


Systematic review of lessons learned from delivering tele-therapy to veterans with post-traumatic stress disorder

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Abstract

Introduction: Despite increases in the number of ex-service personnel seeking treatment for post-traumatic stress disorder (PTSD), there remain a number of barriers to help-seeking which prevents many veterans from accessing psychological therapies. Tele-therapy provides one potential method of increasing the number of veterans accessing support. This review aimed to systematically review the literature in order to summarise what lessons have been learned so far from providing trauma-focused tele-therapies to veterans with PTSD.

Methods: A systematic literature review was conducted from which 41 papers were reviewed. Studies were included if they involved the use of trauma-focused therapies carried out using tele-therapy technologies. Only studies using tele-therapy interventions via video or telephone with populations of ex-military personnel with PTSD were included.

Results: In the majority of cases tele-therapy was found to be as effective in reducing PTSD symptoms as in-person interventions. Similarly, there were few differences in most process outcomes such as dropout rates, with tele-therapy helping to increase uptake in some cases. Veterans using tele-therapy reported high levels of acceptability and satisfaction. Some challenges were reported in terms of therapeutic alliance, with some studies suggesting that veterans felt less comfortable in using tele-therapy. Several studies suggested it was harder for clinicians to read non-verbal communication in tele-therapy, but this did not affect their ability to build rapport. Technological issues were encountered, but these were not found to impede therapy processes or outcomes.

Discussion: Tele-therapy provides a viable alternative to in-person therapies and has the potential to increase access to therapy for veterans. Tele-therapy should continue to be evaluated and scrutinised in order to establish the most effective methods of delivery.

Keywords

Tele-therapy, telemedicine, veterans, PTSD

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Introduction

Veterans with post-traumatic stress disorder (PTSD) are at increased risk of higher levels of unemployment and social exclusion,^{1–4} and PTSD creates higher costs to society than any other mental health issue in veterans.⁵ Research of UK veterans suggests that only a minority who experience mental health problems are able to access services for support.³ A number of reasons have been suggested for this, including issues related to stigma about experiencing mental health problems and also practical issues around not being able to access services.⁶ Despite this, evidence suggests that an increasing number of veterans are seeking support for PTSD.⁶ Given the increase in demand and the potential barriers to seeking support, there is a need to investigate more accessible and cost-effective methods of delivering psychological therapies to veterans.

One such alternative is to use remote-access technology to deliver psychological talking therapies, often referred to as *tele-therapy*. There have been numerous studies in the USA describing the use of tele-therapy with veterans with mental health difficulties, typically in order to increase access to those in remote rural areas.

Given their reliance on new technologies, research into tele-therapy is a relatively recent field, with early findings suggesting it is as effective as traditional, in-person interventions.^{7,8} Tele-therapy can differ in its format in terms of what interventions are provided and how. Some, for

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example, use video tele-conferencing technology to deliver online 'in-person' therapy⁹ whereby the therapist and client can see and hear each other, without being in the same room. Other interventions involve the use of online self-help materials,¹⁰ telephone consultations,¹¹ or a combination of these.

One systematic review of 11 studies suggested that video-based interventions with veterans can be effective in reducing symptoms of PTSD, depression and generalised anxiety, although it was noted that these studies used small samples, and they were unable to establish whether these improvements were equivalent to in-person interventions.⁸ Another large-scale review of telemedicine across numerous healthcare disciplines included seven studies relating to mental health and substance misuse, reporting that there were no significant differences between interventions delivered remotely and in person.¹²

Concerns have been raised about the clinical challenges of providing trauma-focused talking therapies, such as the management of intense emotions during re-living exercises,¹³ and the management of client safety.¹⁴ If tele-therapy is to be used more widely as a treatment option for PTSD, more needs to be known about the successes, challenges and lessons learned from its use so far. Because tele-therapy is still a relatively new treatment modality, we need to know more than just whether or not it is effective, such as whether it is comparable to in-person interventions, whether using tele-therapy influences the therapeutic process, and if it is acceptable to both the therapists and veterans engaging in it. As such, the present review focuses on tele-therapy interventions that can be directly comparable to traditional therapies; that is, video or telephone whereby there is verbal interaction between client and clinician. Therefore, the aim of the present study is to systematically review findings from studies using tele-therapy interventions to treat PTSD in military veterans, in order to provide a more robust overview of lessons learned so far from using tele-therapy in this population, and to inform the use of such interventions in the future.

Methods

Literature search

A systematic search of relevant journals and databases was undertaken using CINAHL, PubMed, and PsycInfo databases, with additional searches of the following peer-reviewed telemedicine journals: *Journal of Telemedicine and Telecare* and *Journal of Telemedicine and e-Health*. A search of the Cochrane Library found that no similar systematic reviews had previously been published. The search for the present study was performed using the following search terms:

(teletherapy OR telemedicine OR tele-therapy OR telepsychology OR telepsychiatry OR video OR remote OR internet OR teleconference OR telephone OR e-health)

AND
veteran*
AND
PTSD

Inclusion and exclusion criteria

Papers were included if they reported on the use of a tele-therapy intervention (e.g. videoconferencing, telephone) for PTSD with ex-service personnel. Studies using online-only interventions were excluded. Eligible papers needed to be published in peer-reviewed journals with full texts available in English. There were no restrictions in terms of publication date.

Search results

Initial searches yielded a total of 228 papers, the titles and abstracts of which were examined for relevance. In total, 52 papers were removed as duplicates, and a further 130 removed as they did not meet the inclusion criteria. Most of the papers that were disregarded did not report the use of tele-therapy interventions as they have been defined for the present review.

In total, the full texts of 46 papers were scrutinised for inclusion/exclusion. Of these, five papers did not meet criteria, either due to not reporting on a tele-therapy intervention or because the full text was not available, and were subsequently removed. In total, 41 papers were included in the final review. See Figure 1 for a breakdown of the study selection process (flowchart).

Quality assessment

An assessment of the quality of each paper was carried out using the Quality Assessment Tool for Quantitative Studies.¹⁵ Using this measure, papers are given an overall rating of *strong*, *moderate*, or *weak*, based on eight items assessing methodological bias. If a study is rated as weak in two or more areas, the overall rating is weak.

This assessment tool is designed for use with studies using some form of experimental design. As such, some papers within this review were not suitable to be assessed using this tool; for example, due to being qualitative or single case study designs. The current review was concerned generally with lessons learned from using tele-therapy, so did include studies of anecdotal and experiential findings, where the experimental quality of the study was less critical. Nevertheless, many studies in the review did report on the effectiveness of tele-therapy, so an assessment of experimental quality here was warranted.

Of the 41 studies included in the review, 28 were assessed using the quality tool. The remaining 13 studies were not assessed because they did not have an experimental design; for example, qualitative methods, case studies, cost analyses, or where purely descriptive methods were reported.

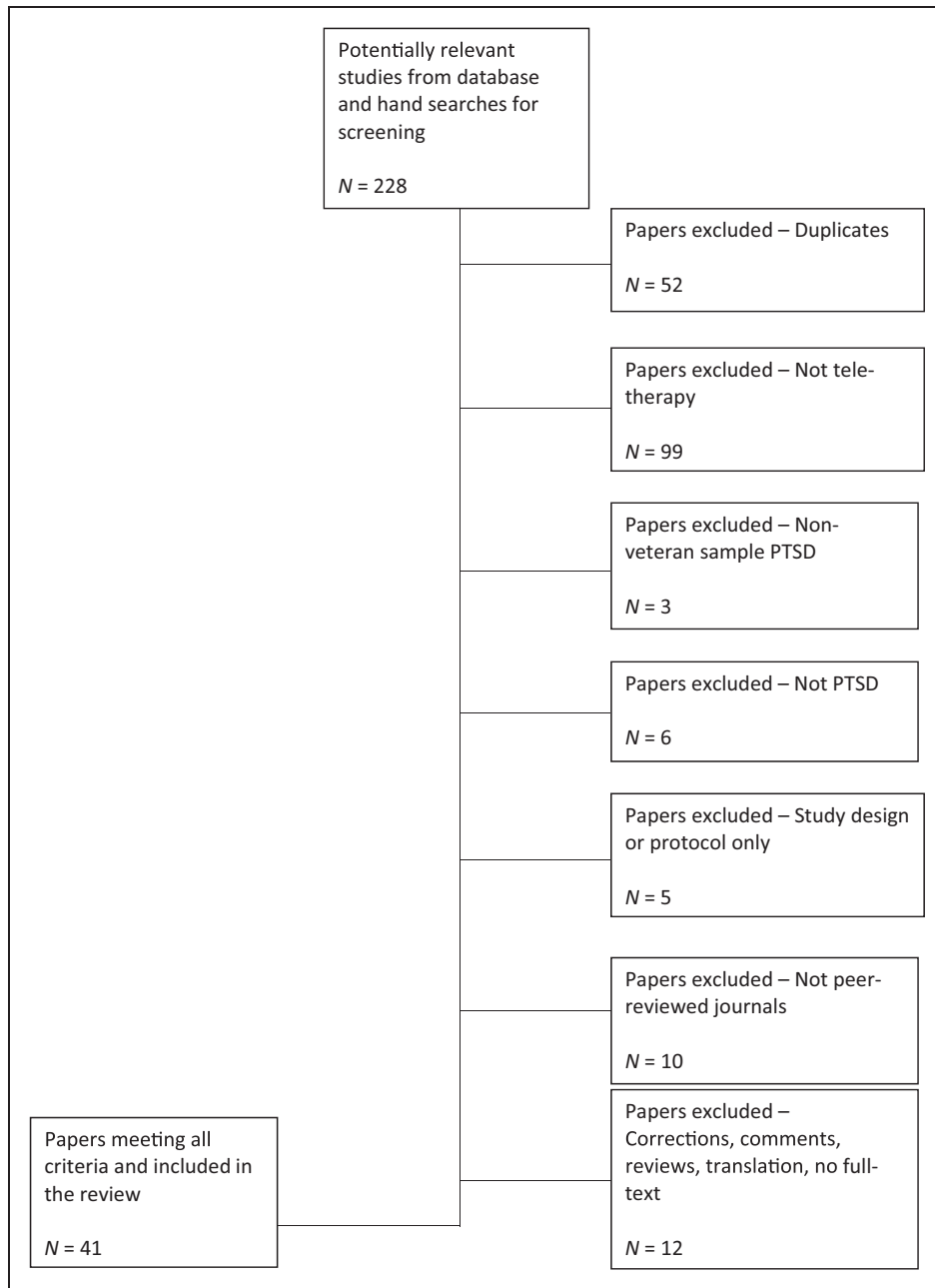


Figure 1. Study selection flowchart.

Results

Study characteristics

With the exception of one Canadian study, all studies included in the final review were conducted in the USA. Sample sizes ranged from single case studies to 600 participants. All studies had samples of military veterans where, in most cases, geographical limitations were restricting access to treatments; for example, veterans in remote and rural areas. The majority of studies (30) reported on the effectiveness of tele-therapy interventions, compared to in-person interventions. The remaining studies either reported on lessons learned so far from ongoing trials without results, the setting up and use of

tele-therapy interventions in different areas, case reports describing specific clinical issues such as managing risk, and veteran and clinician attitudes towards using tele-therapy. All except 13 studies used some form of experimental design.

Forty studies investigated the use of videoconferencing technology, while the remaining study used telephone-based counselling. In most cases, participants were equipped with specific software approved by the Veterans Health Administration (VHA), although in three studies some participants used readily available methods; for example, Skype and other videoconferencing applications such as those readily available on most Smartphones. Interestingly, in 23 studies participants

were not based at home, and travelled to local clinics for tele-therapy appointments. In terms of the interventions used, 15 reported the use of prolonged exposure (PE) as the main intervention. Also used were cognitive processing therapy (CPT; 8), cognitive behavioural therapy (CBT; 5), behavioural activation (BA; 3), eye-movement desensitisation and reprocessing (EMDR; 1), anger management interventions (2), mindfulness (1), and general coping and psycho-education interventions (2). Of these, six studies used group-based interventions. An overview of studies and findings is presented in Table 1.

Overview of methodological quality

In total, 28 studies were rated for quality. Those that were not rated either had non-experimental designs (8), such as one-off surveys or study descriptions only, single case studies (3), qualitative (1), retrospective cost analysis (1), or were repeats of previously described papers presenting a secondary analysis (1). Of the 28 studies assessed, 11 were classified as strong, eight as moderate and eight as weak. Where studies were assessed as being weak methodologically, most had issues with potential selection bias, not having sufficient steps to control for potentially confounding variables, had a large number of dropouts from the study, or did not report the number of dropouts. Each suitable paper was assessed by the first author, with a random sample of 10 studies assessed by the second author. Cohen's k was conducted to assess the level of rating agreement on paper quality. There was a good level of agreement the authors' ratings ($k = .701$, 95%, $p = .001$).

Treatment outcomes

Eighteen studies looked at the clinical effectiveness of tele-therapy interventions. Of these, 15 used a control, typically the same form of intervention but in person. All of these studies reported that tele-therapy was associated with significant reductions in PTSD symptoms, regardless of the type of intervention used, except one study that only measured anger in veterans with PTSD.¹⁶ Of those studies that used follow-up measures, all but one¹⁷ found these changes to be present at three or six months following treatment. In this single study, where improvements were not maintained at follow-up, the intervention was a brief, telephone-based mindfulness programme, which was associated with reduced PTSD symptoms post-intervention. All studies used the Clinician Administered PTSD Scale (CAPS¹⁸) and/or the PTSD Checklist (PCL¹⁹) to measure PTSD symptoms.

Of these 18 studies, 12 reported comparisons between tele-therapy and in-person interventions using non-inferiority analyses, with nine concluding that tele-therapy was as effective as in-person therapy. Two studies suggested that participants receiving in-person interventions had significantly greater reductions in PTSD symptoms,^{20,21} although one study found the opposite – that tele-therapy

was more effective than usual care.²² Neither of the two studies that found in-person therapies to be more effective used randomisation to assign participants to treatment groups. Where tele-therapy was found to be more effective, participants in the tele-therapy condition were far more likely to have received CPT, and attending eight sessions of CPT was found to predict PTSD improvement, suggesting that receiving CPT, rather than having tele-therapy per se, explained the differences in outcomes.

Available data suggests that the treatment efficacy of tele-therapy is similar to in-person therapies, with similar treatment-response profiles evident across the two conditions. Furthermore, the use of manualised treatments such as CPT was associated with better outcomes in some cases.

Process issues

Thirteen studies reported findings related to attrition, dropout, and attendance rates. No studies found significant differences in attrition between tele-therapy and in-person treatments, with one finding that those receiving tele-therapy attended significantly more sessions.²² There were no differences in the number of sessions attended before dropout occurred, except for one study which suggested that those receiving tele-therapy attended more sessions before dropping out of treatment.¹³ One study reported that older veterans were more likely to complete tele-therapy treatment.²⁰ Another study found that those receiving in-person treatments were significantly more likely to dropout due to logistical or work reasons; for example, poor weather, transport issues, or work and family obligations.¹³

While attendance and dropout rates were largely the same between conditions, there were some differences in treatment adherence, such as in one study where those receiving in-person treatments were more likely to complete homework tasks;²³ however, the majority of studies reported no group differences. Three studies suggested that using tele-therapy may facilitate treatment uptake in female veterans, who might face more barriers to accessing treatment.²⁴⁻²⁶ Another study found that using a structured implementation strategy when rolling out tele-therapy services led to a significantly higher uptake in psychotherapy via tele-therapy.²⁷ One study suggested that treatment uptake can be improved by describing tele-therapy in positive terms when recruiting, such as referring to the 'cutting edge' use of technology, and the convenience it offers, rather than presenting it as a second-class alternative to traditional, in-person therapies.²⁸

In the majority of cases there were no differences between tele-therapy and in-person treatments on different process variables. Some evidence suggested that tele-therapy can help to increase treatment uptake and attendance.

Acceptability

Participant satisfaction with treatment was measured using a variety of standardised measures and also

Table 1. Study overview.

First author (year)	N	Treatment modality	Main findings
Acierno et al. (2017) ³⁶	132	Video – PE	Tele-therapy was effective and as effective as in person for PE at follow-up.
Acierno et al. (2016) ⁹	232	Video – BA	Tele-therapy was effective and as effective as in person for BA. Dropout rates were similar, but PPs attended more tele-therapy sessions before dropping out.
Brooks et al. (2012) ⁴³	39	Various	Clinicians were interviewed on their use of tele-therapy. Most were positive after having initial concerns, after receiving positive patient and staff feedback. Acceptance of tele-therapy by community teams and recognition of the need for flexibility helped to give tele-therapy credibility,
Clapp et al. (2016) ⁴⁴	109	Various – PE	Found three types of treatment ‘responder’ to PE, with no differences found between tele-therapy and in-person conditions.
Fortney et al. (2015) ²²	265	Video – CPT	Tele-therapy PPs had significantly better outcomes for PTSD than the usual care group. More tele-therapy PPs received a minimum ‘dose’ of CPT.
Franklin et al. (2017) ⁴⁰	27	Video + iPhone – PE	Some technical and contextual factors affected ability to engage; for example, poor phone service, lack of quiet area at home. Most (14) PPs preferred therapy via iPhone but this was not associated with higher attendance.
Frueh et al. (2007) ³¹	38	Video – group CBT	Therapist competence and adherence was good; for example, structuring sessions, developing rapport, conveying empathy. Tele-therapy therapists were better at introducing new exercises, otherwise there were no differences between tele-therapy and in-person treatment.
Frueh et al. (2007) ²²	38	Video – group CBT	No differences between tele-therapy and in-person groups on clinical outcomes. High treatment satisfaction found in both groups, attendance and drop-out rates were similar, in-person PPs reported more comfort in talking to therapists and had higher treatment adherence; for example, homework tasks.
Greene et al. (2010) ³⁴	112	Video – group anger management	No differences were found between tele-therapy and in-person groups on process variables; for example, attrition, adherence, satisfaction, therapeutic alliance, and group cohesion. Alliance with the group leader was lower in tele-therapy, although still high overall. The difference had no impact on treatment outcome.
Gros et al. (2016) ⁴⁵	89	Video – exposure	Tele-therapy was associated with reduced PTSD, anxiety, depression, and stress symptoms with large effect sizes. However, it was less effective than in-person therapy.
Gros et al. (2011) ²⁰	1	Video – exposure	Case report of managing an acute episode of suicidality. Using tele-therapy, the situation was managed effectively and aided by being able to communicate with other services and family via alternative means, whilst continuing the video link with the PP.
Gros et al. (2011) ⁴⁶	89	Video, PE	Tele-therapy was associated with reduced PTSD, depression, and anxiety symptoms, but in-person therapy had better clinical outcomes. Older PPs were more likely to complete tele-therapy.
Grubbs et al. (2017) ⁴⁷	132	Video, various	Only a small proportion of therapy is currently provided by tele-therapy. Using tele-therapy could increase access to evidence-based treatments.
Grubbs et al. (2015) ⁴⁸	133	Video, CPT	PPs with more severe PTSD were less likely to initiate CPT via tele-therapy. Those who were more depressed were less likely to attend at least eight sessions. Barriers that had previously been reported for in-person treatments were not present with tele-therapy.
Hernandez-Tejada et al. (2014) ¹³	69	Video, PE	There were no differences in dropout rates between tele-therapy and in-person conditions. Dropout reasons in tele-therapy were more likely to relate to intolerance of stress during exposure, although

(continued)

Table 1. Continued

First author (year)	N	Treatment modality	Main findings
Jaconis et al. (2017) ²⁴	1	Video, COPE	tele-therapy PPs completed more sessions before dropout. In-person dropout was more likely due to practical barriers such as travel or childcare. Case study concluding that it is possible to treat concurrent substance misuse with PTSD. Attendance and adherence was high and symptoms reduced.
Klee et al. (2016) ⁴¹	210	Various	Explored general technology use in veterans. Found that 30% have a computer, 13% use a Smartphone, 69% said they would consider using technology for healthcare, but those with PTSD were less likely to want tele-therapy.
Lightstone et al. (2015) ⁴⁹	1	Video, EMDR with music therapy	EMDR was enhanced with the addition of music therapy, with decreases in symptom severity.
Lindsay et al. (2015) ²⁷	Unknown	Video, various	Over a 21-month period, 27 tele-therapy clinics were set up, with a 3.2-fold increase in new patients and 6.5-fold increase in psychotherapy appointments.
Luxton et al. (2015) ⁵⁰	10	Video, BA	PTSD and depression symptoms decreased following tele-therapy and treatment satisfaction was high.
Maieritsch et al. (2016) ³²	90	Video, CPT	Tele-therapy was just as effective as in-person therapy, with PTSD and depression symptoms decreasing in both conditions. Therapeutic alliance was also equivalent.
Miller et al. (2016) ⁵¹	74	Various	Surveyed PPs on technology use. A large majority had access to an Internet-enabled device. PPs tended to prefer computers over phones for tele-therapy. Interest in use of tele-therapy was higher in younger PPs.
Morland et al. (2015) ²⁵	126 (21 veterans)	Video, CPT	In general, PTSD symptoms reduced with equivalence between tele-therapy and in-person treatment. There were lower PTSD reductions in the veteran sub-sample. There were no differences in measures of engagement and dropout rates.
Morland et al. (2014) ³³	125	Video, CPT	PTSD symptoms reduced post-treatment and at follow-up, with no differences between tele-therapy and in-person treatment. Therapeutic alliance, compliance, and satisfaction were high in both conditions.
Morland et al. (2013) ⁵²	74	Video, anger management	Tele-therapy was cost-effective compared to in-person treatment.
Morland et al. (2011) ³⁹	13	Video, group CPT	PTSD symptoms reduced, with no differences between tele-therapy and in-person conditions. There were also no differences in process outcomes; for example, dropout, acceptance, and satisfaction.
Morland et al. (2011) ³⁶	125	Video, CBT (anger)	Therapist adherence to the tele-therapy treatment protocol was rated as 'excellent'. Using tele-therapy did not negatively impact on protocol adherence.
Morland et al. (2010) ¹⁶	125	Video, CBT (anger)	Anger symptoms in PPs with PTSD reduced in both tele-therapy and in-person conditions, with no differences between groups. There were also no differences in process variables (e.g. attrition, adherence, satisfaction), although PPs receiving in-person therapy reported higher therapeutic alliance.
Morland et al. (2004) ³⁸	17	Video, group coping skills	Lower attrition rates were found in tele-therapy. No differences between conditions were found for process variables.
Niles and Wolf (2012) ¹⁷	33	Telephone, mindfulness	PTSD symptoms reduced post-treatment but not at follow-up. High levels of satisfaction were reported.
Price and Gros (2014) ⁴²	59	Video, PE	PTSD and depression symptoms decreased after tele-therapy. Symptom change was not influenced by familiarity with tele-therapy technologies.
Shore et al. (2012) ⁵³	85	Various	Use of all health services increased following the implementation of tele-therapy clinics.

(continued)

Table 1. Continued

First author (year)	N	Treatment modality	Main findings
Strachan et al. (2012) ⁵⁴	31	Video, BA-TE	PTSD symptoms reduced following tele-therapy, with no significant differences between tele-therapy and in-person conditions.
Strachan et al. (2012) ¹³	226	Video, PE	When setting up tele-therapy services, additional consideration is required for safety, informed consent, data protection, and licensure; for example, providing services to out-of-state PPs.
Tan et al. (2013) ²⁶	34	Video, group psycho-education	Pain, PTSD, and depression symptoms reduced following tele-therapy. High acceptability was reported. Qualitative data suggested PPs wished to continue with the intervention and felt more empowered.
Thorp et al. (2012) ³⁵	228	Video, CPT, and PE	Reports on two on-going trials. Therapists report challenges with video image and sound quality, plus missing non-verbal behavioural cues. Satisfaction with tele-therapy was high.
Tuerk et al. (2010) ²⁸	47	Video, PE	PTSD symptoms reduced following tele-therapy, with no differences in outcomes between tele-therapy and in-person treatment. Some technological issues were experienced. No safety issues were reported.
Whealin et al. (2015) ⁵⁵	600	Various	Surveyed tele-therapy preferences. PPs with PTSD and lower education were less willing to use tele-therapy.
Wierwille et al. (2016) ²¹	221	Video, CPT, and PE	PTSD symptoms reduced in both tele-therapy and in-person conditions. PPs receiving in-person therapy had greater symptom reduction. Attrition rates were the same between conditions.
Yuen et al. (2015) ²⁹	52	Video, PE	PTSD symptoms reduced in both tele-therapy and in-person conditions, with no differences between the two in terms of clinical or process outcomes.
Ziemba et al. (2014) ³⁰	18	Video, CBT	PTSD symptoms reduced in both tele-therapy and in-person conditions, with no differences between the two. PP satisfaction was higher in those receiving tele-therapy.

PTSD: post-traumatic stress disorder; PE: prolonged exposure; BA: behavioural activation; CPT: cognitive processing therapy; PP: participant; COPE: concurrent treatment of PTSD and substance-use disorders using prolonged exposure; BA-TE: behavioural activation and therapeutic exposure.

measures developed for specific studies. No studies found any significant differences in satisfaction and acceptability between tele-therapy and in-person treatment groups, with most reporting high levels of satisfaction with both. Accepting the need for tele-therapy treatments was found to be important for their success. Overall, tele-therapy was found to be acceptable to veterans and, in one study, to clinicians delivering therapy, with no differences with in-person therapies.

Clinical issues

Therapeutic alliance. Ten studies investigated the quality of therapeutic alliance and comparisons between tele-therapy and in-person interventions, with mixed results. Using a variety of readily available measures, six studies looked at therapeutic alliance in one-to-one therapies. Of these, five reported equivalence in therapeutic alliance between tele-therapy and in-person treatments,^{13,29–32} but one study found that those receiving in-person treatments reported feeling more comfortable in talking with the therapist.²³ This finding was based on participant self-reports, whereas a finding from a partner study using the same

data suggested that therapists found that using tele-therapy did not compromise their ability to build rapport.³¹

Three studies reported on therapeutic alliance in groups. One study of group-based CPT found high levels of therapeutic alliance and no differences between tele-therapy and in-person conditions.³³ However, two studies of anger management groups found that the tele-therapy groups reported either lower group therapy alliance,¹⁵ or lower alliance with the group leader.³⁴ In neither study were these findings related to any effect on therapeutic outcome or any other process variables.

Thorp et al.³⁵ described lessons learned so far from two on-going randomised controlled trials using tele-therapy interventions. Anecdotal reports from therapists involved in the trials suggested some issues had arisen that might affect therapeutic alliance, such as the ability to detect non-verbal communications, like anxious fidgeting. These therapists did report that tele-therapy did not affect their ability to develop rapport. Some participants described that they felt more comfortable and able to 'let their guard down' when using tele-therapy.

Findings on therapeutic alliance are mixed. Although the majority report equivalence between tele-therapy and

in-person conditions, some have suggested that veterans might have a stronger alliance with or feel more comfortable in talking to therapists in-person. In other cases, therapists have reported some challenges such as detecting body language of veterans, but that, overall, using teletherapy does not affect their ability to establish rapport.

Managing risk and safety. Four studies discussed issues relating either to managing suicidality or more general patient safety in the context of arousing high levels of emotion in trauma-focused therapies; for example, during exposure tasks. Three studies reported that there were no significant difficulties in using teletherapy to effectively manage patient anxiety in exposure-based interventions.^{13,24,28} Tuerk et al.²⁸ described how matters such as high anxiety could be managed using the same therapeutic protocol in teletherapy as with in-person therapy. One of these studies, while not finding statistically significant differences, did report a trend for participants having concerns about managing their emotions during exposure tasks when using teletherapy; for example, being concerned about losing control.¹³ They suggested that it might be prudent to proceed more cautiously when doing exposure tasks in teletherapy interventions.

Although many studies used current suicidality as an exclusion criterion in recruitment, one case study reported on an acute episode of suicide risk during teletherapy.²⁰ This paper describes how the episode was successfully managed and how using video technology had advantages such as being able to maintain contact with the patient while simultaneously liaising with other professionals, and being able to monitor behaviour and the safety of the environment, which would have been more difficult using the telephone, for example.

The evidence suggests that while there may be some occasions where veterans have concerns about carrying out exposure tasks without the physical presence of the therapist, these therapies can be used just as effectively with teletherapy as in-person treatment, and that if appropriate measures and steps are taken to manage safety, episodes of acute suicidality can also be managed.

Therapist fidelity and competence. Three studies measured levels of fidelity to treatment protocols in therapists delivering teletherapy interventions. They all found high levels of fidelity and therapist competence, with no significant differences between conditions.^{31,36,37} One study also reported high levels of satisfaction among clinicians in terms of their confidence in delivering teletherapy interventions.³⁸

Feasibility

Use of technology. Ten studies described factors affecting the use of technology in teletherapy intervention. Commonly reported technical difficulties included low image resolution on videoconferencing technology, not being able to connect, and slight audio delays.^{28,33,35,39,40}

Thorp et al.³⁵ described several lessons learned from using teletherapy technologies, which varied from general suggestions, such as orientating patients and therapists to the technology before use to increase comfort, to the more specific alterations; for example, using a blue backdrop and using heavy chairs to minimise movement on camera. This study also describes how some participants had expressed concerns about the security of video transmissions. In studies that used local clinics rather than home-based teletherapy, it was recommended to have local staff on hand to assist, such as to receive homework and other materials via fax machine and disseminate to participants.⁴⁰ One study described how some participants had difficulties with Internet service, which may have contributed to them withdrawing from the study, and some did not have access to a quiet area for therapy sessions.³⁹

Two studies investigated factors relating to technology use for mental health interventions. One study found that older, less-educated veterans, and those with alcohol-related difficulties were less likely to access Internet-enabled technologies, and having a PTSD diagnosis was associated with being less willing to use computerised therapies.⁴¹ While the results of these two studies suggest that being older might be a barrier to teletherapy engagement, a further study found that neither age nor prior familiarity with teletherapy technologies were related to treatment response.⁴² The same authors suggested that all therapists should be fully trained in using the technology so any issues can be resolved quickly. One study suggested that in most cases, any technological difficulties were investigated and resolved in the first few sessions, and clients were contacted on the telephone as a back-up option where video technologies failed.²⁹

In using teletherapy technology, some technical issues have been encountered, but have not adversely affected the therapy.

Discussion

The aim of the present study was to provide a systematic review of lessons learned from using teletherapy in veterans with PTSD, in the context of exploring teletherapy as a potential way of increasing access to psychological services in this population. The majority of studies were conducted in the USA, and all except one used videoconferencing technologies. A wide range of treatment modalities were investigated, although the most commonly used was PE.

Teletherapy interventions were found to be effective in reducing PTSD symptoms, and in most cases, were just as effective as in-person treatments. Most process variables were similar across modalities, with evidence for teletherapy interventions increasing accessibility of therapies. In a few studies, participants reported feeling less comfortable in using teletherapy, although the acceptability of and satisfaction with teletherapy interventions was high and comparable to in-person treatments.

Most studies reported that using tele-therapy did not affect the quality of rapport or therapeutic alliance, although some challenges such as difficulty reading body language were described. No difficulties were reported relating to therapist's ability to adhere to treatment protocols. Other challenges were described in terms of using technology, such as reduced image resolution on video calls, or audio delays. However, there was no evidence that these negatively impacted on the therapeutic processes or outcomes.

Recommendations and future research

Evidence from this review suggests that tele-therapy is an appropriate treatment option for veterans with PTSD. Findings suggest that veterans who use tele-therapy would not be at a disadvantage in terms of treatment effectiveness, although some will naturally have preferences about the method of treatment they receive. Given the relative infancy of tele-therapy interventions, it is important to continue evaluating services, especially given some of the challenges noted in this review, such as difficulties reading non-verbal communication, or disruptions in communication due to technological faults. If tele-therapy is to be more widely used, it would be advisable to continue to evaluate these process issues as well as treatment outcomes.

In the present review, there was variation in the treatments offered and treatment provision across different US states. Future research might investigate which specific interventions, such as PE, CBT, and so on, are the most effective, and consider how best to adapt treatment delivery for use in tele-therapy. In the future, standardised guidelines for delivering different treatments via tele-therapy could be of use.

This review demonstrates that tele-therapy has the potential to increase access to treatments in populations that might be hard to reach, such as veterans. Some authors suggested that female veterans in particular could benefit from this treatment option, perhaps especially when the alternatives involve attending typically male-dominated residential treatment programmes.

If tele-therapies are to be rolled out on a large-scale, attention should be drawn to the fact that most of the research to date is from North America. It is clear from the weight of the evidence that the US VHA have invested in technologies required for tele-therapy, with many studies in the present review utilising these. If further research was undertaken in other countries, such technology may not be as widely available. Therefore, future research might investigate the benefits of using freely available methods of video telecommunication, such as Skype, for use in tele-therapy.

Limitations

The literature search was conducted using as many databases available to the authors at the time of publishing.

However, it is always possible that some relevant studies were not found, despite measures being taken to minimise this possibility.

Because the literature is dominated by studies from North America, the scope of the present review is limited as the evidence is not based on a representative sample of all veterans. A small number of studies discussed the potential impact of veterans receiving free healthcare while they still have a diagnosable illness and the potential impact this might have on treatment outcomes.³⁵ This limitation might also affect the generalisability of this review's findings.

Conclusion

Alternative treatment options are required in veteran populations in order to increase access to evidence-based therapies for those with PTSD and other mental health difficulties. Tele-therapy offers one such treatment option, and has been investigated in North American veterans. Early findings suggest that tele-therapy is as effective as in-person treatments, and comparable in terms of acceptability and therapy process issues, all of which suggest it is a viable alternative to in-person treatments. However, there are some instances of differences between tele-therapy and in-person treatments, such as in therapeutic alliance. Therefore, tele-therapy should continue to be evaluated and scrutinised in order to ensure it used in a way that maximises its effectiveness. Moreover, research could benefit from investigations into more representative samples of populations in different countries.

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