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Treatment for Anxiety and Depression via Clinical Videoconferencing: Evidence Base and Barriers to Expanded Access in Practice

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Abstract

This review summarizes six decades of clinical outcome research relevant to evidence-based practices for depression and anxiety delivered via clinical videoconferencing. The authors conducted a literature search of previous systematic reviews and an updated search of publications specific to anxiety and depression. Overall, strong evidence supports the safety and clinical effectiveness of administering evidence-based psychotherapy for anxiety and depression via clinical videoconferencing among heterogeneous populations and age ranges, and in multiple care settings, with similar outcomes to in-person care. Despite the overall clinical effectiveness of the modality, the authors discuss common logistical and institutional barriers to long-term effective implementation. Future systems-level research is required to investigate replicable and sustainable models for implementing and expanding access to evidence-based psychotherapies via clinical videoconferencing.

Keywords: Anxiety & anxiety disorders, review, telemental health, telemedicine, telehealth, rural

In this article, we review evidence-based practices (EBPs) for anxiety and depression delivered via clinical videoconferencing with the goal of providing a narrative summary for practicing clinicians. The topic of clinical videoconferencing (often referred to as *telehealth, telemental health, telemedicine,* or *telepsychiatry*) is expansive; even when the focus is significantly narrowed to include only clinical videoconferencing modalities for anxiety and depression, evidence related to feasibility, satisfaction, clinical outcomes,

implementation, and logistics are relevant and available. Naturally, these topics can be and are further demarcated by particular patient populations and care settings. What is gained by inclusion and breadth of knowledge in one area is necessarily borrowed from depth or detail in any other particular area (1). However, consistent themes have emerged in the literature, such as broad patient satisfaction and, more recently, broad clinical effectiveness related to behavioral interventions conducted via the modality.

However, the vast majority of peer-reviewed information regarding clinical videoconferencing was generated by early adapters (2). Thus, much of the information available is understandably based on the motivations, skill sets, resources, and interests of telehealth champions, which could be viewed as somewhat threatening the external validity or relevance of findings to the field in general. This is often immediately obvious to independent clinicians attempting to implement telehealth without sufficient institutional support, as well as to institutions attempting the same without sufficient clinician interest. Yet, champion-related bias in the literature is somewhat counterbalanced by the sheer scale of consistently positive findings in diverse treatment settings and a broad, robust, and stepwise literature base related to the modality in general, which is often obscured in any one diagnosis- or treatment-specific study. Even thorough review articles, often organized by clinical population or treatment setting, rather than chronologically or by method, sometimes do not convey the narrative arc and history of how and what is known and not known about clinical videoconferencing.

To be clear, an abundance of evidence now supports the safety, effectiveness, and utility of clinical videoconferencing for behavioral interventions across many patient populations and clinical settings, but the disconnect between champion-generated information and the needs of the field is continually highlighted by findings pointing to consistent provider concerns regarding the initiation of clinical videoconferencing (3–5). Common apprehensions raised by providers range from broad clinical concerns, such as patient safety, to finer grained logistical barriers, such as exchanging treatment materials between patient and provider (e.g., self-rating scales) (6). Notably, provider-level concerns regarding the initiation of clinical videoconferencing persist even while institutional-level adoption of telehealth is bourgeoning (7), with 42% of U.S. hospitals having some form of telehealth capability and the commensurate expectation that providers will make use of those capabilities (8). Indeed, the field has progressed to the point where providers who may not be inherently interested in offering clinical videoconferencing services often find themselves compelled to do so. This is concerning given that evidence suggests the quality and sustainability of such services hinge on clinician acceptance (9–11) and that such acceptance can be biased by pretreatment assumptions regarding the effectiveness and practicality of the modality (5).

Although in aggregate the literature provides sufficient information to help address most provider concerns, it can be difficult to know which resources to access. Accordingly, in line with the goal to provide relevant information for practicing clinicians, we endeavor to convey a thorough but succinct summary and narrative review of clinical videoconferencing for anxiety and depression to address initial clinical concerns. In so doing, we briefly summarize systematic reviews related to behavioral telehealth in general and consider more recent evidence related to anxiety and depression not included in previous reviews.

Methods

In this review, we gather and organize provider-relevant information regarding clinical videoconferencing in general to serve as a backdrop for information specifically related to the treatment of anxiety and depression. Accordingly, we conducted two separate searches using EBSCOhost, which consists of 35 databases, including MEDLINE and PsycINFO. The first search, conducted through May 20, 2018, targeted

systematic review articles related to behavioral interventions via clinical videoconferencing. Thus, reviews related to nonclinical outcomes such as program costs or technology platforms were excluded. A second search identified more recent publications not included in the identified reviews. This search spanned from January 1, 2012, to May 20, 2018, and targeted individual studies related to clinical videoconferencing for anxiety spectrum and depressive disorders only. The bibliographies of all identified publications were also cross-referenced with the search results to identify potential additional publications.

Results from the first search were used to construct a narrative summary of systematic reviews related to behavioral telehealth in general. We then used results from both searches to construct a summary of evidence related to the treatment of anxiety and depression with EBPs, specifically organized by methodology type, including the following a priori categories: clinical case studies, noncontrolled trials and nonrandomized group comparisons, randomized controlled trials (RCTs), and randomized noninferiority trials.

Results

Summary of Systematic Reviews Related to Behavioral Telehealth

Before the onset of rigorous noninferiority trials of specific EBPs via telehealth, the field had generated sizable amounts of data related to telepsychiatry and telemental health, in general, and a number of summative reviews. This substantial body of reviewed literature provided important information regarding the feasibility and safety of and satisfaction with clinical videoconferencing. In particular, three separate but sequentially staged reviews spanning the literature from 1970 to 2008 considered 279 peer-reviewed investigations, taking care to not overlap or double count individual citations (12–14). The reviewers found that, taken together, earlier investigations, including mostly case studies and novel telehealth applications, provided strong evidence for patient satisfaction, safety, and the reliability of clinical assessment via clinical videoconferencing (12, 13). However, in the earlier literature reviewers emphasized a general lack of methodological rigor and minimal evidence related to cognitive-behavioral therapy (CBT) outcomes for specific mental health diagnoses. Reviewed studies leading up to 2008 contained more direct comparisons of clinical videoconferencing versus in-person care, including manualized CBT treatments that demonstrated comparable clinical outcomes, while also substantially supporting earlier findings related to high patient satisfaction ratings and patient safety (13). Here, too, however, reviewers noted that a lack of random assignment, small sample sizes, or both prevented definitive conclusions regarding relative clinical outcome effect sizes of in person versus clinical videoconferencing care.

Notably, two independent reviews of telepsychiatry publications spanning from 1965 to 2003 (15, 16), one spanning from 1998 to 2006 (17), one spanning from 1997 to 2008 that examined depression (but included only four studies specific to clinical videoconferencing) (18), one spanning from 1997 to 2010 (19), one spanning from 2000 to 2012 (20), one spanning from 2000 to 2016 (21), one spanning from 2003 to 2013 (22), and one specifically related to the treatment of anxiety disorders spanning from 2004 to 2014 (23) all contained strikingly similar conclusions. These nine systematic reviews, conducted in overlapping but progressing timeframes, conveyed strong evidence for behavioral telehealth's feasibility, acceptability, and patient satisfaction and also noted positive and significant clinical outcomes across multiple contexts that were consistently on par with in-person care. However, all also conveyed the need for continued and more rigorous research for definitive conclusions regarding equivalency and noninferiority of clinical outcomes. Also notable was a subtle but reoccurring theme in many of the reviews that provider satisfaction with

clinical videoconferencing, although adequate, still often lagged behind patient satisfaction, mostly because of administrative (e.g., new or different scheduling procedures, room logistics, or note requirements) or technical issues (e.g., quality of conferencing software or equipment) rather than clinical concerns.

Clinical Videoconferencing Evidence-Based Practices for the Treatment of Anxiety and Depression

Here we consider only studies specifically related to clinical videoconferencing to address anxiety spectrum and depressive disorders. The presentation of investigations is primarily organized by methodological design rather than disorder to provide a stepwise view that reflects the development of the evidence base as a whole. Table 1 lists the reviewed studies.

Clinical case studies. By the 2000s, telehealth research in the behavioral realm had shifted from a focus on feasibility and acceptability to clinical effectiveness (24). Clinical case studies documenting traditional process-related outcomes also began documenting large reductions in symptoms as determined by standardized and validated measures of major depression (25), agoraphobia (26), obsessive-compulsive disorder (27, 28), and posttraumatic stress disorder (PTSD) (29, 30).

As expected, EBP researchers often incorporated their earlier case studies into integrated platforms of research, carefully building evidence and expertise for the execution of larger sample pilot research. For example, four of the separate research teams cited earlier (27–30) followed their case studies with larger trials (31–34). This fairly common and predictable pattern is notable for at least two reasons. The accumulation of knowledge, comfort, confidence, practice, and logistical expertise in clinical videoconferencing paved the way, first, for future within-group research and, second, for within-group competent implementation. From this perspective, it is perhaps easier to understand the gulf between many clinicians who remain skeptical about initiating clinical videoconferencing (3, 5) and researchers of the modality, who are often the most vocal advocates as a result of years of practice and familiarity with its strengths and weaknesses.

Noncontrolled trials and nonrandomized group comparisons. Small- to medium-sized investigations of EBPs delivered via clinical videoconferencing span ecologies and settings. Funded and unfunded research projects are often able to take advantage of existing telehealth infrastructures in health care networks to investigate the impact of EBPs delivered via this modality. For example, investigations of treatments for PTSD delivered in established telehealth ecologies have demonstrated positive effects for general trauma-related CBT protocols, including common components of exposure and cognitive restructuring (31, 35, 36), and for specific protocols, such as prolonged exposure (32), trauma-focused CBT (37), and group cognitive processing therapy (38). Notably, only one nonrandomized investigation demonstrated a statistically significant advantage for the in-person comparison group (35), although the authors interpreted the effect to be related to a larger-than-normal effect size in the in-person arm rather than a deficiency in the telehealth arm. Other studies, such as investigations of CBT for panic disorder with agoraphobia (39) and CBT for anxiety and depression (40), avoided the use of existing telehealth infrastructures to study clinical effects specifically when initiating new programming, and another study of acceptance-based behavior therapy for social anxiety disorder (41) used a widely available commercial Web-based application for videoconferencing. Although these investigations lacked randomized controls, they all demonstrated positive clinical effects, with no overt indications that clinical videoconferencing was less effective than standard in-person care. Moreover, such studies confirmed and extended findings related to patient safety and, overall, firmly established that logistical, administrative, and technological issues in clinical

videoconferencing were the source of provider concerns regarding effective implementation, rather than concerns about patient-provider clinical dynamics or therapeutic alliance, which were uniformly robust in clinical videoconferencing CBT contexts (42).

Randomized controlled trials. The advent of RCTs investigating specific CBT protocols for anxiety spectrum and depressive disorders delivered via clinical videoconferencing largely ameliorated concerns that the positive clinical outcomes found in uncontrolled trials were the result of self-selection, therapist selection, or other confounding factors. Three RCTs demonstrated robust CBT treatment effects for PTSD, with no differences in primary clinical outcomes between the clinical videoconferencing and in-person groups (43–45), and a fourth RCT that investigated group social skills training for PTSD delivered either by a therapist in the treatment room or via video conferencing (46) demonstrated modest clinical change but also found no differences between the groups. RCTs of CBT for anxiety (47), childhood tic disorder (33), and obsessive-compulsive disorder among youth (48) also demonstrated large treatment effects for the clinical videoconferencing conditions with no differences between in-person and telehealth groups on primary clinical outcome measures.

Similarly, clinical videoconferencing RCTs for the treatment of depression using medication management and supportive counseling (49), medication management and CBT (50), and problem-solving therapy (51) evidenced clinical benefit and no differences in outcomes between the clinical videoconferencing and in-person groups. One RCT that used CBT for childhood depression (52) did evidence between-group differences, but they favored the clinical videoconferencing group, which demonstrated a faster rate of improvement.

RCTs investigating the management of depression have also revealed substantially better clinical results for telehealth-facilitated collaborative care in rural clinics compared with treatment as usual (53) and for telehealth collaborative care compared with office-based collaborative care (54), as well as better results for home-based medication management compared with primary care treatment as usual for underserved populations (55). These collaborative care examples used telehealth to facilitate augmented levels of care and services that would not have been achievable without the use of technology. Thus, although measurable benefits related to augmented services are not surprising, the use of treatment-as-usual control conditions was an ecologically valid methodological choice. These studies and collaborations also generated a good deal of pragmatic process-oriented and logistical knowledge for the field.

Randomized noninferiority trials. More recently, the field has generated rigorous, gold-standard evidence in support of clinical videoconferencing modalities for PTSD and depression. Large-sample noninferiority (i.e., “as good as”) trials have demonstrated that CBT protocols delivered via video conferencing are no less effective than in-person therapy for the treatment of PTSD with prolonged exposure (56), behavioral activation and therapeutic exposure (57), and cognitive processing therapy (58). Another equivalency trial of cognitive processing therapy did not meet statistical significance for equivalence as a result of larger-than-expected treatment dropout in both arms (59), although the demonstrated effects of the two groups were very similar. Notably, the reported pretreatment-posttreatment effect sizes for the noninferiority cognitive processing therapy (58) and prolonged exposure (57) trials were d=0.72 and d=1.24 (55), respectively, indicating that videoconferencing modalities produce similar results to in-person care even when treatment effects span from large to very large. In other words, the clinical videoconferencing modalities are not merely providing a medium for nonspecific effects such as warmth, empathy, and positive regard but are also conveying the specific and longer term effective components of treatment. One large-scale rigorous noninferiority trial investigating diagnosis remission rates for behavioral activation in

241 older adults with depression also demonstrated noninferiority for clinical videoconferencing compared with in-person care, with 12-month remission rates of 43% and 48%, respectively (60).

Discussion

The investigations summarized here demonstrate that clinical videoconferencing has been used to deliver feasible, acceptable, safe, and effective evidence-based care for anxiety and depression to patients across the life course, in both individual and group formats as well as in real-world standard care settings, collaborative care settings, and, importantly, in unsupervised settings, as five of the trials (two RCTs, two RCT noninferiority, one noncontrolled) examined exposure or exposure with response prevention delivered via videoconferencing directly into clients' homes (34, 45, 48, 56, 57). Notably, this summary is limited to clinical videoconferencing for anxiety and depression only, although outcome data supportive of the modality have emerged across a wide range of behavioral interventions, for example, diverse contexts such as smoking cessation (61) and bulimia nervosa (62).

Although the results of this and previous reviews are supportive of clinical videoconferencing in general, many compelling theoretical and logistical complications exist in relation to the modality for particular diagnoses, treatments, or populations that merit careful and continued investigation. However, at this point, without such identified a priori or compelling counterindications, we believe it is likely unnecessary to cycle through each and every behavioral EBP to validate the efficacy of clinical videoconferencing compared with in-person care.

Telehealth's ability to overcome geographic and stigma-related barriers to care can increase access and encourage utilization by lowering costs to patients in terms of transportation, travel time, missed work (63–65), and child care costs, which are particularly salient issues for those who live in rural areas (66, 67). Yet, there are additional factors to consider that may complicate the effective delivery of telemental health services, including the availability of EBP-trained therapists, unintentional or paradoxical consequences related to expanding referral streams, and institutional nonalignment.

Too few therapists are trained in or regularly provide EBPs in general (68). Moreover, there is nothing inherent in the expansion of telehealth infrastructures that dictates commensurate expansion of EBP-trained and practicing therapists. Therefore, although the field is potentially widening the pool of patients who can benefit from EBPs, there is not always structural support (or intention) to increase the number of EBP-trained providers in facilities. Accordingly, when and where total EBP capacity is not increased (via training or hiring more EBP therapists), we must take care to not confuse shifting access to EBPs with expanding access to EBPs. Although the telehealth literature often focuses on the importance of institutional- and provider-level engagement in addressing barriers to technology adoption (3), the availability of human resources, hiring, training, and capacity to use those technologies specifically for EBPs is often an unaddressed assumption, or beyond the scope of investigations. Overall, the growth of telehealth capacity in health care systems does not solve EBP access issues but merely provides another front in ongoing efforts to disseminate evidence-based care practices. Indeed, without careful and ongoing attention, telehealth infrastructures specifically built for the delivery of evidence-based care often end up being used for general or supportive counseling.

Outside the context of EBP research trials, expanded telehealth capacity can actually threaten EBP programming in health care systems for a number of different but converging reasons. The typical difficulty of developing and maintaining tailored referral streams for specialty mental health care programming is

amplified in telehealth settings, where referring providers and teams are not located in the same place (2). In addition, because telehealth channels often connect providers to stressed or overcommitted rural clinics that may have limited in-person resources, the comparative demand for supportive counseling or case management may be high. At the same time, there is often pressure on teleproviders to accept new referrals, regardless of diagnosis or specific treatment needs, to demonstrate productivity or not threaten fragile or developing referral streams. Also, telehealth implementation is almost always associated with an increased administrative burden on providers (e.g., training, new billing models, information technology issues), even without consideration of at-distance material exchange of EBP self-assessments, worksheets, and psychoeducation materials. These additional logistical considerations can and do influence provider decisions regarding whether or how rigorously (i.e., delivering with fidelity to the protocol) to implement EBPs over telehealth modalities.

Last, institutional nonalignment between managers and clinicians regarding the motivations for telehealth development can also be a barrier to EBP implementation (69). For example, providers may be motivated to use telehealth to expand access to EBP specialty care for a specific diagnosis, managers may primarily want to expand the facility catchment area, and remote referrers may be motivated by a need to address transient triage overflow. These are three different goals with competing needs, metrics, and assumptions. Although the implementation of sustainable and effective EBP telehealth programming in health care systems requires careful planning and collaboration and a good deal of trial and error, a number of resources are available to help clinicians and managers navigate implementation while not reinventing the wheel (1, 70, 71).

The survey of clinical videoconferencing research presented here counters an easily made assumption that the wide-scale use of platforms such as Skype and Facetime are in themselves evidence for the application and utility of clinical videoconferencing. In other words, the impetus for clinical videoconferencing could be viewed as a presupposed eventuality of the field merely reacting to evolving mores regarding the acceptance and expectation of telecommunication modalities (72). Although there is some truth to that sentiment, the current state of the clinical videoconferencing evidence base is the result of six decades of stepwise and systematic research. Accordingly, the argument for delivering EBPs via telehealth is not simply that video chat is popular or in demand but rather that it is effective.

Conclusion

The amassed evidence base related to the efficacy and effectiveness of clinical videoconferencing in the past decade, in conjunction with previous decades' research related to acceptability and safety, firmly establishes clinical videoconferencing as a valid medium for delivering EBPs for anxiety and depression in general. However, initiating clinical videoconferencing increases workload for clinicians related to a variety of administrative and logistical issues and creates new challenges for implementing and sustaining EBP care for new referral sources. Accordingly, future systems-level research is required to investigate replicable and sustainable models for implementing and expanding access to EPBs via clinical videoconferencing.

Footnotes

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Figures and Tables

TABLE 1.

Reviewed EBP Clinical Videoconferencing Studies for Anxiety and Depression by Design Type[a]

Publication	Design (N=Telehealth/Control)	Diagnosis	Treatment
Manchanda et al., 1998 (28)	Case study	Anxiety, depression	CBT
Cowain, 2001 (26)	Case study	Panic disorder,	CBT w/exposure

		agoraphobia	
Himle et al., 2006 (27)	Case study	OCD	CBT, ERP
Goetter et al., 2013 (28)	Case study	OCD	CBT, ERP
Tuerk et al., 2009 (30)	Case study	PTSD or SUD	CBT, PE
Hassija and Gray, 2009 (29)	Case study	PTSD	CBT w/exposure
Bouchard et al., 2000 (39)	Noncontrolled (N=8)	Panic, agoraphobia	CBT w/exposure
Griffiths et al., 2006 (40)	Noncontrolled (N=15)	Anxiety, depression	CBT
Yuen et al., 2013 (41)	Noncontrolled (N=24)	Social anxiety	ABBT
Morland et al., 2011 (38)	Noncontrolled (N=13)	PTSD	Group CBT
Stewart et al., 2017 (37)	Noncontrolled (N=15)	PTSD	TF-CBT
Hassija and Gray, 2011 (31)	Noncontrolled (N=15)	PTSD, depression	PE or CPT
Goetter et al., 2014 (34)	Noncontrolled (N=15)	OCD	ERP
Bouchard et al., 2004 (42)	Between groups (N=11/10)	Panic, agoraphobia	CBT w/exposure
Germain et al., 2009 (36)	Between groups (N=16/32)	PTSD	CBT w/exposure
Gros et al., 2011 (35)	Between groups (N=62/27)	PTSD	CBT w/exposure
Tuerk et al., 2010 (32)	Between groups (N=12/35)	PTSD, depression	PE
Himle et al., 2012 (33)	RCT (N=10/10)	Tic disorder	CBIT
De Las Cuevas et al., 2006 (50)	RCT (N=70/70)	Mixed *ICD-10*	MM or CBT
Stubbings et al., 2013 (47)	RCT (N=14/12)	Mood or anxiety disorder	CBT
Choi et al., 2014 (51)	RCT (N=43/42)	Depression	PST
Storch et al., 2011 (48)	RCT (N=16/15)[b]	OCD	ERP
Fortney et al., 2007 (53)	RCT (N=189/241)	Depression	CC
Fortney et al., 2013 (54)	RCT (N=179/185)	Depression	CC
Moreno et al., 2012 (55)	RCT (N=80/70)[c]	Depression	MM
Nelson et al., 2003 (52)	RCT (N=14/14)	Depression	CBT
Ruskin et al., 2004 (49)	RCT (N=59/60)	Depression	MM w/counseling
Strachan et al., 2012 (43)	RCT (N=20/20)	Depression, PTSD	BATE
Frueh et al., 2007 (46)	RCT (N=17/21)	PTSD	CBT
Yuen et al., 2013 (41)	RCT (N=23/29)	PTSD	PE
Ziemba et al., 2014 (44)	RCT (N=9/9)	PTSD	CBT
Egede et al., 2015 (60)	RCT noninferiority (N=120/121)	Depression	BA
Acierno et al., 2016 (57)	RCT noninferiority (N=111/121)	Depression, PTSD	BATE
Acierno et al., 2017 (56)	RCT noninferiority (N=74/76)	PTSD	PE
Moreland et al., 2014 (58)	RCT noninferiority (N=61/64)	PTSD	CPT

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[a]ABBT, acceptance-based behavior therapy; BA, behavioral activation; BATE, behavioral activation with therapeutic exposure; CBIT, comprehensive behavioral intervention for tics; CBT, cognitive-behavioral therapy; CC, collaborative care; CPT, cognitive processing therapy; ERP, exposure with response prevention; MM, medication management; OCD, obsessive-compulsive disorder; PE, prolonged exposure; PST, problem-solving therapy; PTSD, posttraumatic stress disorder; RCT, randomized controlled trial; SUD, substance use disorder; TF-CBT, trauma-focused cognitive-behavioral therapy; w/, with.
[b]Waitlist control.
[c]Treatment-as-usual control.