation has been neither widespread nor easy to achieve. Several potential barriers to the diffusion of telepsychiatry and e-mental health have been identified. Some of the barriers are associated with the acceptance of any new technology and practice in health care. Usual impediments include cost issues, resistance to change by individuals or organizations, and technological illiteracy. In addition, several legal, regulatory, and technical factors further hinder the implementation of telemedicine in general. Common potential barriers to the dispersion of telepsychiatry will be discussed.

Integrating technology and evidence into practice

Physicians and other providers do not always have easy access to timely, relevant evidence-based information on a consistent basis. When they do have such information, there are other challenges with integrating the information into their routine practice such as time constraints and demands of their work environments including the complexity of large health care organizations and access to technical support. Two studies from Michigan found that after controlling for other barriers such as reimbursement and regulatory issues, providers are the most significant initial gatekeeper affecting the use of telehealth. Therefore, they recommended that telemedicine project managers must keep providers' needs, such as ease of use and incentives, in mind when designing a telemedicine system [29].

Reimbursement

Medicare reimbursement for telemedicine started in 1999, and some of the original limitations in the payment scheme have been addressed [30, 31]. Approximately half of state Medicaid programs, and many third-party payers, provide reimbursement for telehealth services, with similar limitations as seen with the Medicare program. A "fee-for-service" approach is used for payment that reimburses the consulting physician or mental health professional for their time. To meet the requirements for reimbursement the following conditions must be met. The telemedicine encounters must be interactive (i.e. bi-directional videoconferencing), with both the consulting provider and the patient present. Reimbursement in telepsychiatry is typically provided for a diagnostic interview, pharmacologic management, and individual psychotherapy provided by psychiatrists and clinical psychologists [32]. Services provided by other mental health providers are not currently covered in most states. However, social workers and other mental health providers practicing in Utah are currently being reimbursed for their services [33].

The American Psychiatric Association's Resource Document on Telepsychiatry via Videoconferencing [32] has two suggestions regarding this issue. First, reimbursement for telepsychiatry services should follow customary charges for the delivery of the appropriate CPT code(s). Secondly, a structure for reimbursement of collateral charges, such as technician and line time, should be identified.

Impacting practice behavior

Sustained change in workplace behaviors requires a restructuring of the flow of daily work so that routine procedures make it natural for the clinician to give care in the new way. If the goal of the organization is to promote the use of telepsychiatry, then telepsychiatry must be integrated with the current process of delivering patient care. For successful implementation, both providers and consumers must see this method as an approach to treatment that is likely to increase the possibility of a successful outcome, increase access, or enhance quality. For the change in practice behavior to occur, intention to change must be combined with the necessary skill, and the environmental constraints must be removed [34].

Licensure

In the United States it is required that physicians possess a medical license in each state in which they practice medicine. Therefore, for a physician to conduct a telemedicine consultation with a facility in another state, that physician must be licensed by both states'

licensing boards. Likewise, nurses and other allied health professionals have similar state licensing constraints. Three potential solutions have been suggested including establishing a national licensing system; assigning the responsibility of care to the referring physician, with the consulting physician's opinions as "recommendations only,"; or determining that the patient is being "electronically transmitted" to the consultant's state [35].

Privacy, security and HIPPA

The Health Insurance Portability and Accountability Act of 1996 (HIPPA) addresses the need to be vigilant in protecting patient privacy and securing individually identifiable patient data, i.e. protected health information (PHI). The impact of HIPPA can be seen throughout clinical medicine, and telehealth is no exception. Privacy considerations that are unique to telehealth are discussed by Kumekawa [36] who specifically describes the potential for non-clinical technical and administrative personnel to view telehealth transactions and the off-camera presence of other clinical personnel. Telehealth transactions have traditionally occurred over private circuits; however, the increased use of IP videoconferencing over public networks creates the potential for unauthorized access to PHI. Technological solutions, such as in-codec encryption and virtual private networks, will need to be implemented to address these issues. Once these technological solutions are developed and implemented, providers will need to be trained regarding the storage and retrieval of data; medico-legal and ethical issues related to maintaining patient privacy.

Infrastructure

There are costs associated with the infrastructure development and maintenance. Currently these costs are typically non-reimbursable. There are cases where reimbursement is obtained either from individual contracts, from managed care, from third party payers in a few states, and from Medicaid and Medicare in limited situations. Clearly, there is a need to identify a structure for reimbursement of collateral charges, e.g. technician and line time.

The U.S. Federal Communications Commission's (FCC) Universal Service Fund (USF) subsidies can reduce the cost of telepsychiatry network connections. The USF was implemented to increase the diffusion of high bandwidth telecommunications to rural schools, libraries, and health care providers. The funding for the USF is generated from fees paid by telecommunications providers. However, the USF mechanism is not being widely used for several reasons, including a cumbersome application process, limitations on eligible facilities and locations, and questions regarding the actual costs to the provider [37].

Individual states have developed various funding streams to support telemedicine. Texas has a well developed telemedicine program that is supported by funds obtained from telecommunications companies, in lieu of taxes. Kentucky has appropriated specific state funds to cover telemedicine services. In Georgia, the state has used funds recouped from telecommunications companies after they overcharged their customers. California has established an organization to distribute funds for telemedicine that come from a foundation established after the state's Blue Cross/Blue Shield plan was privatized. Long-term, alternative financial support appears to have enabled these states to develop sound statewide telemedicine systems.

Conclusion

The potential for telepsychiatry and e-mental health services to improve access to adequate mental health care is becoming more evident. The current technology is adequate for most uses and continued advances are in progress. There are numerous applications already defined and more are ripe for exploration. Barriers to implementation are primarily of the human variety and will require a combination of consumer, provider and governmental advocacy to overcome.

References

1. New Freedom Commission on Mental Health. Achieving the promise: Transforming mental health care in America. Final report. Rockville, MD, DHHS Pub. No. SMA-03–3832, 2003.
2. Yellowless P, Miller EA, McLaren P, et al: Introduction, in Wootton R, Yellowless P, McLaren P (Eds). Telepsychiatry and e-Mental Health. London, Royal Society of Medicine Press, pp. 3–13, 2003.
3. Bashshur RL, Mandil SH, Shannon GW: Telemedicine/telehealth: An international perspective. Executive summary. Telemedicine Journal and e-Health 8:95–107, 2002.
4. Rothchild E: Telepsychiatry: why do it? Psychiatric Annals 29:394–401, 1999.
5. Zimnik PR: A brief summary of department of defense telemedicine. Telemedicine Journal 2(3):241–246, 1996.
6. Hilty DM, Servis ME, Nesbitt TS, et al: The use of telemedicine to provide consultation-liaison service to the primary care setting. Psychiatric Annals 29:421–427, 1999.
7. Hilty DM, Luo JS, Morach C, et al: Telepsychiatry: An overview for psychiatrists. CNS Drugs 16(8):527–548, 2002.
8. Simpson S: The use of videoconferencing in clinical psychology, in Wootton R, Yellowless P, McLaren P (Eds). Telepsychiatry and e-Mental Health. London, Royal Society of Medicine Press, pp 171–182, 2003.
9. Simpson S, Morrow E, Jones M, et al: The delivery of a tele-psychiatry service to Shetland. Clinical Psychology and Psychotherapy 8:130–135, 2001.
10. King R, Spooner D, Reid W: Online counselling and psychotherapy, in Wootton R, Yellowless P, McLaren P (Eds). Telepsychiatry and e-Mental Health. London, Royal Society of Medicine Press, pp 245–264, 2003.
11. Broder E: Program consultation and pediatric telepsychiatry. Toronto, CA, Paper presented at the Annual Meeting of the American Academy of Child and Adolescent Psychiatry, 2005.
12. Craig J, Loane M, Wootton R: Does telemedicine have a role to play in disease management? Disease Management Health Outcomes 6(3):121–30, 1999.
13. D'Souza R: A pilot study of an educational service for rural mental health practitioners in South Australia using telemedicine. J Telemed Telecare 6(Suppl. 1):187–189, 2000.
14. Urness D, Weisser L, Campbell R, et al: Telepsychiatry in Canada and the United States, in Wootton R, Yellowless P, McLaren P (Eds). Telepsychiatry and e-Mental Health. London, Royal Society of Medicine Press, pp 97–111, 2003.
15. Buist A: Telepsychiatry in Australia, in Wootton R, Yellowless P, McLaren P (Eds). Telepsychiatry and e-Mental Health. London, Royal Society of Medicine Press, pp 113–123, 2003.
16. Gammon D, Sorlie T, Bergvik S, et al: Psychotherapy supervision conducted by videoconferencing: A qualitative study of users' experiences. J Telemed Telecare 4(Suppl. 1):33–35, 1998.
17. McLaren P, O'Kane M: Remote psychotherapy. J Telemed Telecare 4:122, 1998.
18. Teshima J: Telepsychiatry education: Success and challenges in a continuing education program. Toronto, CA, Paper presented at the Annual Meeting of American Academy of Child and Adolescent Psychiatry, 2005.
19. Hilty DM, Marks SL, Urness D, et al: Clinical and educational telepsychiatry applications: A review. Canadian Journal of Psychiatry 49:12–23, 2004.
20. Demiris G, Donghua T: An analysis of the specialized literature in the field of telemedicine. J Telemed Telecare 11:316–319, 2005.
21. Ball CJ, McLaren PM, Summerfield AB: A comparison of communication modes in adult psychiatry. J Telemed Telecare 1:22–26, 1995.
22. Blackmon LA, Kaak HO, Ranseen J: Consumer satisfaction with telemedicine child psychiatry consultation in rural Kentucky. Psychiatric Services 48:1464-1466, 1997.

23. Dongier M, Tempier R, Lalinec-Michaud M, et al: Telepsychiatry: Psychiatric consultation through two-way television. A controlled study. Canadian Journal of Psychiatry 31:32–34, 1986.
24. Elford R, White H, Bowering R: A randomized, controlled trial of child psychiatric assessments conducted using videoconferencing. J Telemed Telecare 6:73–82, 2000.
25. Montani C, Billaud N, Tyrell J, et al: Psychological impact of a remote psychometric consultation with hospitalized elderly people. J Telemed Telecare 3:140–145, 1997.
26. Hilty DM, Nesbitt TS, Kuenneth TA: Development of a successful telepsychiatry program: A look at the first 200 consultations at UC Davis. Palm Springs, CA, Poster presented at Academy of Psychosomatic Medicine, November 2000.
27. Hailey D, Jacobs P, Simpson J, et al: An assessment framework for telemedicine applications. J Telemed Telecare 5:162–170, 1999.
28. McLaren, Yellowless P, Wootton R: Conclusion, in Wootton R, Yellowless P, McLaren P (Eds). Telepsychiatry and e-Mental Health. London, Royal Society of Medicine Press, pp 349–354, 2003.
29. Whitten PS, Mackert MS: Addressing telehealth's foremost barrier: Provider as initial gatekeeper. Int J Technol Assess Health Care 21(4):517–521, 2005.
30. Coleman J: HMOs and the future of telemedicine and telehealth. The Case Manager 13(4):38–43, 2002.
31. Puskin DS: Letter to the Federal Communications Commission. April 1, 1999. Available at: http://telehealth.hrsa.gov/pubs/fccfil.htm.
32. American Telemedicine Association: Report on reimbursement. April 2003. Available at: http://www.atmeda.org/news/Reimbursement%20White%20paperfinal.pdf.
33. American Psychiatric Association: APA Resource Document on Telepsychiatry via Videoconferencing. July 1998. Available at: http://www.psych.org/psych_pract/tp_paper.cfm?pf = y.
34. Centers for Medicare and Medicaid Services: Report on Telemedicine Services. December 2005. Available at: http://www.cms.hhs.gov/Telemedicine/03_StateProfiles.asp.
35. Fishbein M: Developing effective behavioral change interventions: Some lessons learned from behavioral research. in: Reviewing the Behavioral Science Knowledge Base on Technology Transfer. NIDA Research Monograph 155, 1995.
36. Sanders JH: Telemedicine: Challenges to implementation. Washington, DC, Paper presented at the Rural Telemedicine Workshop, November 4, 1993.
37. Kumekawa JK: Health information privacy protection: crisis or common sense? Online Journal of Issues in Nursing 6(3), Sep. 30, 2001. Available at: http://www.nursingworld.org/ojin/topic16/tpc16_2.htm.
38. Puskin DS: Telemedicine: Follow the money. Online Journal of Issues in Nursing 6(3), Manuscript 1, September 30, 2001. Available at: http://www.nursingworld.org/ojin/topic16/tpc16_1.htm.