Non-pharmacological treatment of chronic insomnia

in both primary and comorbid manifestations

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Sleep disorders in the developed world have nearly become a pandemic. Modern life is rife with new stressors that affect the health of patients' sleep, and in a holistic view, their entire lives. These disorders cause many billions of dollars of direct damages in developed nations (indirectly, even more). They affect more than half of the population here in the United States. They're even a risk factor for many other serious disorders both mental and physiological; particularly, anxiety and depression. Treatment is available for insomnia and related sleep disorders through a range of programmes, both pharmacological and non-medicinal in nature. However, one treatment in particular has shown great promise: ‘CBT-I,’ or cognitive-behavioural therapy for insomnia. Herein follows an examination of the recent research on this topic; in measuring the extent of these diseases, and in psychological treatments thereof.

Insomnia is more common than might be expected. Léger, Poursain, Neubauer, and Uchiyama (2008) performed a study on this topic across over 10,000 individuals. They found that more than a quarter thereof experienced ‘sleeping problems’ in Europe and Japan; rising to a striking 56% in the U.S. Despite more than *half* of primary-care patients experiencing insomnia, less than 30% of those actually contact a physician about their problems. Meanwhile, an almost insignificant number of these patients actually seek treatment, as detailed by Smith et al. (2002). This disease has also been shown to disproportionately affect otherwise-disadvantaged groups. Besides often manifesting comorbidly with several other mental disorders, insomnia manifests symptoms significantly more often in both female (Bei, Coo, Baker, & Trinder, 2015; Léger et al., 2008) and African American (Ruiter, Decoster, Jacobs, & Lichstein, 2010) populations. Insomnia is often recognized as referring to ‘primary insomnia’ (that is, insomnia manifesting in the absence of an additional related disorder). Unfortunately, insomnia also manifests with or acts as a risk factor for a number of other debilitating conditions. These include alcohol and drug abuse, suicidal impulses, decreased immune function, and reduced cardiovascular function. Most notably, however, insomnia often manifests co-morbidly with the closely related disorders of anxiety and depression (Major Depressive Disorder, MDD).

As also detailed in Smith et al.’s summary (2002), these sleep issues claim much more than individual well-being and happiness. An economic cost of US$ ~100 billion dollars (in terms of reduced productivity and accidents) is effected worldwide, each year, by these sleep disorders. Even disregarding general economic impact, the ‘direct costs’ (the cost of pharmacological treatments and related healthcare services) are immense. In the United States alone, these totaled to over US$ 14 billion in 1995 (according to Léger et al., 2008). Such substances come in a very wide range of treatment options. One may be prescribed the traditional benzodiazepines and associated benzodiazepine receptor agonists (zopiclone, zolpidem and zaleplon). Additionally, there exist rarer prescriptions for sleep disorders, such as antidepressants (doxepin), neuropeptides, progesterone receptor antagonists, hormones, melatonin receptor agonists, antihistamines, anti-epileptics, and narcotics (Winkler, Auer, Doering, & Rief, 2014). Beyond this laundry-list of pharmaceuticals, there's non-pharmacological treatments for these disorders, including everything from the cognitive-behavioural therapies discussed below, to acupuncture.

Despite the quantity of such empirically studied treatments available, however, a substantial subset of these populations takes little-to-no advantage. More than one-third of insomnia sufferers in Western Europe were found have taken no action whatsoever to combat their sleeping disorders. 10% of those that did only tried over-the-counter solutions, while 13% adopted alternative or non-pharmacological measures besides CBT-I. Further, of those respondents, as few as 3% (in Japan) consulted a physician about their symptoms (Smith et al., 2002). This shows the unfortunate tendency for patients to treat insomnia (and mental disorders in general) as less serious than physical disabilities or sicknesses. Even worse, some of the remedies undertaken by sufferers actually act as perpetuating influences; for instance, cigarettes or alcohol consumed immediately before bedtime (Drake, Schwartz, & Roth, 2008).

There is a growing body of literature supporting cognitive-behavioural therapy as one of the strongest tools with which to address sleep-disorders. CBT-I involves four primary components, as described by Pigeon (2014):

1. **Stimulus control therapy.** The limiting of time spent awake in the bedroom, engaged in activities other than sexual coitus and sleep. This also includes, in general, promoting a healthy bedroom environment. It is achieved, for instance, by instructing the patient to leave the bedroom temporarily, if they find themselves awake for more then fifteen minutes. This serves to reduce stressful and negative associations with the sleep-environment.
2. **Sleep restriction therapy.** This limits, instead, the time that the patient spends *instead* bed. The practitioner works with the patient to develop a self-reported sleep-diary. Such allows them to measure the amount of time the patient is spending actually asleep, versus the time they are spending in bed. With this, the practitioner can calculate the patient's ‘sleep efficiency.’ The patient is then instructed to go to bed / get up at a particular time every day. This period is chosen precisely to restrict the time available for sleep. This, counter-intuitively, is made marginally shorter. This process increases that ‘sleep efficiency,’ as their sleep accounts for a larger percentage of that time spent in bed. As that measurement shows improvement, the practitioner finally works with the patient to begin to re-extend their sleeping period.
3. Besides stimulus control and sleep-restriction, there are also other generic elements of **sleep hygiene** in which the patient is educated. Keeping a routine conducive to sleep, maintaining healthy bed- and wake-times, and avoiding things like tobacco, alcohol, or large meals immediately before bed. Effectively any negative activity contributing to sleep-disturbance becomes a therapeutic target.
4. Finally, a CBT-I program wraps up with **cognitive therapy.** The patient is coached by the practitioner in meeting their goals (in this case, a better sleep experience). This begins by identifying dangerous or unhelpful thought-patterns and thinking, problematic behaviour, and maladaptive emotional responses standing between the patient and those goals. The patient is helped to challenge the veracity and usefulness of such problematic thoughts and beliefs. Once the patient is aware of these, they can change those beliefs and their resultant behaviour.

The CBT-I approach originates from the ‘cognitive model’: that distorted beliefs regarding sleep (and their resultant behaviour patterns) hyper-arouse the central nervous system. Further, that these eventually result in deregulated sleep cycles, which manifest as chronic insomnia. The process is designed assault the sleep-interfering hyper-arousal features of insomnia, and on the reinforcing of circadian and sleep-homeostasis regulation (Pigeon, 2014). It is usually customized by the practitioner into a pattern allowing for weekly CBT sessions, occurring over a period of six to eight weeks (Pigeon, 2014). The behavioural therapy portion generally takes place during the first half of that period, with the cognitive therapy following during the latter portion.

Throughout the literature, CBT is repeatedly shown to be especially effective in treating insomnia patients. CBT-I has been shown to reliably be at least as effective as, and often more effective than, benzodiazepines (Smith et al., 2002). For comparison, amongst the various pharmacological treatments for the insomnias, Winkler, Auer, Doering, and Rief (2014) show that benzodiazepines are the most effective. Further, CBT-I has no known negative side-effects; and is preferred by most patients, compared to prospective pharmacological treatment (Aho, Pickett, & Hamill, 2014). Most tellingly, the American Psychological Association (APA) has chosen CBT-I as the ‘treatment of choice’ for chronic insomnia, both primary and comorbid. This is partially due to 70-80% of treatments showing a positive response (Whitworth, Crownover, & Nichols, 2007).

Importantly, however, insomnia cannot be examined in a vacuum: it appears in concert with other, related mental disorders very, very often. Drake, Schwartz, and Roth (2008) synthesize prior work into some interesting numbers: almost three-quarters of psychiatric patients for other disorders experience comorbid insomnia. Even with physiological issues (eg. cancer, diabetes, hypertension, chronic pain, and gastrointestinal problems), comorbid insomnia appears between 40-55% of the time. Drake et al. (2008) mention that insomnia is the most common refractory symptom of major-depressive disorder. Tsai et al. (2013) place further numbers on this prevalence: between 67% and 84% for depression, and around two-thirds for generalized anxiety disorder (GAD). Conversely, around 28% of general insomnia subjects presented another mental disorder comorbidly.

These links are crucial, because CBT-I is developed from the related CBT treatments originally created for those precise mental disorders. Illustratively, Aho, Pickett, and Hamill (2014) wrote that “CBT-A [cognitive-behavioural therapy for anxiety] has overwhelming success for the treatment of anxiety disorders.” They also mention that it is recommended strongly as the “preliminary and foundational” treatment in current practice. Over 300 studies have shown CBT-A's efficacy; with an effect between 64% and 70%, and with positive effects sustained for over two years. In addition, just as above with CBT-I, CBT-A is shown to be superior to pharmacological treatment for GAD in numerous ways. These matter, because a combined CBT program can be constructed for the vast number of patients experiencing insomnia comorbid with other psychiatric disorders. Such a program can simultaneously improve on their various disorders in a concerted fashion, to great effect. It can mitigate such tightly integrated disorders without allowing either to defeat treatment by reinforcing the other.

In the developed world, and the United States in particular (with ~131 million people suffering from sleep disorders), insomnia, anxiety, and depression are epidemic. Cognitive-behavioural therapies are one of the only tools equipped to simultaneously assault such comorbid disorders effectively. More importantly, they are the *only* one that can do so without negative side-effects. CBT is preferred by patients, it's extremely effective, and it's economical. These qualities lend us an opportunity to realize massively increased quality-of-life for a *huge* segment of the developed population.

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