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## Digital cognitive behavioural therapy for insomnia: the answer to a major public health issue?



Insomnia is a major public health concern across high-income countries. Current treatment guidelines advocate cognitive behavioural therapy for insomnia (CBT-I) as the preferred treatment. However, very few people are given CBT-I, and most people presenting to their general practitioners with insomnia are prescribed sleep medications, which lack long-term efficacy and can have unwanted side-effects such as dependency. CBT-I provision is limited by the scarce availability of trained therapists,<sup>1</sup> and could be scaled up if made available digitally (dCBT-I).

Several studies on dCBT-I, with or without human support, have been published, and reviews and meta-analyses have shown that this intervention is effective.<sup>2</sup> Øystein Vedaa and colleagues' study in *The Lancet Digital Health* is an excellent addition to this evidence.<sup>3</sup> The study assessed the effectiveness of an automated dCBT-I intervention, Sleep Healthy Using the Internet (SHUTi), in a well conducted large-scale (n=1721) randomised controlled trial in Norway. The control group received online sleep education. The results showed that reductions in Insomnia Severity Index (ISI) score between baseline and post-treatment (9 weeks) were substantially larger for the dCBT-I group than for the control group (between-group Cohen's d -1.21). At the 9-week follow-up, 58% of participants in the dCBT-I group had a clinically relevant response (a reduction of  $\geq 8$  points on the ISI), compared with 21% in the control group. Furthermore, 38% of those in the dCBT-I group were in remission (an ISI score  $< 8$ ), in contrast to 8% in the control group. Importantly, in the dCBT-I group, there was a 16 percentage point decrease in the proportion of participants using sleep medication, while this reduction was only 10 percentage points in the control group. These findings show that dCBT-I, even a fully automated version requiring no human support, can produce meaningful and large improvements in insomnia and related outcomes.

This evidence supports the scaling up of dCBT-I. However, several important issues still need to be addressed to increase its impact. The first relates to the uptake of digital interventions. Although digital interventions are claimed to be easily accessible, people with a higher socioeconomic status are reached more easily while

people with a lower socioeconomic status are under-represented.<sup>4</sup> Vedaa and colleagues' study confirms this disparity, with participants having spent a mean of around 16 years in education, roughly equivalent to obtaining a Bachelor's degree. To prevent even more health disparities in the population, we need to do more to ensure that everyone is able to engage in dCBT-I.

A second issue is the adherence to the interventions. It is an often-stated problem in digital mental health care that treatment dropout is high.<sup>5</sup> This is especially true for interventions that are offered without any human support. For example, of the participants assigned to receive the fully automated dCBT-I intervention in Vedaa and colleagues' study, 46% completed the entire intervention during the study period. The addition of some form of (minimal) human support can increase adherence rates considerably, but means that the intervention is less scalable. Whether the benefits of this increased adherence outweigh the loss of health benefits resulting from reduced scalability remains under debate.

The third issue regards the effects of dCBT-I. For other common mental health disorders, digital interventions seem to be as effective as face-to-face interventions,<sup>6</sup> but this debate is still ongoing for insomnia. Although several trials of dCBT-I have shown large effect sizes, comprehensive meta-analyses of CBT-I for insomnia have shown that self-help interventions (either in digitalised format or in books, with or without human support) are, on average, slightly less effective than face-to-face therapies.<sup>7</sup> However, the relative effectiveness can only be established by trials directly comparing the different modes of delivery. From the small number of those trials that have been done, the evidence has been conflicting.<sup>8,9</sup> Therefore, efforts should be made to increase the availability of face-to-face treatments as well as dCBT-I.

The final issue concerns the way dCBT-I should be implemented. Many advocates of this intervention argue that it should be delivered in a stepped-care model. Although evidence for the cost-effectiveness of stepped care is scarce, services that deliver care in a progressive delivery model have been shown to

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achieve better outcomes than services with a stratified treatment model.<sup>10</sup> We therefore endorse the stepped care principles, although more research is warranted.

In summary, Vedaa and colleagues' study shows that large effects can be achieved through SHUTi, and adds to the compelling evidence for dCBT-I. To address the public health issue of insomnia, digital interventions should be implemented broadly to serve the large numbers of people suffering from the condition. However, greater awareness of under-served populations is needed; face-to-face interventions, in addition to online interventions, remain necessary because of their better adherence rates and possibly better outcomes; and the treatment model with the optimal cost-benefit ratio still needs to be identified.

AvS and JL are the developers of i-Sleep, a guided internet-based intervention for insomnia. The authors hold intellectual property rights to this intervention but have no financial interest in it.

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