



Predictors of outcome in Internet-based cognitive behavior therapy for severe health anxiety



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ABSTRACT

Internet-based cognitive behavior therapy (CBT) for severe health anxiety can be effective, but not all patients achieve full remission. Under these circumstances, knowledge about predictors is essential for the clinician in order to make reliable treatment recommendations. The primary aim of this study was to investigate clinical, demographic, and therapy process-related predictors of Internet-based CBT for severe health anxiety. We performed three types of analyses on data from a sample comprising participants ($N = 81$) who had received Internet-based CBT in a randomized controlled trial. Outcomes were a) end state health anxiety, b) improvement in health anxiety (continuous change scores), and c) clinically significant improvement. Outcomes were assessed at six-month follow-up. The results showed that the most stable predictors of both end state health anxiety and improvement were baseline health anxiety and depressive symptoms. Treatment adherence, i.e. the number of completed treatment modules, also significantly predicted outcome. Notably, health anxiety at baseline was positively associated with symptom improvement while depressive symptoms was negatively related to improvement. Demographic factors were largely without significant impact on end state symptoms or improvement. We conclude that baseline symptom burden and adherence to treatment have strong predictive effects in Internet-based CBT for severe health anxiety.

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Introduction

The main feature of severe health anxiety, or hypochondriasis according to DSM-IV, is a persistent fear of serious illness based on misinterpretation of bodily symptoms (American Psychiatric Association, 2000). Although severe health anxiety was not long ago considered a disorder highly difficult to treat, cognitive behavior therapy (CBT) has been found to be effective in reducing health anxiety (Clark et al., 1998; Greeven et al., 2007; Seivewright et al., 2008; Sorensen, Birket-Smith, Wattar, Buemann, & Salkovskis, 2011; Speckens et al., 1995; Thomson & Page, 2007;

Warwick, Clark, Cobb, & Salkovskis, 1996). In a recently published study of CBT delivered via the Internet for severe health anxiety, we showed that this could be an effective treatment yielding effect sizes at par with conventional CBT (Hedman et al., 2011). Internet-based CBT has several advantages, one of the most important being that it can be used to increase availability to psychological treatments.

Although generally effective, there is considerable inter-individual variance in outcome and at least one-third of patients with severe health anxiety do not respond sufficiently well to CBT regardless if delivered in a conventional format or via the Internet (Buwalda, Bouman, & van Duijn, 2007; Hedman et al., 2011). Under these circumstances investigation of predictors of treatment outcome is important as the information obtained could be used to lessen the proportion of treatment failures, and to inform the clinician about which treatment to recommend for whom (Keijsers, Hoogduin, & Schaap, 1994; Kraemer, Wilson, Fairburn, & Agras,

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2002). Predictor variables can broadly be classified into three categories: a) clinical characteristics, i.e. variables related to the clinical disorder such as symptom levels, b) demographic variables, e.g. age and gender, and c) therapy process-related variables, e.g. expectancy of treatment outcome.

Previous studies investigating predictors on conventional face-to-face CBT for severe health anxiety have demonstrated that clinical characteristics associated with outcome are severity of health anxiety, general anxiety, and negative cognitions regarding bodily symptoms (Buwalda & Bouman, 2008; Hiller, Leibbrand, Rief, & Fichter, 2002; Nakao, Shinozaki, Ahern, & Barsky, 2011). It seems however that these predictive clinical factors are mainly related to levels of health anxiety after treatment, i.e. persons with higher levels of these symptoms at baseline tend to have more health anxiety at post-treatment. When it comes to predictors of improvement one fairly robust result seems to be that baseline health anxiety predicts larger improvement from baseline to post-treatment (Buwalda & Bouman, 2008; Nakao et al., 2011). This could be interpreted as higher initial symptom severity gives room for more improvement.

As for demographic predictors, no previous studies on CBT for health anxiety have demonstrated clear predictive effects. In one study higher age was associated with less pre-to-post-treatment gains (Buwalda & Bouman, 2008), but in two other reports no predictive effect of age was found (Hiller et al., 2002; Nakao et al., 2011). Following the same pattern of mixed results, Nakao et al. (2011) found that marital status predicted better outcome, i.e. being married was associated with larger improvements, while there was no such association in the study by Hiller et al. (2002).

When it comes to therapy process-related factors published data are scarce. Buwalda and Bouman investigated the prognostic effect of expectancy of treatment outcome but found no significant association with health anxiety reduction (Buwalda & Bouman, 2008). In research on other anxiety disorders, higher expectancy of treatment outcome has been shown to predict larger improvements (Chambless, Tran, & Glass, 1997; Hedman et al., 2012; Mausbach, Moore, Roesch, Cardenas, & Patterson, 2010). In Internet-based CBT for social anxiety disorder, treatment adherence, i.e. number of completed modules, has been shown to predict better treatment outcomes (Hedman et al., 2012; Nordgreen et al., 2012).

In sum, based on the previous literature, baseline health anxiety emerges as the only stable predictor of both end state health anxiety and improvement in CBT for severe health anxiety. To date, no study has investigated predictors of Internet-based CBT for this patient group. Although the hypothesized therapeutic mechanisms are the same in Internet-based and conventional CBT, there are important differences potentially influencing what factors that predict outcome. These differences include that patients have minimal therapist guidance and thus must take a larger responsibility for learning how the treatment works and how to apply general therapeutic principles on their own idiosyncratic health anxiety behaviors. Other differences are that the Internet-based CBT requires basic computer skills and that the patient must read lengthy fairly complex texts. It could therefore be that demographic factors such as age, computer skills and educational background have a larger impact on outcome in Internet-based CBT. As treatment delivered via the Internet requires a highly active patient despite limited therapist guidance, it could also be that clinical factors related to passive coping, such as comorbid depressive symptoms, have a larger negative predictive value in this form of therapy compared to conventional CBT. Prior research on social anxiety disorder has shown that delivery format, i.e. Internet or face-to-face, can moderate the effect of predictors (Hedman et al., 2012). Against this background, it is highly

important to examine which factors that predict treatment outcome in Internet-based CBT for severe health anxiety.

The main aim of this study was to investigate clinical, demographic and therapy process-related predictors of treatment outcome, both regarding end state and improvement, in Internet-based CBT for severe health anxiety. We hypothesized that more health anxiety at baseline would predict larger improvements but also more health anxiety at six-month follow-up. Due to the mixed results in the literature in terms of demographic and therapy process factors, the analyses in these domains were considered exploratory. The second aim of the study was to investigate patterns of change in health anxiety between end of treatment and longer-term follow-up, and predictors of this change.

Methods

Study design

This was a study with a repeated measurements design investigating predictors of outcome in a sample of participants ($N = 81$) who received treatment within the context of a previously published randomized controlled trial (RCT) (Hedman et al., 2011). In the trial, participants were randomized to ICBT ($n = 40$) or the control condition ($n = 41$). As participants in the control condition had stable symptom levels during the initial 12 weeks and were crossed over to treatment directly after the 12 weeks, all randomized participants were included in this study and no waiting list data were used. This meant that all predictor analyses were conducted using data from a sample that had received treatment and that the distinction between the treatment condition and the control condition in the original RCT is not relevant for the present study. All dependent variables were assessed at six-month follow-up and in the main analyses potential predictors were assessed at baseline.

Participants

The study was conducted at an Internet psychiatry unit (Hedman et al., 2013), located in a university hospital in Stockholm, Sweden. Table 1 presents the characteristics of the participants. The main inclusion criteria were that participants had to (a) have a principal diagnosis of severe health anxiety, i.e. hypochondriasis, according to DSM-IV (American Psychiatric Association, 2000), (b) agree not to undergo any other psychological treatment during the study, (c) have a constant dosage two months prior to treatment if on prescribed medication for anxiety or depression, (d) have no history of psychosis or bipolar disorder, and (e) not score >20 on the Montgomery Åsberg Depression Rating Scale-Self-report (MADRS-S; Svanborg & Åsberg, 1994) if diagnostic criteria for major depression were met, (f) have no serious somatic disease, (g) have no history of CBT in the past four years, and (h) not meet criteria for any personality disorder within cluster A or B according to the DSM-IV. In the inclusion process all participants underwent a diagnostic interview with a psychologist.

Treatment – Internet-based CBT

The treatment used in this study can essentially be described as Internet-delivered CBT-bibliotherapy with web-based therapist contact. The treatment consisted of a self-help text provided in 12 modules completed over 12 weeks through an Internet-based treatment platform with access to a therapist via a secure online contact system. The treatment platform was used as a mean of providing the tools and knowledge necessary for conducting the *in vivo* behavior change prescribed by the treatment.

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