Journal of Affective Disorders 148 (2013) 331–337

Contents lists available at SciVerse ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research report

Internet-based behavioral activation and acceptance-based treatment for depression: A randomized controlled trial

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ARTICLE INFO

Article history:
Received 8 July 2012
Received in revised form
22 December 2012
Accepted 24 December 2012
Available online 26 January 2013

Keywords:
Depression
Internet-based treatment
Acceptance and commitment therapy
Randomized controlled trial

ABSTRACT

Background: Internet-based cognitive behavior therapy for depression has been tested in several trials but there are no internet studies on behavioral activation (BA), and no studies on BA over the internet including components of acceptance and commitment therapy (ACT). The aim of this study was to develop and test the effects of internet-delivered BA combined with ACT against a waiting list control condition as a first test of the effects of treatment.

Methods: Selection took place with a computerized screening interview and a subsequent semi-structured telephone interview. A total of 80 individuals from the general public were randomized to one of two conditions. The treatment lasted for 8 weeks after which both groups were assessed. We also included a 3 month follow-up. The treatment included interactive elements online and a CD-ROM for mindfulness and acceptance exercises. In addition, written support and feedback was given by a therapist every week.

Results: Results at posttreatment showed a large between group effect size on the Beck Depression inventory II $d=0.98$ (95%CI=0.51–1.44). In the treated group 25% (10/40) reached remission defined as a BDI score ≤ 10 vs. 5% (2/40) in the control group. Results on secondary measures were smaller. While few dropped out from the study ($N=2$) at posttreatment, the average number of completed modules was $M=5.1$ out of the seven modules.

Limitations: The study only included a waiting-list comparison and it is not possible to determine which treatment components were the most effective.

Conclusions: We conclude that there is initial evidence that BA with components of ACT can be effective in reducing symptoms of depression.

1. Introduction

Depression is a serious health problem in the world, with a high incidence rate and often a long duration with recurrent episodes (Gotlib and Hammen, 2009). There are several evidence-based psychological treatments for major depression (Cuijpers et al., 2008), and one is behavioral activation (BA), which exists in different forms (Dimidjian et al., 2011; Kanter et al., 2010), but with a shared focus on behavior rather than on modifying maladaptive cognition. Systematic reviews and meta-analyses clearly suggest that BA is effective (Cuijpers et al., 2007; Ekers et al., 2008; Mazzucchelli et al., 2009), and there are indications that it can be slightly more effective in more severe forms of depression (Coffmann et al., 2007; Dimidjian et al., 2006), even if there is yet little empirical support for this notion. A recent form of BA has incorporated techniques from Acceptance and Commitment Therapy (known as ACT), such as working with client values and willingness to change (Kanter et al., 2009). The evidence for ACT on its own in the treatment of depression is yet limited (Bohlmeijer et al., 2011; Forman et al., 2007; Zettle and Hayes, 1987; Zettle and Rains, 1989), and the combination of BA with ingredients of ACT has also not been studied in controlled trials. Another component in recent depression treatments is mindfulness (Piet and Hougaard, 2011), which can be a standalone treatment or a part of another treatment such as cognitive therapy, ACT and BA.

A new development in the treatment of depression is to deliver the intervention via the internet (Carlbring and Andersson, 2006).

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http://dx.doi.org/10.1016/j.jad.2012.12.020

Given that the treatment is guided by a therapist, internet-based cognitive behavior therapy (ICBT) has been found to be effective as a treatment for depression (Andersson and Cuijpers, 2009). Unguided ICBT has however been found to be less effective (de Graaf et al., 2009), even if there are exceptions where unguided ICBT for depression has been found to work (Meyer et al., 2009). Overall, however, unguided internet treatments tend to have larger dropout rates and smaller effects (Christensen et al., 2009). A recent meta-analysis showed a mean standardized mean difference (Cohen's *d*) of $d=0.78$ for guided interventions, $d=0.58$ for treatments with administrative support, and $d=0.36$ for studies without guidance (Richards and Richardson, 2012). Moreover, the same review noted that dropout rates were 28% for professionally guided treatments, 38.4% when the support was administrative, and a stunning 74% dropout rate when the treatments were unguided, leading the conclusion that unguided treatment are clearly inferior in terms of effects and dropout rates.

Most studies on guided internet treatment for depression have combined behavioral activation and cognitive techniques, for example in studies conducted in Australia (Titov et al., 2010), Sweden (Andersson et al., 2005), and Switzerland (Berger et al., 2011). There is also one study on psychodynamic internet treatment (Johansson et al., 2012a), and one on problem solving therapy for depressive symptoms (Warmerdam et al., 2008). To our knowledge there are no controlled studies on internet-delivered BA as a standalone treatment. There are reasons to consider incorporating ACT components in BA as there has been a development of behavior therapy which is incorporated in recent manuals of BA (Kanter et al., 2009), in particular the concepts of values and defusion. Indeed, it may be that these aspects are already implicit in BA, but by adding values (which relates to motivation) and defusion (which is a way to confront negative thoughts), BA becomes a more comprehensive treatment approach. It is worth mentioning that there are different conceptualizations of BA (Kanter et al., 2010), and the name BA may be misunderstood as being mere activation in terms of increasing positive activities when in fact it often incorporates other aspects such a focus on avoidance and evaluation of the function of behavior (Martell et al., 2010). Given that mindfulness exercises often play a role in ACT manuals to target the process of "contact with the present moment" (Hayes et al., 1999), we decided to add the option of practicing mindfulness alongside the BA and ACT components. Given the possibility that BA and ACT combined (with elements of mindfulness) may be a useful treatment for some individuals with depression it is important to investigate if BA including ACT (and mindfulness) can be delivered over the internet as guided self-help. Another important reason to test if BA can be delivered from a distance using the internet is the fact that a majority of persons with depression do not get appropriate care, with a large treatment versus demand gap (Kohn et al., 2004). The sample we target is individuals with mild to moderate depression. As a moderately high depression score may reflect longstanding depressive symptoms in the form of dysthymia, a condition for which psychological treatments tend to yield smaller effects (Cuijpers et al., 2010), the presence of dysthymia was investigated as a moderator of outcome with the expectation that dysthymia would result in smaller treatment effects. As an alternative way to investigate the effects of more severe depression we investigated the role of seeking additional treatment alongside our intervention.

The overall aim of the present study was to investigate the effects of internet-delivered BA including components of ACT in a sample of individuals diagnosed with major depression of mild to moderate severity. We expected that the treatment would lead to reduced symptoms of depression compared with a group who were randomly allocated to a waiting-list.

2. Method

2.1. Recruitment and measures

Participants were recruited from the general public by means of a 10×8 cm advertisement, published on a Sunday in January 2011, in a Swedish newspaper (Dagens Nyheter) with wide circulation. The advertisement contained the heading "Do you feel depressed?" and brief information about the study including a web address. Interested participants were instructed to access the web page. This web site included an outline of the study, a short presentation of the people involved in the study and the possibility to sign up for the trial. Selection took place with a computerized screening interview consisting of the self-rated version of the Montgomery Åsberg Depression Rating Scale (MADRS-S; Svanborg & Åsberg, 1994), Beck Depression Inventory (BDI-II; (Beck et al., 1996), Beck Anxiety Inventory (BAI; (Beck et al., 1988), Quality in life inventory (QOLI; (Frisch et al., 1992), and 15 additional questions regarding demographics and current and past treatment. All questionnaires have demonstrated good psychometric properties even when administered online (Carlbring et al., 2007; Holländare et al., 2010). The measures were later used as outcome variables in the trial. Given that the BDI-II has been used in numerous trials we designated this measure as the main outcome, even if weekly measures were collected using the MADRS-S.

2.2. Inclusion criteria, interview procedure, and demographics

To be included in the study, participants had to meet the following criteria: (a) be at least 18 years of age; (b) live in Sweden; and (c) have a MADRS-S score in the range of 15–30. If the participant was on medication the dosage had to be kept constant for the past 3 months. Participants who fulfilled the initial inclusion criteria (a–c) according to the computerized screening were telephoned and subsequently interviewed using module A from the Structured Clinical Interview for DSM-IV – Axis I disorders (SCID-I; (First et al., 1997). Two M.Sc. clinical psychology students, who had completed their clinical training and were in their last semester, conducted the interviews. A psychiatrist then assessed the SCID protocols after the interviews. Hence, all participants had to fulfill the criteria for major depressive episode according to the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000). We also assessed the presence of dysthymia. Of the 215 individuals who initially expressed interest in the study during the month of January 2011, 80 were subsequently included after the telephone-based diagnostic interview. The reasons for exclusion are specified in the CONSORT flowchart (Fig. 1). The study protocol was approved by the regional ethics committee at Umeå University, and written informed consent was obtained from all participants. Demographic data on the included participants are presented in Table 1.

2.3. Research design and randomization

The participants were divided into two groups – treatment or control – by an online true random-number service independent of the investigators and therapists. Both groups completed a weekly mood rating by answering the nine items on the MADRS-S. No feedback was given on the results. Whereas those in the waiting list control group received no treatment, those in the treatment group received internet-administered self-help including minimal therapist contact as outlined below. However, due to ethical reasons the control group was given treatment immediately following the post treatment assessment period. Hence, there is no 3 month follow-up data available for the untreated group.