



Weekly brief phone support in self-help cognitive behavioral therapy for insomnia disorder: Relevance to adherence and efficacy



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ABSTRACT

Self-help cognitive-behavioral therapy for insomnia (CBT-I) is an acceptable, low-intensity treatment in a stepped care model for insomnia. We tested the application of self-help CBT-I in a Chinese population. 312 participants with self-report of insomnia associated with distress or daytime impairment 3 or more nights per week for at least 3 months were randomized to self-help CBT-I with telephone support (SHS), self-help CBT-I (SH) and waiting-list (WL). The program was Internet-based with treatment materials delivered once per week, and lasted for 6 consecutive weeks, while the telephone support was limited to 15 min weekly. Mixed-effects analyses found significant group by time interaction in sleep and sleep-related cognitions at immediate and 4-week posttreatment. Post-hoc pairwise comparison with WL revealed that both SHS and SH had significantly higher sleep efficiency at immediate ($p = .004$ and $p = .03$, respectively) and 4-week posttreatment ($p = .002$ and $p = .02$, respectively) and lower insomnia and dysfunctional beliefs scores. The SHS group had additional improvements in sleep onset latency and sleep quality. Benefits with self-help CBT-I were maintained at 12-week posttreatment, but attrition rate was about 35%. Internet-based self-help CBT-I was effective and acceptable for treating insomnia in the Chinese population. A brief telephone support further enhanced the efficacy.

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Introduction

Insomnia is recognized as one of the most common sleep complaint, with a prevalence of 6–15% in the general population suffering from insomnia symptoms accompanied by daytime consequences (Ohayon, 2011). Insomnia is associated with cognitive, social and emotional impairments (Léger et al., 2010). Additionally, insomnia is a risk factor for suicide, depression, anxiety disorders, substance and drug abuse, decreased immune functioning and cardiovascular disease (Taylor, Lichstein, & Durrence, 2003). From a

societal perspective, insomnia brings heavy burden to the sufferers and the public (Léger & Bayon, 2010). A Canadian study showed that the total annual cost of insomnia was estimated at \$6.6 billion, including direct and indirect expenses, and was equivalent to average per-person cost of \$5010 for individuals with insomnia syndrome compared to \$421 for good sleepers (Daley, Morin, LeBlanc, Grégoire, & Savard, 2009).

Although pharmacological agents are commonly prescribed to treat insomnia, their use is limited by concern regarding long-term efficacy and potential for abuse, dependence and adverse effects (National Institutes of Health, 2005). Cognitive-behavioral therapy for insomnia (CBT-I) which includes sleep hygiene education, stimulus control, sleep restriction, cognitive restructuring and relaxation training and aims at changing dysfunctional beliefs and maladaptive behaviors associated with sleep has been shown to be efficacious (Morin et al., 2006). CBT-I and pharmacological treatment were found to have comparable efficacy in short term, but further and long-term improvement was only detected in individuals receiving CBT-I (Riemann & Perlis, 2009). Furthermore,

Abbreviations: CBT, Cognitive-behavioral therapy; DBAS, Dysfunctional Beliefs and Attitudes about Sleep Scale; HADS, Hospital Anxiety and Depression Scale; ISI, Insomnia Severity Index; ITAS, Insomnia Treatment Acceptability Scale; MFI, Multidimensional Fatigue Inventory; PSQI, Pittsburgh Sleep Quality Index; SE, Sleep efficiency; SF-36, Short Form-36; SH, Self-help without telephone support; SHS, Self-help with telephone support; SOL, Sleep onset latency; TIB, Time in bed; TST, Total sleep time; WASO, Wake after sleep onset; WL, Waiting-list.

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greater acceptance of CBT-I, relative to pharmacological treatment, has been reported; therefore, CBT-I seems to be a better choice (Morin, Gaulier, Barry, & Kowatch, 1992; Morin et al., 1999). However, CBT-I has remained underutilized perhaps due to lack of availability of CBT service and the time-intensive nature of the treatment (Bluestein, Healey, & Rutledge, 2011; Stinson, Tang, & Harvey, 2006).

Faced with the limitations of CBT-I, a stepped care model has been proposed (Espie, 2009). Self-help CBT-I is recommended as the least restrictive evidence-based entry step of the treatment model. With the advance of information technology, recent studies have used the Internet for the delivery of self-help material. Internet-based CBT-I has been shown to be effective and acceptable, and it has the benefits of low cost and convenience of access (Espie et al., 2012; Lancee, van den Bout, van Straten, & Spoormaker, 2012). Another line of research suggests that self-help CBT-I with therapist support seems to be more effective than self-help CBT-I alone (van Straten & Cuijpers, 2009). However, data on Internet-based self-help CBT-I, benefits of therapist support, and application in non-Western population are still limited.

The primary objective of this study was to develop and test an Internet-based Chinese-language self-help CBT-I program. Another objective was to compare self-help CBT-I with and without weekly brief telephone support. Our hypotheses were that self-help CBT-I would be superior to waitlist control in the short-term treatment of insomnia and telephone support would enhance adherence and efficacy of self-help CBT-I.

Methods

Study design

This was a randomized parallel-group trial with a 1:1:1 ratio to self-help CBT-I with telephone support (SHS), self-help CBT-I without telephone support (SH) and waiting-list control (WL). Major assessments were at baseline and immediate, 4-week and 12-week posttreatment. We followed the CONSORT guideline in designing and reporting the controlled trial. The trial was registered at ClinicalTrials.gov (NCT01719120).

Participants

Participants were recruited through mass media, public talks, emails, social networking websites and the Internet. The inclusion criteria were: (1) Hong Kong residents; (2) aged ≥ 18 years; (3) self-report of difficulty initiating or maintaining sleep, early morning awakening or non-restorative sleep with associated distress or impairment in social, occupational and other important areas of functioning for three or more nights per week for at least three months; (4) ability to read Chinese and type in Chinese or English and (5) having an email account and Internet access. Participants were excluded if they had any suicidal ideation. To enhance recruitment and considering the nature of self-help, the inclusion and exclusion criteria were evaluated by a self-report checklist. No monetary incentive was given for participation, but treatment was provided free of charge.

Study procedure

The study was reviewed and approved by the local institutional review board. All screening, assessment and treatment delivery were conducted via the Internet or email. Participants showing an interest in the study were directed to the website (www.sleep.hk.com). According to the 2012 census in Hong Kong, about 80% of households had personal computer connected to the Internet

(Census and Statistics Department, 2013). Informed consent was obtained prior to all study procedures. Participants were told that they would be randomized to one of two groups: treatment before assessment or treatment after assessment. The assessment and treatment schedule of the two groups were shown in the consent form, but telephone support was not mentioned. After online screening, participants were provided username and password and required to complete a 1-week sleep diary and a set of questionnaires as baseline assessment. The same set of questionnaires and sleep diary were used for assessment at other time-points. One-week sleep diary was used instead of 2 weeks' because of the program's weekly review and that similar results would be obtained for 1-week and 2-week sleep record (Briscoe et al., 2014). Block randomization was done by an independent administrator using a computer-generated list of numbers, with a block size of 9. For participants randomized to the SHS and SH groups, they could log-on the self-help CBT-I program and began using the treatment program. Participants in the WL were explained that they could begin treatment after 12 weeks of assessment, a time point equivalent to 4-week posttreatment of the SHS and SH groups. We did not extend WL observation to 12-week posttreatment so as to avoid dropouts. Investigators were not blind to participants' group allocation, but all data were acquired via the Internet and scored by computer-generated formulas.

Intervention

The Internet-based self-help CBT-I lasted for 6 weeks, with treatment materials delivered once per week, but an extra one week flexibility per session was allowed upon request. The content was adopted from a well-established CBT-I manual (Morin & Espie, 2003). Copyright permission of the translated Chinese version was obtained from the publisher (Yang, Huang, & Lin, 2008). We summarized the most salient information of the treatment manual, edited the language in Hong Kong Chinese, and used examples that we believed were most relevant in the culture. The program content was approved by the senior authors (KC and SC) and two clinical psychologists who have extensive experience in the treatment of insomnia. The materials were presented mostly in text, together with some diagrams and a 15-min audio clip on relaxation training. Full details of the program are available from the authors upon request.

Session 1 consists of program overview, basic facts about sleep, etiological model of insomnia, the roles of cognition and behavior as perpetuating factors, the influence of temperature, age and psychosocial factors on sleep and goal setting. Session 2 includes sleep hygiene, activity scheduling and relaxation training. Participants were asked to complete the Sleep Hygiene Practice Scale (Lin, Yang, Hsu, & Cheng, 2009) and Caffeine Knowledge Quiz (Anderson, Juliano, & Schulkin, 2009) before reading the educational materials. Participants were shown an example of activity scheduling, which suggests using 20 min for writing down events, emotions, worries and next-day plans well before bedtime. They were then asked to plan their schedule from 7:30 pm to bedtime. Session 2 includes an audio clip on progressive muscle relaxation, which is based on Morin & Espie's script (Morin & Espie, 2003). Participants were advised to follow the instructions and practice relaxation training twice daily. Session 3 begins with a revision of the sleep hygiene rules, followed by an introduction of stimulus control and sleep restriction. Participants were asked to complete the Sleep Behavior Self-Rating Scale (Kohn & Espie, 2005) before the concept on stimulus control was introduced. Based on participants' total sleep time (TST) recorded on sleep diary and their desirable rise time (or bedtime), the corresponding bedtime (or rise time) for the coming week were derived, with a minimum time in bed (TIB) set at 5 h. Session 4 begins with a revision of the stimulus

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