



Digitally-delivered cognitive-behavioural therapy for youth insomnia: A systematic review

Aliza Werner-Seidler*, Lara Johnston, Helen Christensen

Black Dog Institute, University of New South Wales, Sydney, NSW, Australia

ARTICLE INFO

Keywords:
 Insomnia
 Sleep disturbance
 Adolescence
 Cognitive-behavioural therapy

ABSTRACT

Sleep disturbance is common among young people, with consequences for academic, emotional and behavioural development. Cognitive-behavioural therapy for insomnia (CBT-I) is efficacious, yet it is costly and not available to many who need it. Digitally-delivered CBT-I (eCBT-I) has the potential to overcome these barriers. The purpose of this systematic review was to identify studies which report on the efficacy or effectiveness of eCBT-I for young people with sleep disturbance. Electronic databases were systematically searched and three studies met inclusion criteria. Two studies used the same online intervention for adolescents with insomnia symptoms, while the other was conducted in a college sample of individuals who opted into a stress-management study. Results showed that eCBT-I improved sleep efficiency, sleep quality, sleep-onset latency and total sleep time with effect sizes ranging from 0.17–1.30 (Cohen's *d*). This suggests that eCBT-I is a promising intervention for young people, but more studies are needed to verify the conditions under which it is most effective.

1. Introduction

Adolescence is a time of major developmental and social change. As children transition into adolescence, many develop sleep problems, with approximately 30% of adolescents reporting at least some level of sleep difficulty (Ohayon et al., 2000). At the clinical end of the spectrum, insomnia is the most common sleep disorder among adolescents, with prevalence rates of approximately 4% (Ohayon et al., 2000). Both subclinical levels of sleep disturbance and insomnia are associated with a range of negative outcomes that are particularly problematic during adolescence, including poorer academic performance (Dewald et al., 2010), problems with interpersonal relationships (Roberts et al., 2001), increased risky behaviour (Shochat et al., 2014), depression (Baglioni et al., 2011; Ford and Kamerow, 1989; Franzen and Buysse, 2008; Harvey, 2001; Riemann and Voderholzer, 2003; Taylor et al., 2003) and suicide (Roane and Taylor, 2008). These educational, behavioural and emotional disturbances caused by sleep problems and insomnia during adolescence can seriously derail psychological, social and vocational pathways into adulthood.

The most common treatment for insomnia is medication. Typically, hypnotics such as benzodiazepine receptor agonists are prescribed, with efficacy supporting their use in both adults and young people (Holbrook et al., 2000; Reed & Findling, 2002). However, as with many

pharmacological approaches, benzodiazepines are associated with side effects, dependence and tolerance over time. Moreover, these drugs are not curative which means once treatment is discontinued, the problems re-emerge. An alternative is cognitive-behavioural therapy for insomnia (CBT-I), which is a psychological approach that has comparable efficacy to hypnotics in the short-term, but has longer lasting effects such that benefits are maintained even after the active phase of this brief treatment is discontinued (Mitchell et al., 2012; Riemann and Perlis, 2009; Smith et al., 2002). Clinical guidelines now recommend CBT-I as first line treatment for insomnia (Qaseem et al., 2016). CBT-I involves a combination of strategies that include psychoeducation, sleep restriction, stimulus control, cognitive therapy, and sleep hygiene, and is typically delivered over the course of approximately eight weeks (Sharma and Andrade, 2012). A major challenge in delivering CBT-I at scale are limits to the availability of trained sleep therapists and the high cost of receiving face-to-face treatment (Gulliver et al., 2010; Manber et al., 2012). To this end, there has been great interest in the possibility of delivering CBT-I digitally (via the internet, tablets or smartphones) as a way to overcome the barriers of reach and cost (Griffiths et al., 2006).

Research into the effectiveness of digitally delivered CBT-I (eCBT-I) has established it is effective for the treatment of adult insomnia, with improvements across a range of sleep indices including sleep efficiency (SE), sleep quality (SQ), wake after sleep onset (WASO), sleep onset

Abbreviations: BDI-II, Beck Depression Inventory-II; CBT-I, Cognitive-behavioural therapy for insomnia; eCBT-I, digitally-delivered CBT-I; PSQI, Pittsburgh Sleep Quality Index; SE, sleep efficiency; SOL, sleep onset latency; SQ, sleep quality; STAI-S, State-Trait Anxiety Inventory State Version; TIB, time in bed; TST, total sleep time; WASO, wake after sleep onset

* Corresponding author at: Black Dog Institute, University of New South Wales, Sydney, NSW, Australia.

E-mail addresses: a.wernerseidler@blackdog.org (A. Werner-Seidler), l.johnston@blackdog.org.au (L. Johnston).

<https://doi.org/10.1016/j.invent.2018.01.007>

Received 24 October 2017; Received in revised form 28 January 2018; Accepted 30 January 2018

Available online 07 February 2018

2214-7829/© 2018 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

latency (SOL), total sleep time (TST) and number of night-time awakenings (NWAK; Zachariae et al., 2016). Several studies have compared internet-delivered CBT-I to face-to-face treatments, with some reporting superiority for face-to-face formats (Lancee et al., 2012), while others report no difference (Blom et al., 2016). A recent meta-analysis that drew from eight studies established that effect sizes for eCBT-I are in the small to large range ($g = 0.21$ – 1.09), and comparable to face-to-face delivered CBT-I (Zachariae et al., 2016). This approach therefore shows great promise in overcoming some of the barriers associated with the accessibility and use of CBT-I for the treatment of insomnia. Encouragingly, there are now a number of eCBT-I programs commercially available for use by adults (e.g., Sleepio, SHUTi; Christensen et al., 2016; Espie et al., 2012).

While considerable work has been done examining eCBT-I for adults, there is less research into the use of eCBT-I for adolescents. As suggested by the adult literature, there is a great opportunity to potentially prevent a lifelong trajectory of chronic insomnia and associated issues if interventions are made accessible early in the course of illness, before chronic sleep problems emerge. Moreover, young people may be particularly well suited to digital programs because they are generally reluctant to seek professional help (Gulliver et al., 2010), are more comfortable with technology than any previous generation (Younes et al., 2015) and may therefore be more likely to engage with digitally-delivered programs. The data supports this suggestion, with 97% of adolescent individuals with insomnia, when given the choice between internet-delivered and face-to-face group CBT-I, opting for the internet version (de Bruin et al., 2015).

1.1. Aims of study

The state of the literature and evidence supporting the use of eCBT-I to treat sleep problems among young people is unclear. Therefore, the aim of this systematic review was to identify and evaluate studies testing the efficacy and effectiveness of eCBT-I delivered to young people. A description of the available interventions will be provided and a summary of intervention effects will be reported. Given that this is a relatively new area of enquiry, we were interested in studies that reported on both pilot data using pre-post designs, as well as non-randomised controlled trials and randomised controlled trials (RCTs).

Conducting a review of this type will both determine the effectiveness of these interventions in reducing sleep problems and insomnia, and will identify gaps where further research is warranted and required.

2. Methods

The study was conducted in accordance with PRISMA recommendations (Moher et al., 2010) and was registered with PROSPERO [CRD42017054972].

2.1. Search strategy

A search was conducted in Embase, Medline and PsycINFO databases for articles published between 1st January 1991 and 31st December 2016. The start date was selected to coincide with the year the World Wide Web was introduced. The following search terms were used to represent the constructs of (i) technology; ii) intervention; iii) youth; iv) sleep; v) trial methodology: app OR computer* OR cyber OR cyberspace OR electronic OR electronic mail OR email OR e-mail OR internet* OR net OR online OR virtual OR web OR e-health OR ehealth OR web OR m-health OR mhealth OR mobile* OR smartphone OR text message OR SMS OR social media OR blog OR forum OR Twitter OR Facebook OR Instagram AND screen* OR assess* OR interven* OR *prevent* or treat* OR track* OR *support OR therapy OR CBT OR self-help AND adolescent* OR child* OR youth OR young person OR young adult OR young people OR emerging adult OR teen* OR school-aged OR

student AND Sleep OR insomnia AND Trial OR RCT OR randomised control trial OR randomized controlled trial or randomized control trial OR randomised controlled trial. Two reviewers (AWS, LJ) independently searched all databases. A separate electronic search (using the same terms) was also conducted for the journal *Internet Interventions*, as it is not currently listed in these databases. In addition, reference lists from included studies and previous literature reviews in this field were hand-searched.

2.2. Eligibility criteria

Peer-reviewed journal articles published in English were eligible for the current study. Eligibility was assessed using the PICOS guidelines found in the PRISMA statement (Moher et al., 2010). **Participants:** To capture the full spectrum of youth, participants with a mean age of between 12 years, 0 months and 24 years, 0 months were included. **Interventions:** Interventions were required to: i) directly target insomnia or symptoms of insomnia (interventions were permitted to target additional concerns such as anxiety as long as the insomnia-focused component constituted at least 75% of the intervention); ii) incorporate at least two core elements of CBT-I (i.e. sleep restriction, stimulus-control, cognitive therapy, sleep hygiene education and relaxation); iii) be delivered via a web-based or mobile phone application. For multi-modal interventions that delivered component(s) non-digitally (e.g. face-to-face or paper-based), the digital component was required to constitute at least 75% of the program's delivery method. **Comparisons:** No restriction was imposed on the type or use of control groups. However, for trials that compared an eCBT-I group to a non-intervention control group, between-group effect sizes are reported. **Outcomes:** Studies were required to report baseline and post-intervention means and SD/SE data for the intervention group. This data was required on at least one primary sleep-related outcome, which could be insomnia severity, SE, WASO, SOL, TST, NA, time in bed (TIB) or subjective sleep quality. Sleep outcomes could be reported using subjective or objective (e.g., polysomnography) approaches. Assessment measures needed to be standardised, validated and reliable instruments or scales suitable for adolescents. Secondary outcomes were related to mental health and general functioning, and measured depressive symptoms, anxiety symptoms, psychological distress, level of functioning and quality of life; however these were not required for study inclusion. Reporting on follow up data was not required for inclusion in the current review. However all available follow-up data was extracted. **Study design:** Eligible studies included pre-post designs, non-randomised controlled trials and RCTs, including clustered RCTs. Studies were excluded if: participants did not meet the age criterion; the intervention did not target insomnia, incorporate CBT-I components or was not delivered digitally; or; the study did not report sleep-related outcomes.

2.3. Effect size estimates

To evaluate the effect of eCBT-I, effect size estimates (Cohen's d ; Cohen, 1992) were extracted from controlled studies that included a non-intervention control group.

2.4. Study selection and data extraction

Two reviewers (AWS, LJ) independently conducted the searches and removed duplicates. Titles and abstracts were then screened by both reviewers and irrelevant articles were removed. These lists were compared and discrepancies were resolved through discussion. Full-texts were then obtained for remaining studies and both reviewers independently assessed whether they met inclusion criteria. Discrepancies were resolved through discussion in consultation with the final author (HC). One reviewer (AWS) extracted all relevant data for included studies into an Excel spreadsheet. Data outlining study design, aims, sample, intervention, outcome measures, outcomes

Download English Version:

<https://daneshyari.com/en/article/6949000>

Download Persian Version:

<https://daneshyari.com/article/6949000>

[Daneshyari.com](https://daneshyari.com)