



Clinical effectiveness and cost-effectiveness of Internet- vs. group-based cognitive behavior therapy for social anxiety disorder: 4-Year follow-up of a randomized trial



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ABSTRACT

Social anxiety disorder (SAD) is common, debilitating and associated with high societal costs. The disorder can be effectively treated with Internet-based cognitive behavior therapy (ICBT), but no previous study has investigated the long-term clinical or health economic effects of ICBT for SAD in comparison to an evidence-based control treatment. The aim of the study was to investigate the clinical effectiveness and cost-effectiveness of ICBT compared to cognitive behavioral group therapy (CBGT) four years post-treatment.

We conducted a 4-year follow-up study of participants who had received ICBT or CBGT for SAD within the context of a randomized controlled non-inferiority trial. The cost-effectiveness analyses were conducted taking a societal perspective. Participants in both treatment groups made large improvements from baseline to 4-year follow-up on the primary outcome measure ($d = 1.34$ – 1.48) and the 95% CI of the mean difference on the primary outcome was well within the non-inferiority margin. ICBT and CBGT were similarly cost-effective and both groups reduced their indirect costs. We conclude that ICBT for SAD yields large sustainable effects and is at least as long-term effective as CBGT. Intervention costs of both treatments are offset by net societal cost reductions in a short time.

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Introduction

Social anxiety disorder (SAD) has an early onset, follows a chronic course if untreated, leads to functional impairment and is highly prevalent (Kessler et al., 2005; Kessler, Chiu, Demler, & Walters, 2005; Wittchen & Fehm, 2003; Yonkers, Dyck, & Keller, 2001). The disorder is associated with an increased risk of unemployment and disability pension and the annual societal costs of SAD has been estimated to more than \$350 million per one million inhabitants (Acarturk et al., 2009; Bruch, Fallon, & Heimberg, 2003; Dahl & Dahl, 2010; Fehm, Pelissolo, Furmark, & Wittchen, 2005),

which translates to about \$111 billion annually in the US. Cognitive behavioral group therapy (CBGT) has been shown to be effective in the treatment of SAD in at least 12 randomized controlled trials (e.g. Blanco et al., 2010; Heimberg et al., 1990). Access to treatment is however limited (Cavanagh, 2013) and stigma, costs, and difficulty to take time off from work to attend therapy sessions are common barriers to treatment (Mewton, Smith, Rossouw, & Andrews, 2014; Moritz, Schroder, Meyer, & Hauschildt, 2013). Recently, Internet-based cognitive behavior therapy (ICBT) has emerged as an empirically supported treatment for SAD with effect sizes on par with those of CBGT and tested in at least 16 randomized controlled trials (Berger, Hohl, & Caspar, 2009; Hedman, Ljótsson, & Lindefors, 2012; Titov, Andrews, Choi, Schwencke, & Mahoney, 2008). In short, ICBT can be described as online bibliotherapy with therapist support through a secure Internet-based treatment platform (Andersson, 2009). One important advantage of ICBT is that the

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treatment requires less therapist time, often about 10–15 min weekly per patient (Hedman, Andersson, Ljótsson, Andersson, Ruck, Mortberg, et al., 2011), and is thus a promising means to increase accessibility to effective treatment. In a previously reported randomized non-inferiority trial we found that ICBT for SAD can be at least as effective as CBGT when delivered in a psychiatric setting (Hedman, Andersson, Ljótsson, Andersson, Ruck, Mortberg, et al., 2011). Also, both treatments led to substantial societal indirect cost reductions at 6-month follow-up compared to baseline (Hedman, Andersson, Ljótsson, Andersson, Ruck, & Lindefors, 2011).

Although ICBT for SAD has been tested in many trials only two studies have investigated its long-term effects. These studies demonstrated maintenance of improvement from ICBT up to five years after completed treatment (Carlbring, Nordgren, Furmark, & Andersson, 2009; Hedman, Furmark, et al., 2011), which is similar to the long-term effects of CBGT (Heimberg, Salzman, Holt, & Blendell, 1993). However, both studies investigating ICBT lacked control groups. In a study on depression it was found that ICBT was as effective as conventional CBT at three-year follow-up (Andersson et al., 2013), but to our knowledge no study has compared the long-term effects of ICBT for SAD to an active treatment.

When it comes to cost-effectiveness, we have found two studies demonstrating that ICBT is likely to be cost-effective compared to conventional CBT (Hedman, Andersson, Ljótsson, Andersson, Ruck, & Lindefors, 2011; Titov, Andrews, Johnston, Schwencke, & Choi, 2009), but the knowledge on health economic effects of psychological treatment for SAD is scarce. Given the disabling effects of SAD, effectiveness and health economic effects are important to investigate in order to determine long-term societal benefits.

The aim of the present study was to investigate the long-term clinical effectiveness and cost-effectiveness of ICBT vs. CBGT for SAD in a 4-year follow-up study of a randomized controlled non-inferiority trial (Hedman, Andersson, Ljótsson, Andersson, Ruck, Mortberg, et al., 2011). We hypothesized that ICBT would be at least as effective as CBGT in reducing social anxiety and secondary psychiatric symptoms in terms of depression, general anxiety, and anxiety sensitivity. Also, we expected that both treatments would lead to societal cost reductions.

Methods

Design

This was a long-term follow-up study of a previously reported randomized controlled non-inferiority trial where participants ($N = 126$) were allocated to ICBT ($n = 64$) or CBGT ($n = 62$) for SAD (Hedman, Andersson, Ljótsson, Andersson, Ruck, Mortberg, et al., 2011). Both treatments were 15 weeks long and all participants had a principal diagnosis of SAD. The rationale for using a non-inferiority design rather than the typical superiority design was that a) ICBT had been previously shown to be superior to waiting list controls in randomized trials (Andersson et al., 2006; Carlbring et al., 2007), b) CBGT had been found to be superior to other active face-to-face treatment (Heimberg et al., 1990), c) the placebo concept is hard to transfer to the psychological treatment context due to the difficulty of manipulating only a hypothesized mechanism but keeping other variables constant, and d) from a clinical perspective the most relevant comparator was judged to be the face-to-face CBT with the best empirical support, which at the time of designing the trial was CBGT. The study was carried out in a university hospital psychiatric setting (Psychiatry Southwest, Karolinska University Hospital Huddinge) in Stockholm, Sweden. The average time from post-treatment, i.e. after 15 weeks of treatment, to long-term follow-up was 4.2 years ($SD = 0.7$), with a range from

3.1 to 5.3 years. Throughout the paper, the long-term follow-up assessment is denoted 4-year follow-up. Participants had also been previously assessed at baseline, post-treatment and 6-month follow-up. Baseline to 6-month follow-up trial data showed that both treatments were effective in reducing social anxiety and that ICBT was at least as effective as CBGT (Hedman, Andersson, Ljótsson, Andersson, Ruck, Mortberg, et al., 2011). Moreover, the study showed that societal indirect costs were reduced in both ICBT and CBGT (Hedman, Andersson, Ljótsson, Andersson, Ruck, & Lindefors, 2011).

The present study was also a cost-effectiveness study using a societal perspective, which means that both direct and indirect costs were analyzed. Cost-effectiveness analysis provides a combined estimate of the incremental gains and costs of a new treatment, in this case ICBT, compared to an alternative standard treatment, i.e. CBGT (Saha et al., 2001). In this study, cost changes from baseline to 4-year follow-up were related to changes in quality of life and social anxiety during the same time period and incremental cost-effectiveness ratios were calculated. The trial was approved by the regional ethics review board in Stockholm and all participants provided informed consent.

Participants

Participants were recruited to the study by referral from primary care physicians and psychiatrists, and by self-referral. A presentation of the characteristics of the sample is displayed in Table 1.

The main inclusion criteria were that participants had to: (a) have a principal diagnosis of SAD according to the DSM-IV criteria (b) agree to undergo no other psychological treatment for the duration of the study, (c) have constant dosage two months prior to treatment of any prescribed medication for anxiety or depression and agree to keep dosage constant throughout the treatment period, and (d) have no history of psychosis or bipolar disorder.

Persons who applied to participate were invited to a clinical assessment interview with an experienced psychiatrist trained in using structured diagnostic instruments. The purpose of this interview was to establish whether the inclusion criteria were met. Of the 230 individuals who were referred or self-referred to the study, 126 fulfilled all inclusion criteria and were included in the trial. The main outcome study provides a more detailed description of the sample and the recruitment process (Hedman, Andersson, Ljótsson, Andersson, Ruck, Mortberg, et al., 2011).

Treatments

Internet-based cognitive behavior therapy (ICBT)

The ICBT investigated in this trial was based on the treatment developed and validated by Andersson and colleagues (Andersson et al., 2006; Carlbring et al., 2007; Tillfors et al., 2008). The treatment was based on a CBT-model for SAD, emphasizing the role of safety behaviors, cognitions and internal focus of attention as

Table 1
Description of the participants.

		ICBT <i>n</i> = 64	CBGT <i>n</i> = 62
Mean age (SD)		35.2 (11.1)	35.5 (11.6)
Social anxiety disorder	Generalized subtype (%)	56.0 (87.5)	53.0 (85.5)
	Mean duration, years (median)	20 (18)	21.95 (21.5)
Psychiatric comorbidity	Any anxiety disorder (%)	10 (16)	12 (19)
	Major depression (%)	10 (16)	9 (15)

Abbreviations: ICBT, Internet-based cognitive behavior therapy; CBGT, cognitive behavioral group therapy.

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