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Telehealth and eHealth interventions for posttraumatic stress disorder

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This paper presents existing research describing how telehealth and eHealth technologies can be used to improve mental health services for trauma survivors, either by enhancing existing treatment approaches or as a stand-alone means of delivering trauma-relevant information and interventions. The potential ways in which telemedicine technologies aide in overcoming barriers to care is first addressed in terms of providing mental health treatment. We then outline how different telehealth and eHealth tools can be used for key therapeutic tasks, including the provision of self-guided interventions, remote delivery of psychotherapy, and augmentation of psychological treatments. We conclude by discussing key emergent issues that are shaping current and future use of telemedicine technologies as part of the continuum of care for trauma survivors.

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Introduction

Mental healthcare consumers increasingly expect to receive "on-demand service" with the ability to receive care at the time and location of their choice, which is consistent with consumers of many services such as banking, shopping, and air travel. Technology has been heralded as a solution to several barriers that trauma survivors face when seeking mental health care (e.g., distance, timing, scarcity of specialists, cost, stigma). The goal of this paper is to present how telehealth and eHealth interventions can expand and facilitate the delivery of patient-centered, high quality care for trauma-related problems. This paper also examines the potential benefits of such approaches, provides an overview of select available interventions, describes the efficacy evidence, and concludes with suggestions for future directions.

The potential of technological approaches to overcome barriers to care

Accessing mental health services can be particularly challenging for people living with posttraumatic stress disorder (PTSD) or other trauma-related problems. To accommodate real world challenges, flexible models of care delivery are needed that meet trauma survivors where they are, both geographically and psychologically [1,2]. Telemedicine can be an important component in providing a continuum of more patient-centered care options. The World Health Organization has broadly defined telemedicine as: "The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities" [3]. Within telemedicine, telehealth delivery modalities and eHealth self-management tools describe interventions using modern information and communication technologies to provide health care to individuals in lieu of in-person care. In the absence of any consensus on exact definitions of telehealth and eHealth, we use" telehealth" to mean real-time remote care via video or telephone and eHealth to mean care mediated by computers or mobile applications (apps). Telehealth technologies include well-developed options like telephone-based care and more recently developed telehealth delivery modalities such as psychotherapy provided via clinical videoteleconferencing (CVT). eHealth interventions involve self-guided web- and mobile-based psychoeducational and assessment materials, including mobile apps designed to deliver or as an adjunct to mental health treatment, Furthermore, there are hybrid

options that combine telehealth and eHealth tools, such as internet-based interventions (IBIs) and certain CVT interventions that involve clinicians in the delivery of care. The development of these newer technologies has been enabled by the rapid proliferation and availability of personal technology devices and equipment. Information delivered via telehealth and eHealth can also be presented through online books, factsheets, and webinar programs.

Telehealth and eHealth interventions can play an important role in providing a variety of patient-centered care options, overcoming common barriers to care including geographic location, availability of providers, limited operating hours, and readiness/willingness to engage in needed care caused by issues ranging from stigma to poor problem recognition. Unlike conventional office-based care, some telehealth and eHealth approaches enable patients to receive location and/or time-independent interventions, either autonomously or with remote support from skilled practitioners. These delivery modalities may benefit those patients for whom medical centers and clinics trigger painful trauma memories and emotions. Telehealth and eHealth interventions can reduce the need to drive or be transported to appointments, which helps both people who avoid driving (e.g., motor vehicle accident survivors, combat veterans of Iraq or Afghanistan) [4,5] and individuals who avoid public transportation caused by feelings of discomfort in crowded places [6]. Shortages of skilled providers can also be mitigated by telehealth and eHealth applications. Communities affected by a large-scale disaster or crisis (e.g., flood, earthquake, civil unrest, influx of refugees) may not have sufficient numbers of providers to accommodate increased need. Similarly, rural communities often have chronic shortages of providers with expertise in treating PTSD [7,8] and can therefore benefit from either expanded access to resources beyond the local area [9] or the use of mental health services that require no clinician involvement [10]. These applications can also expand access to individuals who do not have adequate resources or the ability to attend traditional weekly face-to-face care during standard business hours.

Telehealth and eHealth interventions may also help individuals with PTSD overcome psychopathology-related issues related to trust and support the development of a therapeutic alliance [11,12]. Additionally, the ability to receive care anonymously or in the privacy of a patient's own home may help individuals who fear stigmatization or experiencing a negative impact on their career if they are known to receive mental health treatment.

The technology continuum of care

There has been an increased interest in web and mobile-based behavioral health resources [13] given the wide-scale access that patients now have to the internet. The wide array of telehealth and eHealth tools offer resources for all points on the continuum of care. The role of technology as means of allowing for a more flexible model of PTSD care is illustrated in Table 1, which presents the potential utilities of telemedicine as the advantages of these applications occur across the continuum of care. Technological applications can be considered to be self-guided, therapist-guided, or therapist-engaged depending on the amount of clinician contact necessary. We use "engagement" to correspond to the contemplation/preparation stage of change, "active treatment" for intensive activity to address problems, and "maintenance" for ongoing care that is less intensive than active treatment.

Self-guided technological or eHealth applications, meaning those with no clinician involvement, can be used to mitigate a variety of barriers to care. In particular, self-guided web and mobile-based psychoeducational and assessment materials provide an easy way for individuals to become engaged in treatment without having face-to-face contact with a clinician. By reducing the burden of this "first step" into mental health services, these tools may be used by individuals who do not yet have sufficient motivation to engage in live interaction with healthcare professionals.

eHealth self-management tools

Technologies for self-help, including websites, mobile apps, and text messaging generally utilize well-established principles of evidence-based psychotherapies and enhance

Table 1

Clinical applications of telemedicine technologies along the continuum of care

		Stage of care		
Clinical application	Technologies	Engagement	Active self-management or treatment	Maintenance
Psychoeducation and self-assessment	Web, mobile	X	X	
Self-management tools without clinician support	Web, mobile		X	X
Clinician-supported self-management tools	Web, mobile		X	
Clinician-delivered psychotherapy	Video teleconferencing		X	
Augmenting clinician-delivered psychotherapy	Mobile, text messaging		X	