



Motivational support provided via email improves the effectiveness of internet-delivered self-help treatment for insomnia: A randomized trial



Jaap Lancee^{a,*}, Jan van den Bout^b, Marjolijn J. Sorbi^b, Annemieke van Straten^c

^a Department of Clinical Psychology, University of Amsterdam, Weesperplein 4, 1018 XA Amsterdam, The Netherlands

^b Department of Clinical and Health Psychology, Utrecht University, The Netherlands

^c Department of Clinical Psychology, EMGO Institute, VU University, The Netherlands

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ABSTRACT

Internet-delivered treatment is effective for insomnia, but little is known about the beneficial effects of support. The aim of the current study was to investigate the additional effects of low-intensity support to an internet-delivered treatment for insomnia. Two hundred and sixty-two participants were randomized to an internet-delivered intervention for insomnia with ($n = 129$) or without support ($n = 133$). All participants received an internet-delivered cognitive behavioral treatment for insomnia. In addition, the participants in the support condition received weekly emails. Assessments were at baseline, post-treatment, and 6-month follow-up. Both groups effectively ameliorated insomnia complaints. Adding support led to significantly higher effects on most sleep measures ($d = 0.3–0.5$; $p < 0.05$), self-reported insomnia severity ($d = 0.4$; $p < 0.001$), anxiety, and depressive symptoms ($d = 0.4$; $p < 0.01$). At the 6-month follow-up, these effects remained significant for sleep efficiency, sleep onset latency, insomnia symptoms, and depressive symptoms ($d = 0.3–0.5$; $p < 0.05$). Providing support significantly enhances the benefits of internet-delivered treatment for insomnia on several variables. It appears that motivational feedback increases the effect of the intervention and encourages more participants to complete the intervention, which in turn improves its effectiveness.

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Introduction

Insomnia is a common disorder that affects approximately 10% of the general population (Ohayon & Smirne, 2002). People with insomnia have trouble falling asleep, maintaining their sleep, and/or suffer from early morning awakening (American Psychiatric Association, 2013). Insomnia has serious consequences: impaired sleep causes fatigue, impaired cognitive functioning, and distress during the day (LeBlanc et al., 2007; Roth & Drake, 2004; Simon & Vonkorf, 1997). Furthermore, insomnia is associated with psychological problems, most notably depression and anxiety (Taylor, Lichstein, Durrence, Reidel, & Bush, 2005). The direct and indirect societal costs associated with insomnia are substantial. For the province of Quebec (Canada), it is estimated that poor sleepers cost society approximately 10 times more than good sleepers (Daley, Morin, LeBlanc, Gregoire, & Savard, 2009).

Insomnia can be treated effectively. Sleep medication is effective in the short-term management of insomnia, but it has adverse effects such as headaches, drowsiness, and dizziness (Buscemi et al., 2007; Holbrook, Crowther, Lotter, Cheng, & King, 2000). Moreover, there is little evidence on the effects of long-term sleep medication use (Holbrook et al., 2000; Smith et al., 2002). Cognitive behavioral treatment for insomnia (CBT-I) has similar short-term and better long-term outcomes than pharmacological interventions (Jacobs, Pace-Schott, Stickgold, & Otto, 2004; Rieman & Perlis, 2009; Smith et al., 2002). The effects of CBT-I are demonstrated in several reviews and meta-analyses (Irwin, Cole, & Nicassio, 2006; Morin et al., 1999, 2006).

This means that CBT-I is the most preferred option for people that screen positive on insomnia disorder. The problem with CBT-I is that it is often unavailable and appears more costly in the short term. To increase CBT-I outreach while restraining care expenses, CBT-I delivered through the internet is proposed as a first option within a stepped-care model (Espie, 2009). A meta-analysis shows that self-help CBT-I is effective, with moderate effects (Van Straten & Cuijpers, 2009). Recently, our group found large effect sizes for an

* Corresponding author. Tel.: +31 20 5258609.

E-mail address: j.lancee@uva.nl (J. Lancee).

unsupported internet-delivered CBT-I (Lancee, van den Bout, van Straten, & Spormaker, 2012), and other authors have found even more pronounced effects for internet-delivered treatment with either automated (Espie et al., 2012; Ritterband et al., 2009) or human-delivered support (Van Straten et al., 2013).

In two meta-analyses, it is argued that support is necessary to provide optimal internet-delivered treatment (Andersson & Cuijpers, 2009; Spek et al., 2007). However, these meta-analyses include no direct comparison. To date, few studies have directly compared internet-delivered treatment with and without support. We encountered two such studies on depression: one found small to moderate (but non-significant) effect size differences (Berger, Hammerli, Gubser, Andersson, & Caspar, 2011), and the other study found that telephone tracking provided no additional benefit to the internet-delivered treatment (Farrer, Christensen, Griffiths, & Mackinnon, 2011). We also came across two such studies on social phobia: one found no substantial effect size differences (Berger, Caspar, et al., 2011), and the other found that guided self-help was superior (Titov, Andrews, Choi, Schwencke, & Mahoney, 2008). Whether the additional effects are related to the support or to other factors is therefore unclear.

In terms of insomnia, two studies have been published on the additional effects of weekly phone calls to provide motivational support to self-help CBT-I delivered via a book. The first study yielded minor additional benefits of the phone calls (Mimeault & Morin, 1999); in the second study, the support improved the effectiveness of self-help CBT-I treatment via a book to a moderate-to-large extent (Jernelov et al., 2012). To date, no research group has investigated the additional effects of support via email, nor has the feedback been added to an internet-delivered treatment.

Recently, Farrand and Woodford (2013) published a meta-analysis on the impact of support on written self-help interventions. Based on the taxonomy of Glasgow and Rosen (1978), they use the terms “guided self-help” and “minimal contact.” With minimal contact, patients receive support on the progress only. With guided self-help, patients receive support on the process in addition to the support on the progress. The meta-analysis demonstrates that the effect sizes are equal between these types of support. This would make the minimal contact preferable because this is less intensive and, as a consequence, fewer costs are involved. However, the researchers also argue that the effects of guided and unguided self-help treatments may vary between mental health conditions (Farrand & Woodford, 2013).

This could also be the case for CBT-I where most of the exercises are relatively straightforward. For instance, an important part of the insomnia treatment consists of restricting the time in bed (Morin & Espie, 2003). During this technique, patients restrict their time in bed, which can result in less sleep initially. The formal aspects of the exercise are simple to explain, but it is strenuous to carry out, and motivation may easily drop. Minimal contact feedback probably helps the patients to complete the exercise. Because adherence is associated with treatment effect (Donkin et al., 2011), this should in turn improve the effectiveness of the intervention.

On the other hand, some aspects of the treatment may be more complicated. For instance, patients may need help in deciding the exact sleep window to use during the period that they restrict their time in bed. This indicates that, for CBT-I, the most promising option is minimal contact with some feedback on the progress (e.g., calculating the sleep window).

In this study, we were interested in whether such low-intensity support provided via email enhances internet-delivered CBT-I. To avoid confusion, we use the term “motivational support” to describe minimal contact support with a small amount of support on the progress. We expect the motivational support to increase compliance and improve the effectiveness of treatment.

Method

Procedure

The study was conducted in line with the Declaration of Helsinki, approved by the Medical Ethical Committee of the University Medical Centre Utrecht, and registered at ClinicalTrials.gov (ID: NCT01456637). Participants were recruited via a popular scientific Dutch insomnia website (www.insomnie.nl). People interested in the study were invited to provide their email address. All persons that provided their email address in the period from May 2011 to January 2012 were emailed by the first author (JL) with information on the study ($n = 1595$). After completing the online baseline questionnaire, eligible participants ($n = 352$) filled out an online seven-day diary (Fig. 1). After written informed consent was obtained and the online diary was filled out, participants were randomized to the support ($n = 129$) or the no-support condition ($n = 133$). As compensation for their participation in the study, participants were not required to pay for their treatment.

Randomization

Unrestricted randomization was achieved by a computer-generated random-number table. Participants and the principal investigator (JL) were not blinded to the assigned condition (the participants in the no-support condition knew of the supported condition).

Power

For this study, we wanted to have sufficient power to significantly detect effect size differences of at least Cohen's $d = 0.4$. With a 20% dropout correction, the groups needed at least 125 participants (power: 0.8; $p < 0.05$; two-tailed). This is a conservative estimate, and the achieved power was probably higher because the multilevel intention-to-treat analysis uses all baseline information (see “Statistical analysis” section).

Assessments

At baseline, post-test, and six-month follow-up, participants filled out online questionnaires and an online seven-day sleep diary. Post-test was 10 weeks after the start of the intervention. Participants were considered dropouts after three unanswered reminders (two emails and one postal). These participants retained access to the internet-delivered intervention.

Participants

Four hundred and forty-four persons started the online questionnaire, of whom 116 did not complete the baseline assessment, 30 did not meet the inclusion criteria, and 36 were excluded (see Fig. 1 for a flowchart). Inclusion criteria were as follows: lying awake at least 30 min a night at least three nights a week; screened positive for DSM-IV-TR criteria for insomnia disorder according to the SLEEP-50 (cut off ≥ 19 ; Spormaker, Verbeek, van den Bout, & Klip, 2005) and the Insomnia Severity Index (cut off ≥ 7 ; Bastien, Vallières, & Morin, 2001); age 18 years or older; and a valid email address. Exclusion criteria were as follows: sleep apnea (cut off ≥ 15 ; Spormaker et al., 2005); consumption of more than three glasses of alcohol a day for at least 21 days a month; marijuana use more than once in a week, schizophrenia/psychosis; and current suicidal plans (people with exclusively suicidal ideation were not excluded – see Supplemental Table S1 for the questions that were used). We did not exclude on the basis of psychiatric comorbidities

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