Long-term effects of Internet-supported cognitive behavior therapy

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Abstract

Internet-supported cognitive behaviour therapy (ICBT) has existed for almost 20 years and there are now a large number of controlled trials for a range of problems. While it is known that therapist-supported ICBT can be effective less is known about the long-term effects with follow-ups of two years or longer. In this paper we reviewed studies in which long-term effects of guided ICBT were investigated. Meta-analytic statistics were calculated for 14 studies involving a total of 902 participants and an average follow-up period of three years. The pre- to follow-up effect size was Hedge's $g = 1.52$, but with a significant heterogeneity. The average symptom improvement across studies was 50%. While effects may be overestimated, it is likely that therapist-supported ICBT can have enduring effects.

Key words: internet delivery, cognitive behaviour therapy, long-term effects, depression, anxiety

Introduction

Internet-supported cognitive behaviour therapy (ICBT) has been developed and tested since the mid 1990s, and has generated a large number of publications [1], including randomized controlled trials, systematic reviews, studies on cost-effectiveness, effectiveness studies, mechanisms of change, qualitative studies, and various aspects of treatment delivery including the role of therapist factors [2]. Briefly, ICBT is delivered in a secure platform and resembles online education in that the content is delivered via the internet with support provided from a clinician (mainly via text). There are also programs with no or minimal therapist support [3], even if these previously have been found to be less effective than therapist-supported interventions [4]. Moreover, over the years the conditions for which ICBT has been tested has expanded and there are now programs and studies for the majority of common psychiatric and somatic problems for which regular face-to-face psychological treatment has been found to be effective. Overall, therapist-supported ICBT appears to be as effective as face-to-face CBT but there are yet not many direct comparative trials [5]. Recently the possibility that ICBT can lead to harmful effects has been investigated and even if this is not common it is possible and should be documented [6].

In spite of all the reviews on the effects of ICBT, long-term effects have not been the topic of any review although long-term follow-up data often have been included in the original trials and also as separate publications. Long-term effects of treatment are important to investigate as it is known that regular CBT can yield long-term effects [7], and that these effects can be in favour of CBT versus medication [8]. While several studies on ICBT (and there are more than 200 published controlled trials) have included follow-up data with duration of 6 months and one year, an interesting question is whether effects endure for longer periods (two years or longer). The reason to focus on follow-ups of two years or longer is that it marks a clear time distance from the treatment, but also that fact that little is

known about long-term effects in general following traditional face-to-face CBT and that ICBT could be perceived as only having short-term effects (up to one year).

The aim of this paper was to review the literature on the long-term effects of clinician-guided ICBT with follow-up periods of two years or longer. We review studies in which long-term follow-up data have been presented and provide a summary of the findings. We conclude by discussing future research needs and a selection of topics concerning the evaluation of the long-term effects of ICBT.

Enduring effects of ICBT

We searched the literature (Medline, Scopus, Web of Science, Google Scholar, contents in established journals in the field e.g., JMIR, Internet Interventions), for studies published between June 1997 and June 2017. We used various search terms as there is a large heterogeneity in the terminology related to internet-supported treatments [9], but focused on long-term effects, and ≥ two-year follow-up in addition to the various terms used for finding internet-supported CBT studies (web-based, online, internet-delivered, etc.). We did not include studies in which the intervention was not based on CBT (for example [10]), including internet-based bias modification training [11], or studies in which the follow-up period was unclear. To a great extent, the studies located were from a restricted number of research groups including our own, and most studies in the field did not include follow-up data longer than one year post treatment. While the searches lead to the identification of more than 200 publications there were few with follow-up periods as long as two years. Some studies had a 1.5-year follow-up included [12], and many involved six months or one-year follow-ups. In total, we located 14 published studies (in English) and reviewed them based on the target for the interventions (e.g., depression). A summary of the included studies is provided in Table 1.

Panic symptoms

Ruwaard et al. [13] conducted a controlled trial on ICBT for panic symptoms and included a three-year follow-up. Initially, 58 participants were included and randomized to either treatment (n=31) or waiting list (n=27). For the three-year follow-up, they collected data from 47 treated participants (pooling the two groups), yielding a 81% response rate. Primary outcome measures were the self-rated version of the Panic Disorder Severity Scale (PDSS-SR) [14] and a one-week Panic Diary. We focused here on the PDSS-SR. The score on that measure decreased from 8.6 (SD=5.0) at pre-treatment to 4.0 (SD=4.7) at three-year follow-up. Negative effects were not reported.

Social anxiety disorder

We found three studies on social anxiety disorder. Carlbring et al. [15] conducted a 30-month follow-up of a previous controlled trial [16], and approached 57 treated participants out of which 44 responded yielding a 77.2% (44/57) response rate. Main outcome was the Liebowitz Social Anxiety Scale self-report version (LSAS-SR) [17]. Pre-treatment score was 69.6 (SD=22.5), which decreased to 35.2 (SD=26.6) at 30-month follow-up (the post treatment score was 47.0, SD=24.1). A clinical telephone interview was also conducted (n=38) which indicated that one person had not improved. Deterioration was not found.

Hedman et al. [18] did a follow-up of a controlled trial [19]. The treatment was similar to the previous study and out of 80 participants, 64 (80%) completed the main outcome measure LSAS-SR. Here the authors did not pool the data for the immediate treatment and waitlist control groups. Scores on the LSAS-SR decreased from 71.3 (SDs 22.5 and 24.9) to 41.5 (23.7) and 36.3 (25.3) at five-year follow-up (immediate treatment and treated waitlist respectively). They also conducted a telephone interview which 71 (89%) completed. While 15 (21%) stated no improvement, there was no report of negative effects.

The third study on social anxiety disorder was a four-year follow-up [20] of a controlled trial comparing guided ICBT against face-to-face treatment [21]. Hedman et al. obtained 4-year data from 103 (82%) of the original 126 participants. They also collected data on cost-effectiveness. For the ICBT group scores on the LSAS-SR dropped from 65.0 (SD=23.6) to 34.9 (SD=21.1). The face-to-face group treatment condition dropped from 74.0 (SD=21.5) to 40.7 (SD=23.6). Negative effects were not reported.

Generalized anxiety disorder

Paxling et al. [22] included a three-year follow-up in their original RCT on the treatment of generalized anxiety disorder. Participants were initially randomized to either an 8-week treatment group (n =44) or a waitlist control group (n =45) who subsequently received treatment. Three-year self-report data were obtained from 51 participants. A telephone interview was also conducted with 58 participants. The main outcome measure was the Penn State Worry Questionnaire (PSWQ) [23]. Scores at follow-up decreased from 68.7 (SD=5.9) to 51.3 (SD=16.6) for the immediate treatment group, with the delayed treatment having similar effects 69.3 (SD=6.6) to 53.4 (SD=13.7). Negative effects were not reported.

Depression

There are at least three studies on the long-term effects of ICBT for depression. Andersson et al. [24] gathered 3.5-year follow-up data from a previous depression trial [25]. A total of 58% (51/88) completed the 3.5-year follow-up. In the original study two forms of ICBT were tested (e-mail versus guided self-help). The waitlist group in that trial subsequently received unguided ICBT (with support only on request). Scores on the main outcome Beck Depression Inventory (BDI) [26] decreased from 21.9 (SD=6.3) to 9.4 (SD=8.5) in the ICBT group and from 22.1 (SD=5.3) to 10.5 (SD=10.1) in the email group.

Negative outcomes were not described but it was reported that five persons (10%) had scores of 19 or higher on the BDI indicating an ongoing depression.

In a direct comparative study contrasting guided ICBT and group-based face-to-face CBT data from a three-year follow-up were included in the original trial [27]. Andersson et al. randomized participants to either guided ICBT (n=33) or to a face-to-face group treatment (n=36). A large proportion 62/69 (90%) completed the three-year questionnaire assessments. The ICBT group went from 24.0 (SD=7.0) to 9.1 (SD=8.0) on the BDI and the scores for the face-to-face group treatment from 25.3 (SD=6.6) to 11.2 (SD=8.7) at three year follow-up. Negative effects (deterioration) were investigated (based on an interview) and none were found.

Holländare et al. [28] did a follow-up of a relapse prevention trial for partially remitted depression [29] and collected two-year follow-up data from 67 persons who had participated in the trial (79.8%). When calculating relapse rates they found that five participants (13.7%) in the ICBT group experienced a relapse during the two-year follow-up. In the control group, who received general support only, 23 participants (60.9%) had experienced a relapse during the follow-up period. In terms of BDI scores the treated group went from 17.0 (SD=8.3) at pre-treatment to 8.4 (SD=9.5) at two-year follow-up. In the control group, the corresponding means were 17.7 (8.3 SD=) and 12.3 (SD=9.5). The authors reported between-group effect sizes at two-year follow-up which was Cohen's *d*=0.36. Even if the trial focused on relapse, which by definition is negative, the authors did not report treatment-related negative effects nor deterioration from baseline.

Mixed anxiety and depression

While there are several trials on transdiagnostic and tailored ICBT there is only one study with a long-term follow-up. Carlbring et al. [30] included two-year follow-up data in the

original trial. Two-year follow-up data were collected from 44 participants (out of 53 yielding a high response rate of 83%). Scores on the main outcome Beck Anxiety Inventory [31] dropped from 22.5 (SD=9.0) to 11.1 (SD=9.5) at the two-year follow-up. With regards to negative effects and deterioration, a structured interview was conducted with 41 of the original 53 participants. One person was rated as much deteriorated (2.4%).

Obsessive-compulsive disorder

Andersson et al. [32] did a long-term follow-up and collected two-year data from a previous controlled trial on obsessive-compulsive disorder [33]. A second focus of the study was to investigate the effects of booster sessions. As this did not appear to affect outcomes at two-year follow-up we report the overall long-term effects here as described in the study. Follow-up data at two years was available from 87 of the original 101 participants (86%). Scores on the main outcome measure Yale–Brown Obsessive Compulsive Scale (YBOCS) [34] decreased from 21.1 (SD=4.31) to 10.7 (SD=5.7) at two-year follow-up. The authors clearly described negative effects, and while five adverse events were reported at the one-year follow-up, these were no longer present at two-year follow-up.

Pathological gambling

Carlbring and Smit [35] conducted a controlled trial on pathological gambling and included a three-year follow-up in the original study. They collected long-term data from 28 out of 34 treated participants (82%). In this study data from the control group were not included at follow-up. On the outcome measure National Opinion Research Center DSM Screen for Gambling Problems (NODS) [36] scores decreased from 8.2 (SD=1.3) at pre-treatment to 0.7 (SD=1.6) at three-year follow-up, yielding a large within-group effect size. Negative effects were not clearly described, but a telephone interview revealed that 9 individuals (26%) could

be regarded as non-improved (based on an estimation that the nine non-responders could be regarded as not having improved but not necessarily deteriorated).

Carlbring et al. reported data from an open study on the same treatment as above, but with a significantly more depressed population. Included in the original study was a three-year follow-up [37]. Of the original 284 participants 196 provided data at three year (69%). Scores on the NODS decreased from 8.1 (SD=1.6) to 2.0 (SD=3.4) at three-year follow-up. Negative effects of treatment were not reported.

Stress

Ruwaard et al. [38] did a randomized controlled trial on work-related stress and included a three-year follow-up in the study. They collected data from 63 participants out of 167 (38%) who had completed their stress management intervention. On the main outcome the Stress subscale from the Depression Anxiety Stress Scales (DASS-42 [39] scores decreased from 19.6 (SD=7.6) at baseline to 7.3 (SD=6.6) at three-year follow-up yielding a within-group effect size of Cohen's *d*=1.8. Negative effects at long-term follow-up were not covered.

Chronic fatigue

Nijhof et al. [40] did a long-term follow-up of a trial on adolescents with chronic fatigue syndrome. We decided to include this trial even if a there were a few participants with a slightly shorter follow-up than two years as the average follow-up period was 2.7 (±0.5) years. They approached 127 participants out of which 112 (88.2%) responded.

On the outcome measure Fatigue severity (8 items) from the Checklist Individual Strength–20 (CIS-20) [41] scores decreased from 51.3 (SD=4.4) at baseline to 26.2 (SD=14.4) at the long-term follow-up. The authors reported relapses at follow-up but did not comment on treatment-related negative effects.

Summary of the findings

The summary of studies in Table 1 show that the majority of the studies were from Sweden (11/14), with three additional trials from the Netherlands. About nine different conditions were targeted and with the exception of one study [40] all were on adults. Follow-up periods ranged between 2 to 5 years with an average follow-up duration of 3 years (SD=0.80). Only two studies included an active treatment control group [20,27] and results indicated similar outcomes. In spite of having very long follow-up periods the response rate was high with a mean of 74.1% (SD=13.1). While the within-group effects varied across studies, the average improvement from baseline (in percent) was 50.1% (SD=15.2). There were two outliers, with one having a small improvement [22] and one very large [35] (with regards to percentages) and the same study had a very large within-group effect size. This is probably best explained by the pathological gambling condition having a relatively high degree of natural recovery [42].

We used the program Comprehensive Meta-Analysis (version 2.2.021; CMA) to estimate pooled mean within-group effect sizes for the studies in Table 1. As the correlation between pre- and follow-up assessment is required for computation of Hedges' *g* (and this was not reported), we used an estimate of r=.75, given the reliability of most of the included primary outcome measures. A forest plot for 14 ICBT studies is presented in Figure 1. We pooled the data for the studies in which separate groups were presented and did not include the control conditions (e.g., face-to-face). In total, there were 902 participants who had completed long-term follow-up following ICBT. As in the Table we used the main outcome measures for the calculation of effect sizes. The overall random effects within-group effect size was Hedge's g = 1.52 (95% CI: 1.29~1.75) indicating long-term effects of guided ICBT. However, heterogeneity was observed (I^2=90%) and hence we removed the Carlbring and Smit (2008) study which resulted in a lower estimate (Hedge's g = 1.40), but

still heterogeneous (I^2=86%). Duvall and Tweedie's trim and fill procedure and Egger's test also did not suggest publication bias (as implemented in CMA), but it is obvious that effects vary. We did another analysis focusing only on the 10 studies in which psychiatric conditions had been treated (anxiety and depression). This resulted in a very similar estimate (Hedge's *g* = 1.31) with maintained heterogeneity.

Expert commentary & five-year view

Our aim was to review studies on ICBT with a long-term follow-up of at least two years. The 14 studies included covered follow-up periods ranging between two and five years and the overall effects indicated an average improvement of 50% from baseline. Within-group effect sizes were calculated using CMA, and the findings suggest large within-group effects. However, the effect sizes varied substantially and the mean effect size must be interpreted with caution. In spite of some limitations (which we will mention later), the studies suggest that there are enduring effects of ICBT in line with what has been observed in studies on face-to-face CBT [7]. The contrast against face-to-face CBT is interesting as it is possible that former clients repeat and return to their former internet treatment (for example if they have printed the text material as is often possible in ICBT), whereas this is not as obvious in face-to-face CBT (even if it can occur that handouts are provided). The role of knowledge acquisition and how much clients recall of their treatment has do date not been studied in great detail even if studies are emerging [43]. One way to elucidate how ICBT is experienced is to do qualitative studies, and in one small study conducted four years after completion of ICBT for social anxiety disorder most participants could describe the setup of the treatment in general terms and all remembered that they had worked with exposure [44]. However, the 14 studies did not investigate recall of treatment in any detail, which could be a topic for future research. Moreover, given the low cost of ICBT, it is also possible that some client groups (for example with bipolar disorder) could be in need of continuation of treatment [45], yielding much longer treatment periods than tested in ICBT trials. Recently the possibility of negative effects following ICBT has been studied, and in the present review there were few studies in which negative effects were investigated. Future long-term follow-up studies should screen for treatment-related negative effects, and in that case make an effort to distinguish these effects from the natural course of the disorder/problem as well as other

circumstances in the clients' lives, e.g., job loss and relationship issues, and the possibility that the negative effects might be caused by other treatments (for example medication). The included studies were published between 2007 and 2014 and we did not find any more recent studies on the long-term effects of ICBT. This could reflect that the field is changing with new studies using mobile phone technology (Smartphones) and blended treatments (face-to-face and ICBT), but it may also be that researchers have moved on to other research questions. A striking observation was the dominance of studies conducted in Sweden, and there is a need for similar studies on long-term effects of treatment programs that are widely used for example in Australia [46]. There is also a need to study long-term effects of other digital interventions (again smartphones but also virtual reality and bias modification programs).

This study is not without limitations. First, the choice to focus only on studies with a long-term follow-up of two years or more could be seen as arbitrary and a review focusing on one year outcomes would be welcome. Second, even if we did searches and also calculated effect sizes we hesitate to call this a systematic review. We did not for example engage in coding of study quality as most rating systems rely heavily on controlled trials rather than long-term within-group follow-ups. The third point relates to this, namely that we cannot exclude that the effects are overestimated as has been suggested in the field of depression [47], not least given the limitations of calculating within-group effect sizes [48]. There is also a possible bias given the fact that we were authors of a large proportion of the studies reviewed. The fourth critique is the lack of control over follow-up periods. Some studies reported treatment seeking activities but there is a grey area in terms of treatment seeking (for example complementary medicine) that would demand more careful assessment.

Five-year view

In the present review data were available for anxiety and depression and a few other problems like stress, pathological gambling and chronic fatigue. Given the much larger number of problems for which ICBT has been tested there is a lack of longer term follow-ups. In particular, long-term studies on adolescents with anxiety and depression would be informative as relapse rates are common. Trauma is another area for which long-term outcomes would be informative. We did not locate any long-term studies on problems like chronic pain, irritable bowel syndrome, or tinnitus, which are conditions for which several ICBT studies have been conducted. Other problems like psychological distress in association with cancer and heart disease would also be important to investigate. Overall, there are few ICBT studies on more severe psychiatric disorders like bipolar disorder and psychosis, but if and when they emerge we would encourage long-term studies as these are longstanding problems. There are more reasons to do long-term follow-ups. Most prediction studies in the field of psychological treatments tend to focus on short-term outcome (for example one-year post treatment), but we cannot exclude the possibility that other factors might be important for longer term outcomes. We would for instance suspect that memory of the intervention (knowledge) and implementation when needed (for example in times of crisis) could be of importance years after the treatment has been completed. Given the ease of data collection in ICBT studies it would be easy to collect data continuously and this will possibly happen in research as it is still unclear what happens between the follow-up periods. Another possible development would be to develop continued booster treatments for clients who are likely to relapse.

Key points

- Internet-based cognitive behavior therapy has been tested in many trials showing good results when guidance from a clinician is provided.
- Increasingly, long-term effects of guided ICBT has been documented.
- Most studies have included short follow-up periods.
- In this study, we located 14 studies with long-term data which suggest that guided ICBT can have enduring effects.
- Future studies could focus on more conditions and target groups for which long-term effects are not known, negative effects, and also measure symptoms and help-seeking during the follow-up periods.

Figure legend

FIGURE 1: Forest plot of studies with long-term follow-up data following guided internet-delivered cognitive behaviour therapy

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• • of considerable interest

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Study name	Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	Total
Ruwaard et al. 2010	0,930	0,122	0,015	0,691	1,169	7,620	0,000	47
Carlbring et al. 2009	1,344	0,146	0,021	1,059	1,630	9,225	0,000	44
Hedman et al. 2011	1,327	0,120	0,015	1,091	1,563	11,018	0,000	64
Hedman et al. 2014	1,312	0,134	0,018	1,050	1,575	9,794	0,000	51
Paxling et al. 2011	1,033	0,121	0,015	0,795	1,271	8,508	0,000	51
Andersson et al. 2013a	1,340	0,135	0,018	1,075	1,605	9,902	0,000	51
Andersson et al. 2013b	1,922	0,209	0,044	1,512	2,331	9,190	0,000	32
Holländare et al. 2013	0,928	0,147	0,022	0,640	1,216	6,315	0,000	32
Carlbring et al. 2010	1,208	0,139	0,019	0,936	1,480	8,704	0,000	44
Andersson et al. 2014	1,946	0,129	0,017	1,694	2,198	15,136	0,000	87
Carlbring and Smit 2008	4,996	0,490	0,240	4,036	5,956	10,204	0,000	28
Carlbring et al. 2012	1,760	0,081	0,006	1,602	1,918	21,860	0,000	196
Ruwaard et al. 2007	1,682	0,138	0,019	1,412	1,952	12,213	0,000	63
Nijhof et al. 2013	1,536	0,098	0,010	1,343	1,729	15,621	0,000	112
	1,523	0,116	0,013	1,295	1,750	13,126	0,000	

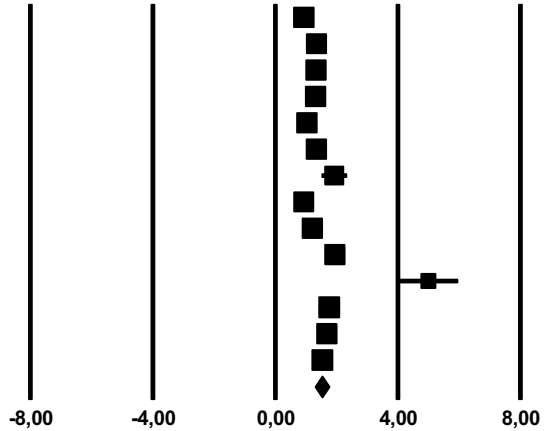

Table 1. Overview of long-term effects of internet-supported CBT with a follow-up of two years or longer

Study	Year	Condition treated	Country	Treatment	Follow-up periods	Conditions	N/Original sample at pretreatment	Measure	Percent improvement from baseline	Within-group Hedges *g* effect size pre-follow-up	Reference
Ruwaard et al.	2010	Panic symptoms	Netherlands	Guided ICBT (Interapy) for 11 weeks	3 years	ICBT with initial wait list group treated	47/58 (81%)	PDSS-SR	53.4%	0.93	Ruwaard et al. 2010 [13]
Carlbring et al.	2009	Social Anxiety Disorder	Sweden	Guided ICBT for 9 weeks	30 months (2.5 years)	ICBT with initial wait list group treated	44/57 (77.2%)	LSAS-SR	49.4%	1.34	Carlbring et al. 2009 [15]
Hedman et al.	2011	Social Anxiety Disorder	Sweden	Guided ICBT for 9 weeks	5 years	1. ICBT	32/40 (80%)	LSAS-SR	41.8%	1.33	Hedman et al. 2009 [18]
						2. Treated waitlist	32/40 (80%)		49.1%	1.40	
Hedman et al.	2014	Social Anxiety Disorder	Sweden	Guided ICBT for 15 weeks Face-to-face group CBT for 15 weeks	4 years	1. ICBT	103/126 (82%)	LSAS-SR	46.3%	1.32	Hedman et al. 2014 [20]
						2. Face to face group treatment			45.0%	1.48	
Paxling et al.	2011	Generalized Anxiety Disorder	Sweden	Guided ICBT for 8 weeks	3 years	1. ICBT	51/89 (57.3%)	PSWQ	25.3%	1.03	Paxling et al. 2011 [22]
						2. Treated waitlist			23.7%	1.01	

Study	Year	Condition treated	Country	Treatment	Follow-up periods	Conditions	N/Original sample at pretreatment	Measure	Percent improvement from baseline	Within-group Hedges *g* effect size pre-follow-up	Reference
Andersson et al.	2013	Major depression	Sweden	Guided ICBT or email therapy for 8 weeks	3.5 years	Guided and unguided ICBT	34/56 (60.7%)	BDI	57.1%	1.60	Andersson et al. 2013 [24]
						Email CBT	17/29 (58.6%)		52.5%	1.50	
Andersson et al.	2013	Major depression	Sweden	Guided ICBT or email therapy for 8 weeks	3 years	Guided and unguided ICBT	32/33 (97%)	BDI	62.2%	1.97	Andersson et al. 2013 [27]
						Face-to-face group CBT	30/36 (83.3%)		55.7%	1.83	
Holländare et al.	2013	Partially remitted depression	Sweden	Guided ICBT aimed at relapse prevention for 10 weeks	2 years	ICBT	67/84 (79.8%)	BDI	50.1%	0.95	Holländare et al. 2013 [28]
						Treatment as usual/general support			30.5%	0.60	
Carlbring et al.	2011	Mixed anxiety and depression	Sweden	Tailored ICBT for 10 weeks	2 years	ICBT with initial wait list group treated	44/53 (83.0%)	BAI	50.9%	1.20	Carlbring et al. 2011 [30]
Andersson et al.	2014	Obsessive-compulsive disorder	Sweden	Guided ICBT for 10 weeks	2 years	ICBT with initial wait list group treated	87/101 (86.1%)	YBOCS	49.5%	1.94	Andersson et al. 2014 [32]
Carlbring and Smit	2008	Pathological gambling	Sweden	Guided ICBT for 8	3 years	1. ICBT	28/34 (82.3%)	NODS	91.2%	4.96	Carlbring and Smit 2008

Study	Year	Condition treated	Country	Treatment	Follow-up periods	Conditions	N/Original sample at pretreatment	Measure	Percent improvement from baseline	Within-group Hedges *g* effect size pre-follow-up	Reference
				weeks		2. WL					[35]
Carlbring et al.	2012	Pathological gambling	Sweden	Guided ICBT for 8 weeks	3 years	ICBT	106/284 (69.0%)	NODS	75.3%	1.76	Carlbring et al. 2012 [37]
Ruwaard et al.	2007	Work-related stress	Netherlands	E-mail supported ICBT for 7 weeks	3 years	ICBT with initial wait list group treated	63/197 (37.7%)	DASS-stress scale	62.7%	1.68	Ruwaard et al. 2007 [38]
Nijhof et al.	2013	Chronic fatigue in adolescents	Netherlands	Fatigue In Teenagers on the interNET (FITNET)	2.7 years	ICBT	112/127 (88.2%)	CIS-20	48.9%	1.53	Nijhof et al. 2013 [40]

PDSS-SR = Panic Disorder Severity Scale; LSAS-SR = Liebowitz Social Anxiety Scale self-report version; PSWQ= Penn State Worry Questionnaire; BDI = Beck Depression Inventory; BAI= Beck Anxiety Inventory; YBOCS, Yale–Brown Obsessive Compulsive Scale; NODS = National Opinion Research Center DSM Screen for Gambling Problems; DASS stress scale= Depression Anxiety Stress Scales stress subscale. CIS-20=Checklist Individual Strength–20 Fatigue severity subscale.