

Cognitive Behavioural Therapy for Post-Traumatic Stress Disorder: A Review of the Clinical and Cost-Effectiveness

[Adapted from Pohar SL, Nkansah E. [*Cognitive Behavioural Therapy for Post-Traumatic Stress Disorder: A Review of the Clinical and Cost-Effectiveness*](#). (Health Technology Inquiry Service). Ottawa: Canadian Agency for Drugs and Technologies in Health; 2010.]

Introduction

An estimated 5% of males and 10% of females experience an episode of post-traumatic stress disorder (PTSD) at some point in their lives following a major traumatic event.¹ Symptoms of PTSD include upsetting thoughts, nightmares and flashbacks about the traumatic event, avoidance of reminders of the event, sleep disturbances, numbing of general responsiveness, increased irritability, and hypervigilance.^{1,2} To satisfy the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) criteria for PTSD, the symptoms must persist for at least one month and they must cause clinically important distress or reduced day-to-day functioning.¹

PTSD is a complex disorder that often requires a long-term, multi-faceted approach to treatment.² A combination of pharmacotherapy and psychotherapy can be employed.² Cognitive behavioural therapy (CBT) is a form of psychotherapy that is based on the relationships between thoughts, emotions, and behaviour.² CBT makes use of a number of techniques that have been developed to change an individual's distressing emotions by changing his or her thoughts, beliefs, and behaviours.³ The purpose of therapy is to reduce distress or unwanted behaviour by undoing this learning or by providing new, more adaptive learning experiences.³ The behavioural component of CBT aims to reduce dysfunctional emotions and behaviour by altering the individual's behaviour and the factors that control it.³ The cognitive component attempts to reduce dysfunctional emotions and behaviour by altering an individual's appraisals and thinking patterns.³ In comparison with other psychotherapies, CBT is brief, highly structured, problem-oriented, and prescriptive, and individuals are active collaborators.³ The benefit of CBT in PTSD has been demonstrated in a number of studies.^{3,4}

CBT for PTSD may not always be available as an alternative in areas without access to psychotherapists trained in this technique. Self-directed CBT (for example through a web-based or stand-alone computer program) or teletherapy CBT have been introduced to help improve access to CBT for patients in remote areas.⁵ However, it is not clear if these alternate delivery strategies are as clinically effective as traditional, face-to-face therapy. Moreover, it is not clear if alternate delivery strategies are appropriate for the entire population with PTSD or whether they are better suited to particular subgroups of the population. The report reviews the evidence of clinical and cost-effectiveness of CBT delivered in a self-directed manner or through telehealth applications relative to traditional CBT and guidelines for patient

selection. This information could help in decision-making pertaining to which patients could benefit from CBT for PTSD when delivered in these alternative formats.

Objective

The objective of the report is to answer the following research questions:

- What is the clinical effectiveness of self-directed CBT or teletherapy compared with traditional CBT for the treatment of adults with PTSD?
- What is the cost-effectiveness of self-directed CBT or teletherapy compared with traditional CBT for the treatment of adults with PTSD?
- What are the guidelines for patient selection criteria for self-directed CBT or teletherapy for the treatment of adults with PTSD?

Methods

A limited literature search was conducted on key health technology assessment resources, including OVID's MEDLINE and Embase, The Cochrane Library (Issue 3, 2009), the University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between 2004 and December 2009. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, controlled clinical trials, and observational studies, economic studies, and guidelines.

Results

Two studies were identified in which CBT delivered through teletherapy was compared with a traditional method of delivery (one randomized controlled trial⁶ and one non-randomized controlled clinical trial [CCT]).⁵ No studies of the cost-effectiveness of self-directed CBT or teletherapy compared with traditional CBT for the treatment of adults with PTSD were identified with the search strategy. Identified guidelines^{3,7,8} for the management of PTSD did not address patient selection criteria for self-directed CBT or teletherapy for the treatment of adults with PTSD.

Randomized Controlled Trials

The identified randomized controlled trial⁶ was a single-centre non-inferiority trial of group CBT delivered through teletherapy or face-to-face contact for PTSD in veterans. The primary objective of the

study was to compare outcomes for the two modes of service delivery. This intervention was specific to combat-related PTSD. It was not stated in the report if all participants in each study group had the intervention delivered to them together as a single group. The report did not state if the same therapist was used for both study arms. A number of previously developed instruments were used to assess the outcomes of the two modes of delivery. Primary and secondary analyses were performed. The primary analysis used a non-inferiority approach to statistical testing, whereas the secondary analysis used standard statistical hypothesis testing. Outcomes were assessed immediately post-treatment and three months later.

Ninety-seven male veterans were referred for participation in the study, 38 of which were randomized to face-to-face ($n = 21$) or teletherapy ($n = 17$) as the mode of CBT delivery. Of these 38 participants, 25 had complete data for at least one instrument and comprised the primary analysis set. Missing data were imputed by carrying the last observation forward (for example, if three-month data were missing, the post-treatment data were used). However, the authors presented only the analyses based on complete data because there was little difference between the results based on imputed or complete data. Of note, 24% of participants had substance abuse disorders despite this being an exclusion criterion. No statistically significant differences in change from baseline were found for the self-reported outcomes between the two modes of delivery post-treatment and at the three month follow-up. For process measures, neither overall satisfaction, likeliness of using the therapy again, or likeliness of referring a family member or friend differed between groups, nor did ratings of the quality of communication or level of comfort with other group members. The only difference between the two methods of delivery was in comfort with talking to the therapist, which was significantly higher in the face-to-face group. Group differences for session attendance were not statistically significant. However, the face-to-face group was more likely to have completed homework assignments.

It was concluded that the findings supported the use of teletherapy in the treatment of veterans with PTSD, but that caution should be exercised in interpreting the results given the study's limitations. The authors of the study stated the limitations to be low rates of clinical change in either group, the sample size, and the dropout rate. The authors indicated that these factors may have affected the ability to detect significant differences between groups and may have introduced bias into the comparisons between groups. A number of details of the intervention were not reported, including whether the facilitator or therapist was the same for both interventions. This could impact the degree of clinical change in each group. Further, the size of each group session could not be ascertained from the study report, which would make the intervention difficult to replicate. As well, the training of the individual or individuals delivering the intervention was not reported, which would again make the intervention difficult to replicate. The representativeness of the sample may have been compromised by the proportion of participants who were

screened versus randomized. As well, those veterans who referred themselves to the program could be a systematically different subset of the larger population of veterans. It is not clear if the results of this study could be generalized to female veterans with PTSD, other causes of PTSD (i.e., unrelated to combat), civilian populations, and to CBT delivered as a one-on-one intervention. A strength of this study was the use of previously developed, standardized assessment tools to measure the effect of the interventions.

Controlled Clinical Trials

The identified CCT⁵ was a non-randomized controlled study of CBT delivered through teletherapy (n = 16) or face-to-face contact (n = 32) carried out in Montreal and at a remote location 200 km away from the city. Individuals in the face-to-face group were recruited in Montreal. Individuals in the videoconferencing group were recruited from Montreal (n = 5) and the remote location (n = 11). Participants were selected from pre-existing wait lists of two anxiety disorders clinics and from newspaper advertisements and radio announcements for the remote location. The primary objective of the study was to compare outcomes for the two modes of delivery, specifically in terms of treatment effectiveness, comfort with the remote communication, and perceptions of videoconferencing. CBT was delivered one-on-one and was tailored to each participant based upon symptom type and severity. The interventions were delivered by a core group of psychologists with an average of five years experience with CBT and in-depth knowledge of PTSD. These psychologists treated patients in both groups. In addition to the core group, seven other psychologists each treated one to five participants in the face-to-face group. The intervention was an average of 21 sessions in the teletherapy group and 19 sessions in the face-to-face group. There was a one-month waiting period before the initiation of treatment to ensure that symptoms were stable, but this was waived for patients who needed urgent intervention. A number of previously developed instruments were used to assess the outcomes of the two modes of delivery. These questionnaires were administered at the beginning of the one-month waiting period, pre-treatment, and post-treatment (immediately following the completion of therapy).

Forty-eight participants completed the study, but an additional 20 participants (eight in the teletherapy group and 12 in the face-to-face group) were enrolled and dropped out or were excluded after the interventions began. Sexual aggression was the most common traumatic event that precipitated PTSD. After treatment, 81% of participants in the videoconference group and 75% of participants in the face-to-face group no longer met the diagnostic criteria for PTSD. No differences over time were noted between the two treatment groups for the Modified PTSD Symptom Scale (the primary outcome measure), but both groups improved over time in the frequency and severity of PTSD symptoms. Secondary measures (Beck Depression Inventory, Beck Anxiety Inventory, Assessment of Current Functioning) also indicated

statistically significant improvements over time in both groups, but no differences between the two modes of delivery. For videoconferencing process measures, changes between pre-treatment and post-treatment were not statistically significant. From these results, it was concluded that videoconferencing can be an effective means of delivering CBT for PTSD.

Limitations that the authors identified included the lack of random assignment to the delivery modes, suboptimal image quality and latency with the videoconferencing, and the short-term follow-up, which did not permit the assessment of whether any gains were sustained over a longer duration of time. An additional limitation to this study included a lack of power to detect differences between groups (the authors indicated that 730 participants would have been required to have 80% power to do so). A major limitation to this study was the potential for systematic differences between groups due to the different modes of recruitment used, possible differences between rural and urban residents, differences between the psychologists who delivered the interventions, and the non-standardized intervention (in terms of content and duration). Further, there was potential for bias in the selection of patients from the waiting lists as this did not appear to be done in a random manner. This could compromise the representativeness of the sample and, hence, the generalizability of the results. As well, the experience of the psychologists in CBT and PTSD could influence generalizability. Finally, the participants in the remote region entered the study through self-referral, which may not make them representative of the larger population with PTSD as they were likely motivated to seek treatment. Strengths of this study included the use of standardized measures for which evidence of validity and reliability had been previously demonstrated and a therapeutic integrity check to ensure that the principles of CBT were being adhered to in the interventions.

Limitations

The body of evidence comparing the clinical effectiveness of CBT delivered through teletherapy compared with the traditional face-to-face mode of delivery for the treatment of PTSD is limited. Two studies,^{5,6} which included a total of 86 participants, were identified. The manner in which these studies were conducted could potentially lead to bias and could limit the generalizability of the results beyond the immediate context as outlined in the previous section. No studies on self-directed CBT were identified. Further, there were no studies of cost-effectiveness comparing the alternate delivery modes and usual face-to-face delivery or guidelines as to which patients with PTSD would be best suited to self-directed CBT or teletherapy.

Conclusions

The available evidence suggests that the clinical effectiveness of CBT delivered through teletherapy in group and one-on-one sessions is comparable with face-to-face delivery. As well, overall participant satisfaction appeared to be comparable between the two delivery modes of group session CBT. However, because of issues with methodologies and factors that limit the generalizability of the results, the evidence should be interpreted with caution. No conclusions can be made about the clinical effectiveness of self-directed CBT, the cost-effectiveness of CBT delivered through teletherapy or in a self-directed manner, or about which patients are best suited to the alternate delivery formats, as no literature was identified. Before alternate delivery methods are widely adopted, more research is needed to determine their clinical effectiveness and to help identify which patients could most likely benefit from these approaches. In the absence of access to face-to-face care, however, teletherapy with CBT may be an alternative used to treat patients with PTSD who would otherwise be without access to such an intervention.

References

1. Bisson, J. Post-traumatic stress disorder . BMJ Clin Evid (Online) [Internet]. 2006 Dec [cited 2010 Jan 12];12(1005). Available from: <http://clinicalevidence.bmj.com/> Subscription required.
2. Ciechanowski P, Katon W. Overview of post-traumatic stress disorder. 2009 Sep 18 [cited 2010 Jan 12]. In: UpToDate. Version 14.3. Waltham (MA): UpToDate, Inc.; c2005 - . Available from: <http://www.uptodate.com> Subscription required.
3. National Collaborating Centre for Mental Health. Post-traumatic stress disorder (PTSD): the management of PTSD in adults and children in primary and secondary care [Internet]. London: National Institute for Clinical Excellence; 2005 [cited 2009 Nov 10]. Available from: <http://www.nice.org.uk/nicemedia/pdf/CG026NICEguideline.pdf>
4. Mendes DD, Mello MF, Ventura P, Passarela CM, Mari JJ. A systematic review on the effectiveness of cognitive behavioral therapy for posttraumatic stress disorder. *Int J Psychiatry Med.* 2008;38(3):241-59.
5. Germain V, Marchand A, Bouchard S, Drouin MS, Guay S. Effectiveness of cognitive behavioural therapy administered by videoconference for posttraumatic stress disorder. *Cognitive Behav Ther.* 2009;38(1):42-53.
6. Frueh BC, Monnier J, Yim E, Grubaugh AL, Hamner MB, Knapp RG. A randomized trial of telepsychiatry for post-traumatic stress disorder. *J Telemed Telecare.* 2007;13(3):142-7.
7. Work Group on ASD and PTSD. Treatment of patients with acute stress disorder and posttraumatic stress disorder [Internet]. Washington (DC): American Psychiatric Association (APA); 2004 Nov. [cited 2010 Jan 12]. Available from: http://www.psychiatryonline.com/pracGuide/loadGuidelinePdf.aspx?file=AcuteStressDisorder-PTSD_GuidelineWatch Practice guideline.

8. Forbes D, Creamer M, Phelps A, Bryant R, McFarlane A, Devilly GJ, et al. Australian guidelines for the treatment of adults with acute stress disorder and post-traumatic stress disorder. *Aust N Z J Psychiatry*. 2007 Aug;41(8):637-48.