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PERSPECTIVES

# Who is the "Therapist" in Digital Cognitive Behavioural Therapy for Insomnia (dCBTi)?

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**Abstract:** Cognitive Behavioural Therapy for insomnia (CBTi) is a highly effective, evidence-based intervention, increasingly delivered through digital platforms. However, the human qualities embedded in traditional face-to-face CBTi (such as empathy, clinical judgement, and personalised encouragement) are difficult to replicate digitally. Digital CBTi is often treated as a single therapeutic modality, yet approaches vary significantly in the extent and nature of human support provided, raising important questions about the identity and role of the "therapist" in digital care. This perspectives paper explores the critical role of human support in digital CBTi and examines different models for integrating human input into digital care pathways. The authors argue that while digital CBTi offers scalable and accessible treatment for insomnia, that the inclusion of trained human support remains a vital component for maximising engagement, personalisation, and long-term clinical outcomes.

**Keywords:** empathy, therapist, dCBTi, insomnia

## The Therapeutic Relationship in Digital CBTi (dCBTi)

In 1979, Aaron Beck et al devoted an entire chapter to the therapeutic relationship in their CBT treatment manual.[1] They emphasised the Rogerian counselling skills of warmth, accuracy, empathy, genuineness, and basic trust and rapport. They also advised tailoring the relationship to the individual client, seeking agreement on the goals and tasks of treatment and sharing an interpersonal bond. These are human qualities that current AI and algorithms are unable to authentically replicate. Later Elliott et al, 2011[2] stated that the Rogerian counselling skills of empathy, genuineness and positive regard are fundamental in CBT. A literature review[3] confirmed the importance of these qualities concerning the therapeutic relationship and found that collaboration, goal consensus, empathy, positive regard and affirmation, and collecting and delivering client feedback are fundamental components that contribute to successful treatment outcomes.

Lacks (1987),[4] in her pioneering book on the behavioural treatment of insomnia, states,

> Although it may seem self-evident, the therapist plays a key and specific role in the behavioural treatment of insomnia.

She goes on to say that

> The therapist will have to appear self-confident, knowledgeable, experienced, organised, optimistic and as though he or she has a plan.

She stresses the need for a human therapist and the personalisation of therapy

> On top of being expert the therapist needs to be human in order to be successful with this kind of behavioural therapy. Appearing normal and reasonable, using a touch of humour to lighten the atmosphere, avoiding jargon wherever possible and being patient with the client's quirks and frailties will go a long way toward a successful outcome.

This advice is echoed in later works such as Perlis et al,[5] who state that there are characteristics thought to make one a "good clinician". This set generally includes

> Good listening skills, empathy, respect for patient's autonomy, persuasion skills, and perhaps a sense of humour.



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The rationale behind dCBTi is to make the presentation of CBTi more convenient and accessible for users, more cost-effective for providers and scalable, addressing the shortage of trained CBTi therapists. This is done by replacing some or all functions that humans have previously performed.

There is no doubt that dCBTi is effective and while many clinicians consider face-to-face CBTi to be the gold standard, a meta-analysis[6] indicates that digital CBTi is non-inferior to face-to-face CBTi. Further, a network meta-analysis[7] compared various forms of digital CBTi with face-to-face CBTi, and the authors concluded that web-based CBTi with a virtual or real therapist offers better outcomes than other digital CBTi approaches. However, while the author differentiated between "virtual" and "human" therapists, they were unfortunately not analysed separately. This raises the question of "who" the therapist in digital CBTi is, and whether "they/it" are important in the retention and treatment of patients who access dCBTi.

Some available dCBTi options are fully automated and lack any form of "therapist" – human or otherwise. These are essentially digital presentations of CBTi information and may be more appropriately categorised as self-help resources rather than CBT interventions, as they often contain information and advice that is no different from any of the popular science CBTi books available. As Lacks[4] points out, the problem with this type of self-help approach is that it is not particularly successful as there is

> No way to control the consistency of practice of the recommended behaviours.

Furthermore, she notes that

> Typically, people who try such an approach will follow the instructions erratically over a short time and then conclude that the method does not work.

This is because

> Most people appear to need the regular feedback and exhortation provided by a therapist.

## The Virtual "Therapist"

Considering the advancements in AI chatbots, the emergence of AI-driven virtual therapists is not just imminent but already a reality, with several digital CBTi programmes claiming to incorporate AI to provide and/or augment therapeutic support. It may be illustrative to look at an example of a "virtual therapist" that was incorporated into an otherwise fully automated dCBTi programme. One dCBTi product[8] has used what Hasan et al[7] term a "virtual therapist" to present CBTi instruction. This virtual therapist, represented by a cartoon character, used several decision trees to create the impression that the advice provided within the app was personalised. However, such personalisation is, by definition, limited. Furthermore, there were repeated attempts to anthropomorphise this character.

Despite being described as a "therapist", this character was more akin to a virtual assistant, as it lacked the essential qualities typically expected from a therapist. For example, it was not possible to interact with this "virtual therapist".

In a more recent study of users of this app Cheng et al,[9] found that users expressed "a desire for more human contact (eg, 'Talking with a real person would be more helpful')". Other users of the app expressed concerns about the lack of tailoring to their specific circumstances (eg, "The worst part of the study for me was that you avoided the medical issues that impact my sleep").

Van Straten and Lancee (2020)[10] report that dCBTi is as effective as face-to-face CBTi, but note that while outcome measures are important, ensuring user engagement and adherence to the digital therapy programme is crucial for its success.

It is not simply the case that if dCBTi improves sleep, then all dCBTi will be effective. Without proper engagement, even widely accessed dCBTi programmes may fail to deliver overall beneficial effects for the health system or population. This could lead to patients being escalated to other care options when a well-delivered dCBTi could have resolved their issues.

One of the main criticisms of unsupported dCBTi is that there is a high rate of withdrawals, this could be perhaps due to the lack of encouragement and engagement from a true therapist. Indeed, this hypothesis was confirmed by the study of Cheng et al[9] that

> Providing as-needed patient support may be an area of priority, as there was consensus that this feature would have promoted persistence with dCBT-I

("Despite positive regard for the virtual therapist, participants across both remission groups still desired additional in-person interactions" and in particular "non-remitters reported that in-person interactions may have increased treatment effectiveness").

A recent study highlights the benefits of having a human presence in digital cognitive behavioural therapy for insomnia (dCBTi). The study found that treatment adherence rates in guided dCBTi conditions were double those of unguided dCBTi.[11] This finding is consistent with broader research in digital mental health interventions, which demonstrate that the presence of therapist support is associated with greater symptom improvement, higher adherence rates, and lower dropout compared to unguided therapies.[12]

Furthermore, a recent systematic review and meta-analysis on fully automated digital cognitive behavioural therapy for insomnia[13] found that a hybrid model combining therapist support is more beneficial than fully-automated dCBTi.

## The Human "Therapist"

There are a number of dCBTi programmes[14,15] which deliver a hybrid model, combining the digital presentation of CBTi content with support and human guidance. In these models, users can quickly access human support teams (typically sleep coaches), who are able to make individualised adjustments to the programme and provide tailored guidance based on user feedback – helping to preserve the core components of the therapeutic relationship, such as empathy, trust and perceived support, within a digital format.

Although the scalability of human support has been questioned (eg, by van Straten and Lancee, 2020[10]), hybrid digital care models, such as that of Sleepstation,[14] which have been optimised to include human support at optimal points in the care pathways, are successfully delivering a comprehensive and effective service at significant scale, therefore proving that this is possible.

## Empathy

As Morin (1993)[16] says,

> Along with genuine empathy and support, a strong therapist-patient alliance is necessary.

Similarly, Perlis et al[5] also list empathy as one of the essential attributes in effective CBTi delivery. A recent article[17] further demonstrated that patients value emotional support as highly as medical treatment during their care journeys.

As digital interventions become increasingly sophisticated, important questions arise about whether these essential human qualities (eg empathy, understanding and emotional responsiveness) can be effectively replicated by AI-driven systems.

Large language models (LLMs) such as ChatGPT are now capable of communicating the content of CBTi in a coherent and human-like manner. However, this capability does not necessarily reflect the presence of genuine empathy - a key component of effective therapeutic relationships.

Although specific empathy-focused fine-tuning has been introduced for some LLMs, these instructions have primarily targeted the production of empathetic-sounding phrases rather than establishing authentic interpersonal connection.

Recent studies (Ayers et al, 2023;[18] Li et al, 2023[19]) suggest that while AI can simulate empathetic responses in limited, written contexts, the depth and authenticity of therapeutic relationships remain significantly stronger when delivered by human practitioners. These findings highlight the ongoing challenges of replicating genuine human empathy in digital interventions, even with recent technological advances.

Although recent AI models demonstrate progress, concerns raised by Morris et al[20] remain highly relevant. As Morris notes,

> It will always be hard, if not impossible, for a robot to match human levels of performance

in expressing empathy, as nonhuman agents lack lived human experience and may therefore appear inherently inauthentic. While a recent study[18] reported that AI chatbot responses were rated up to 9.8 times more empathetic than physician responses, much of this effect was attributed to the chatbot providing longer and more detailed answers.

As Morris[20] further observed:

> The effort required to compose a supportive response may be as important as its actual substance.
>
> It can be powerful to know that someone else has listened to you, thought deeply about your situation, and then took the time to craft a considerate response. All of this is lost when a machine algorithm automatically generates a response.

Genuine human interaction, including the knowledge that another person has listened, reflected, and responded thoughtfully, remains central to establishing a meaningful therapeutic connection.

The degree of authentic empathy conveyed by AI systems remains uncertain and unproven. Only with further research will it become clear whether machines can consistently deliver the emotional resonance required for effective therapeutic engagement.

Regardless of technological advances, empathy remains a fundamental pillar of healthcare practice. It is empathy that patients often need most during the challenging points of their care journey.

An empathic approach to care has been reported to reduce patients' experiences of isolation, anxiety, pain, and depression,[19] all of which are common comorbidities of insomnia.[21] Therapy adherence can be improved when these other mental health issues are acknowledged and addressed, chronic conditions are much easier to manage, and well-being, quality of life, and health outcomes can improve.

Empathy enables the therapist to ask the right questions, listen actively, and provide the rationale behind the procedures the user is to carry out.[22]

While some individuals may be motivated simply by instructions, most patients show greater adherence when they understand the reasoning behind therapeutic advice. By enhancing patient understanding and engagement, empathy ultimately drives better health outcomes.

## Conclusion

Digital CBTi has emerged as an important tool for expanding access to evidence-based treatment for insomnia, offering scalable and efficient solutions to workforce limitations.

Given the known advantages of offering CBTi with a therapist, over unsupported alternatives, and the critical importance of the therapeutic relationship in determining engagement, adherence and clinical success - it is essential to maintain human involvement in dCBTi to realise its full potential.

While automated digital interventions can effectively deliver core CBTi content, they often lack the nuanced interpersonal connection that supports long-term behaviour change and recovery. Fully unguided models (which commonly report high early dropout rates) risk disengagement, poorer outcomes, and reduced patient satisfaction, particularly for those with complex needs or comorbid mental health conditions.

Scalable models that integrate targeted human support demonstrate that it is possible to retain essential elements of the therapeutic relationship without sacrificing reach or efficiency. Preserving human connection within digital care pathways is not merely an enhancement - it is a fundamental requirement for delivering sustainable, meaningful, and patient-centred insomnia care at scale.

Until there is clear evidence that AI can deliver all the benefits currently provided by humans, we believe that removing the human-in-the-loop in favour of a fully automated system would be counterproductive and undermine the effectiveness of the therapy.

As digital therapies continue to evolve, the challenge is not whether technology can replace the human element, but how best to preserve and integrate it to ensure the highest standards of care.

The future of insomnia care is digital — but it must also remain deeply human.

## Data Sharing Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

## Author Contributions

NS Conceptualization, Writing – original draft

KM Conceptualization, Writing – review and editing

AG Conceptualization, Writing – review and editing

All authors gave final approval of this version for publication. They all agree on Nature and Science of Sleep as the journals to which this manuscript is to be submitted. All authors agree to take responsibility and be accountable for the contents of this article.

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NS receives a monthly retainer for consultancy from Born Digital Health Ltd (t/a Sleepstation).

KM receives a monthly retainer for consultancy from Born Digital Health Ltd (t/a Sleepstation).

AG is a founder of Born Digital Health Ltd (t/a Sleepstation) and designed the intervention.

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