Chapter 10: Internet-delivered Cognitive Behavioural Therapy

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Introduction

In recent years, computer-based and internet-delivered CBT (iCBT) has become an attractive and evidence-based alternative to face-to-face CBT, and in some cases, a significantly better option for some individuals. This chapter will discuss the origins of iCBT and the research that supports its efficacy and effectiveness, as well as the application of iCBT interventions in clinical practice. We will then explore the advantages and limitations of iCBT for service users and service providers, before considering the future of iCBT and its further expansion into clinical practice.

Summary points for the chapter:

- To provide the theoretical background for iCBT and its supporting empirical base
- To detail the structure, design, and use of iCBT in clinical practice
- To illustrate some future developments and use of iCBT in health service provision

Key Definitions

Cognitive Behaviour Therapy (CBT) is an evidence-based, empirically supported, time-limited, structured, goal-oriented psychotherapy focused toward solving current problems and educating service users in essential skills to alter dysfunctional thinking and behaviour.

Internet-delivered cognitive behaviour therapy (iCBT) is a method for the dissemination of CBT. ICBT is a repurposing of an evidence-based CBT treatment protocol into an online environment and used in a self-administered manner, either with support or without support.

Service users are clients and patients. We use the generic term to refer to all potential users of iCBT interventions.

A Supporter is a generic term used to describe the variety of persons that can offer guidance and support to service users as they progress through an iCBT intervention. These can include a range of health professionals, clinicians, nurse practitioners, trained volunteers, and peer mentors.

Background

In this chapter, our focus is on internet-delivered cognitive-behaviour therapy (iCBT), a descendant of computerised CBT (cCBT). Both approaches are similar in that they deliver evidence-based content, and they only differ in first, the type of platform needed (a computer with internet connection vs any computer) and second, how service user's complete assessments (online vs offline questionnaires). Third, support is provided for iCBT online or by phone, while in cCBT support could only be provided by phone.

Most computerised and internet-delivered psychological interventions use cognitive-behaviour therapy (CBT) treatment protocols, which are especially feasible for being self-applied. Specifically, the didactic format facilitates the operationalisation of therapeutic strategies, and the treatment targets specific behaviours following explicit steps with clearly defined goals (Selmi et al., 1990). Furthermore, cognitive behaviour therapy has the greatest empirical base supporting its efficacy in the treatment of a vast number of psychological conditions (Hollon and Beck, 2016).

The first documented studies of iCBT appeared from the early 2000s and at present hundreds of studies are published about iCBT (Andersson, 2016). There are specific journals (i.e. Internet Interventions, Journal of Medical Internet Research) and international associations which gather the main leaders and researchers in the field (i.e. European Society for Research in Internet Interventions). ICBT has been successfully implemented in various settings and

researched for a broad range of psychological difficulties (e.g., depression or anxiety), health conditions (e.g., smoking cessation, stress management) and the psychological distress derived from chronic and somatic conditions (e.g. diabetes, chronic heart disease, chronic pain). What follows is a review of the current empirical evidence supporting iCBT for psychological disorders.

Empirical Research Supporting the use of iCBT Treatments

Many studies have examined the efficacy of iCBT for varying degrees of depression, from Subthreshold Depression to Major Depressive Disorder, and in different contexts. The majority of studies concerned individuals with mild to moderate symptoms of depression. Reviews have shown that iCBT for depressive symptoms produce moderate to large posttreatment effect sizes and categorise it as a well-established treatment for these conditions, that is, meeting the highest level of criteria for evidence (Richards and Richardson, 2012, Andersson, 2016). Research in internet-delivered cognitive behaviour therapy provided with a supporter continually yields superior outcomes to unsupported delivery formats. A recent review of depression focused iCBT interventions in primary care demonstrated effectiveness for supported interventions, thus, leading the authors to recommend the use of supported iCBT in primary care (Wells et al., in press). Similarly, the use of supported iCBT in secondary and community settings is also recommended (Thase et al., in review).

Regarding anxiety disorders, different meta-analyses have shown that iCBT leads to clinically meaningful reductions in anxiety symptoms and increased quality of life (Olthuis et al., 2016). Research in iCBT for anxiety includes Panic Disorder (PD), Social Anxiety Disorder (SAD), and Generalized Anxiety Disorder (GAD). Individual studies and reviews reveal large effect sizes in the reduction of anxiety symptoms compared to controls (Richards et al., 2015a, Olthuis et al., 2016). Also, initial research has produced positive outcomes for

severe health anxiety and specific phobias (Hedman et al., 2014, Andersson et al., 2013, Andersson et al., 2009, Hedman et al., 2011). Previous DSM-IV anxiety disorders including Posttraumatic Stress Disorder (PTSD) and Obsessive Compulsive Disorder (OCD) studies and reviews have concluded that iCBT interventions are promising (Kuester et al., 2015, Wootton et al., 2016). Therefore, iCBT has been proven to be useful in the treatment of a wide array of anxiety disorders.

ICBT research for severe, complicated and enduring presentations include Eating Disorders and Bipolar Disorder. ICBT research outcomes in Eating Disorder (ED) conditions is promising and superior to waiting list controls especially for binge eating disorder and recurrent binge eating, leading to reductions in symptoms and improved quality of life (Aardoom et al., 2013, Wilson and Zandberg, 2012). Preliminary evidence supports iCBT interventions for improvements in the psychological and physical domains of quality of life and well-being in people with Bipolar Disorder (Todd et al., 2014). However, the limited evidence prevents firm conclusions about the efficacy of these interventions for such presentations.

Several reports have also indicated positive outcomes for the delivery of internet-delivered interventions to address the behavioural health aspects of chronic and somatic conditions, e.g., chronic pain, headache, tinnitus, irritable bowel syndrome, and diabetes (Hanlon et al., 2017, van Beugen et al., 2014). ICBT can be introduced as a tailored intervention addressing significant comorbid depression and anxiety in individuals with specific health conditions (van Beugen et al., 2014). On the other hand, iCBT can be leveraged in disease management, including the provision of disease-specific education, feedback on action plans, medication adherence support and psychological care, to support self-management (Hanlon et al., 2017). To conclude, iCBT interventions have been proven to work in a wide variety of

health conditions, addressing psychological difficulties, as well as focusing on the behavioural aspects of self-management.

Implementing and Researching iCBT in Clinical Practice

ICBT delivery can be supported or unsupported. These latter interventions are readily disseminated and mostly targeted at prevention. However, they can suffer from high dropout rates. Furthermore, supported interventions lead to better outcomes and have higher retention rates (Richards and Richardson, 2012, Wells et al., in press). In this chapter, we put our emphasis on supported interventions, which are delivered by service providers to service users through the means of an online platform, which can be accessed via a computer or mobile device, and which lends itself to direct communication between the service user and the supporter.

Studies indicate that the implementation of iCBT into clinical settings produces moderate to large effect sizes, which are similar to the ones obtained in community samples (Gilbody et al., 2017, Wells et al., in press). Countries including Sweden, Canada, Norway, the U.K., and Australia have implemented iCBT into routine care. In the UK, iCBT is part of the National Health Service (NHS) mental health services (Improving Access to Psychological Therapies, IAPT) whose target is to provide stepped psychological care for people with depression and anxiety disorders. In this case, iCBT is a treatment of choice at step two, that is, for individuals presenting mild to moderate symptoms of anxiety or depression. ICBT is supported by Psychological Wellbeing Practitioners (PWPs), which are a cohort of graduate psychologists with further training in providing low-intensity interventions. PWPs support service user's progress through the intervention using in platform asynchronous or synchronous communication or telephone support. Research in IAPT has demonstrated the effectiveness of cCBT and iCBT in treating symptoms of depression and anxiety (Richards et al., in press, Cavanagh et al., 2006).

Delivering iCBT in Routine Clinical Practice

To illustrate the delivery of iCBT into routine care, we will use the term service user as a category to refer to patients or clients or other users. Supporter encompasses all types of possible supporters: clinicians, PWPs, peer supporters, and trained volunteers.

Accessing the iCBT platform

First of all, a secure platform is used to deliver the iCBT intervention, which means that all of the data provided by the users is encrypted. To begin, users receive an invitation through email to create an account. Sign-up procedures include creating their username and password adheres to the latest security and legal standards (e.g., Health Insurance Portability and Accountability Act [HIPPA]; ISO27001 Information and Security Management) and can include dual authentication procedures, similar to the encryption level used in online banking.

Once the service user has logged in, he/she is asked to read the terms and conditions of the platform. This document details the clinical governance standards, including confidentiality and privacy policies, under which the service operates. Information on the supporter and the type of support provided is made available to the user. After the user signs the agreement, he/she is asked to complete some psychological assessment questionnaires. The outcomes of the assessment can be available to both the service user and the supporter. The user is given access to the platform and the modules of content, including the various interactive tools and the exercises thast are offered.

How does the iCBT platform work?

To explain the mechanisms of an iCBT platform, as well as its essential features, we are going to focus on the platform we are most familiar with, designed by SilverCloud Health. The platform and content, tools, and exercises are continually reviewed by the developers so that they are engaging, effective, and informed with the most up-to-date thinking and technology. The platform is composed of four main sections: *homepage, content, tools* and *supporter*.

- Homepage

The user has their secure homepage, and they can decide the content they want to appear on it, generating a sense of ownership. The homepage provides a point of navigation and departure for the service user in navigating appropriately through the CBT content and tools. The homepage also houses the supporter review, the journal and a find help if they are experiencing a crisis. It is designed using features familiar to social media sites.

- Content of the programmes

The theoretical rationale and treatment focus of an iCBT programme is the same as in a face-to-face treatment, with one difference: the mode of therapy delivery. Face-to-face CBT is predominately verbal, iCBT content relies mainly on text, albeit core CBT concepts and content are presented in many other forms including videos, animations, slideshows, interactive tools and exercises.

Usually, a programme starts with a brief introductory module explaining how the platform works, the content modules and how to use the tools; an overview that will allow the service users to feel confident in navigating the intervention successfully. The process is similar to what happens in face-to-face therapy, where there is an explanation of the treatment, and the logistics of the work are discussed, such as time of sessions, expected etiquette, explaining the CBT model, the homework demands, and establishing expectations and goals.

ICBT comprises various content modules. The number of modules can vary depending on the condition treated, but they always start with a psychoeducation about the disorder or the health state and finish with a relapse prevention module. The modules replicate the content from manualised CBT treatments, either disorder-specific or transdiagnostic. Techniques like cognitive restructuring and behavioural experiments are included in all of the programmes but tailored for each particular condition. The modules follow a familiar layout to help service users navigation and familiarity. The core treatment concepts and learnings from CBT are

communicated to the service user through a variety of means including informational content, quizzes, slideshows, and videos. Interactive activities help service users understand CBT, for instance, constructing a visual representation of their Thoughts-Feelings-Behaviours Cycle. Homework tasks and downloadable files with content summaries are incorporated. The primary goal of all of these elements and interactive activities is to promote engagement with the platform, and also to facilitate the understanding and application of the content and skills.

Indeed, writing content and designing the experience in iCBT is a challenge, and is an area of growing importance. ICBT developers typically have a range of technical content writers, user experience experts, clinicians, and designers in the creation of content for internet-delivered interventions. It is also common to provide personal stories, in the form of video or text, which helps service users to feel that they are not the only ones that are having some troubles. Service users are encouraged to follow one module per week, which can take up to 50 minutes to complete. Between sessions, the user is invited to put into practice the learnings of the module, usually through weekly homework tasks. In service based settings where iCBT is being delivered, deadlines for completing the programme are put in place for the service user. Clear deadlines increase the commitment of the user with the programme and reduce the likelihood of dropout (Andersson, 2014).

- Interactive tools and exercises

The iCBT platform technological capabilities can be used to support fully the efficient delivery of the evidence-based content that proved to work in the face-to-face context. Developers of iCBT platforms create interactive activities that encapsulate the core concepts and skills of CBT. To this end, a broad range of interactive tools and exercises are available to enhance engagement, promote learning of the cognitive and behavioural skills and strategies and maintain the user's engagement to increase the potential for a successful outcome from treatment. For example, service users can monitor their mood and lifestyle through interactive

apps, or engage in pleasurable activity scheduling, which integrates with calendar functions and facilitates pre and post assessment of behavioural activation schedules. ICBT platforms can also facilitate the administration of psychological questionnaires, improving data collection and even the organisation of such data for research purposes.

- The role of the supporter

The meta-analytic evidence to date strongly supports the benefits of guided iCBT interventions for a range of mental health disorders (Olthuis et al., 2016, Richards and Richardson, 2012, Richards et al., 2015a, Thase et al., in review, Wells et al., in press). Guided iCBT, either by a technician or a clinician, produces larger effect sizes and higher retention rates than internet interventions without human support (Johansson and Andersson, 2012, Richards and Richardson, 2012, Wells et al., in press). Regarding the kind of human support, evidence suggests that both technical and clinical support leads to similar results; therefore different types of practitioners could provide support if they get adequate training, which is pertinent to dissemination (Titov et al., 2010). ICBT trials, using support from professionals and para-professionals and even trained volunteers, have demonstrated large effects (Richards et al., 2015b, Gilbody et al., 2017, Karyotaki et al., 2017). These similar results are likely because the role of the supporter is to encourage the users to continue using the platform, answering technical questions and providing feedback on homework assignments (Andersson, 2014). In other words, the treatment is the internet intervention, and the support is targeted to encourage service user adherence.

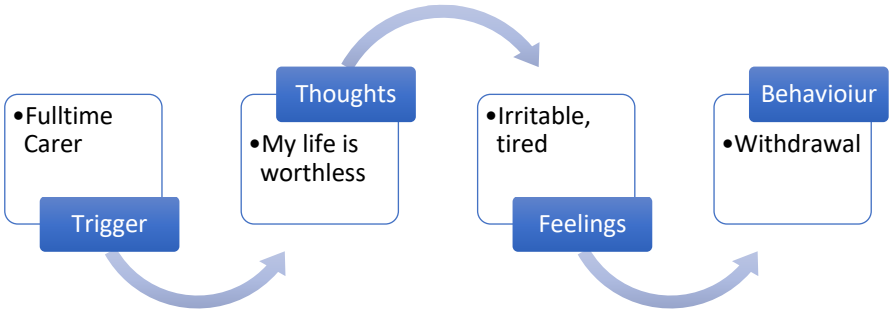
Support for service users in ICBT is scheduled, and supporters can communicate to service users in real time, through phone or video conference, but mostly support is provided in written feedback through the internet platform. Asynchronous communication allows the supporter to reflect on the feedback they provide to service users. Support time usually takes

from 5 minutes to 15 minutes per week, which enables the provision of support to many service users at the same time.

Clinical Case Studies

- iCBT in IAPT services

Shivani, 37, lived in the UK and worked part-time as a teaching assistant until two years ago when her elderly mother fell and needed round the clock care. Shivani gave up her job and became her mother's full-time carer - in addition to looking after her two children. Slowly but surely Shivani grew more tired, irritable, and started having sleep problems. She developed the belief that her life was worthless as she felt that she was slave to her duties. She felt she would never return to the complete life she knew previously. On a visit to her GP, she completed the Patient Health Questionnaire (PHQ-9) and the GP referred her to Step 2 of her local IAPT service, for treatment of moderate depression. The service offered Shivani a choice of group therapy or a supported iCBT programme. Shivani opted for the iCBT as she felt it would be too hard to commute to attend face-to-face appointments. Almost immediately Shivani was comforted through completing a short online quiz that helped her understand how common depressive symptoms were in the world. Her comfort only increased as she read one of the personal stories of a woman called Laura who was also a fulltime carer. The behavioural activation module helped her to get back on track and re-engage with usual activities. The interactive exercises helped her to schedule new activities and she could rate these pre and post. What was particularly useful was that she received feedback regularly from her clinical supporter. The feedback focused on empowering Shivani in maintaining her activities that were eventually responsible for reintroducing greater balance into her life and bringing her joy. Challenging some negative thoughts also helped to balance the burden of being a carer and to reformulate her belief that her life was worthless.



Understanding CBT model	Behavioural activation processes	Cognitive processes
Slideshow on CBT model	Initial focus on BA through the Interactive exercise to schedule, engage and assess pleasurable activities	Slideshow of typical negative automatic thoughts (NATs)
Personal stories in video and text of other people's journey and the application of CBT for successful outcomes		Interactive tool to create personal TFB cycles and identify associated NATS which are being challenged through the BA activities scheduling

Figure 1 Thoughts, feelings, and behaviour cycle for Shivani.

CBT core concepts and processes

ICBT platform provision of CBT using interactive tools and exercises

- iCBT in workplace

Alex is a 42-year-old married man who was recently promoted at work. However, in recent weeks he was beginning to feel overwhelmed. He had been working towards this promotion for years, but the reality of the extra workload and responsibility was suddenly sinking in. Alex realised he needed help when he snapped aggressively at a colleague one day; this was completely out of character for him. A few days later a presentation was given to his department about the company's new online self-help stress programme as part of the employee assistance programme. Alex decided to give it a try since the flexibility of the intervention and its discreetness appealed to him - he could use it on his phone on the train to work, and nobody would need to know. During the program, Alex learned problem-solving strategies through interactive activities which helped him to deal with some matters that emerged from the new

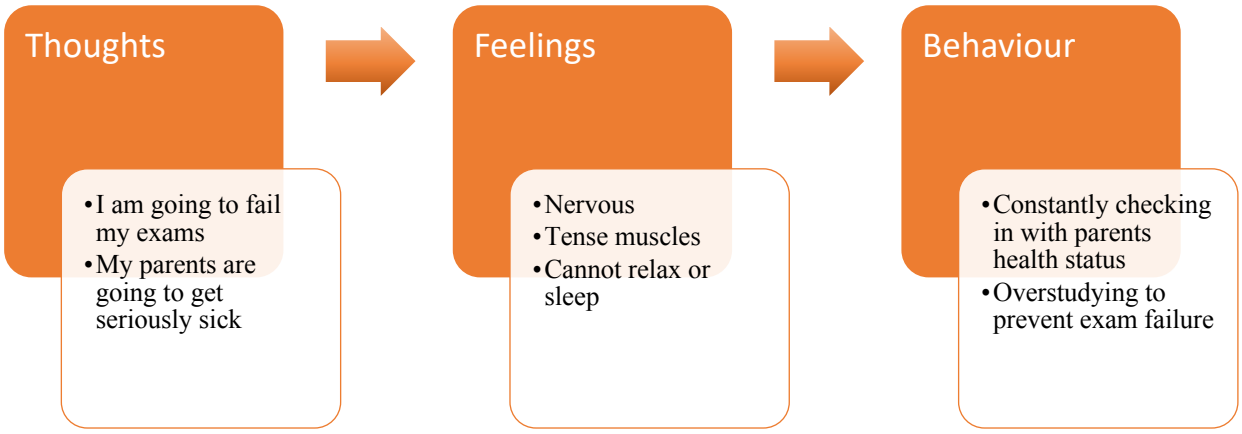
tasks. He was surprised when the program made him aware that he was prioritising his work over his family after completing an activity about rating the importance and time spent in different life areas. He also learned how to challenge his distress-promoting thinking and develop techniques to use when he felt irritable or anxious. Particularly Alex uncovered a core belief about his thinking that he would not be able to cope with responsibility. Alex now recognises this core negative thought and is far better equipped to handle his new position; he has the tools he needs to understand when he is getting stressed and deal with it effectively.

- Self-referred iCBT

Michelle is a 19-year-old college student. She has been suffering from a steady state of worry and irritability. Her main worries are about the possibility of failing the exams, losing her friends, as well as the health of her parents, who live far away in another city. This excessive worry caused her muscular tension, hyperventilating, and sleep problems. As a result, she developed safety behaviours such as spending the whole weekend studying, offering her summaries to her friends to "compensate" her absence, and calling her parents every day to check up on them. Michelle felt overwhelmed by all these "responsibilities", and she became unhappy. She saw an advertisement about online treatment for anxiety difficulties and she decided to give it a try. She conducted a phone interview with a clinical psychologist who diagnosed her Generalized Anxiety Disorder (GAD), and she was offered access to an online program specifically created to address this condition. She learned about the worry cycle through diagrams and quizzes that helped her to understand the benefits she was getting from worrying and the role that safety behaviours were playing in the maintenance of her disorder. Mindfulness exercises helped her not to respond to her thoughts, but to accept them and change the focus to the present. She realised how her anxiety symptoms decreased over time when looking at the mood chart after a few weeks. Through interactive tools, such as the worry tree,

the program taught her strategies for managing her worries, and she stopped using the safety behaviours, which gave her a great sense of freedom.

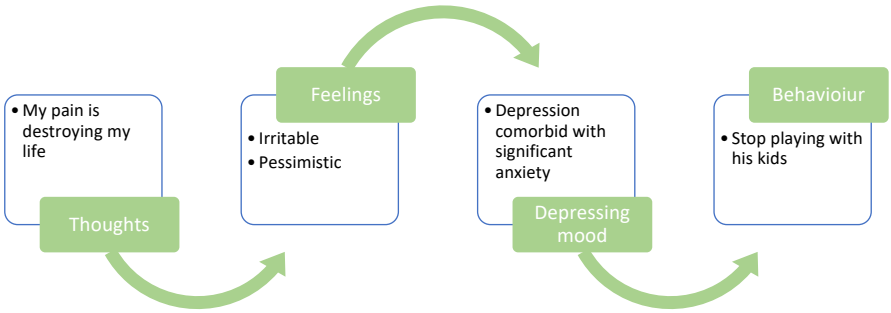
Figure 1 Michelle's maintaining cycle of worry in GAD



- iCBT for long-term conditions

James, a 60-year-old self-employed carpenter, has been suffering from chronic lower back pain since a building site accident 20 years ago. He has increasingly struggled to meet the physical demands of his job and also felt that his pain has prevented him from spending quality time with his children. At a routine visit, James' GP noticed his low mood, irritability and pessimism about his pain, and suggested that he may benefit from therapy. James was sceptical at first about the iCBT intervention that his therapist offered, especially as he had limited computer abilities. James was aware that he was avoiding engaging with life activities due to his pain, but use of the iCBT program enabled James to see that how his avoidant behaviour was a direct result of thinking and feeling about his pain and its management. Learning how to challenge his cognitions helped James to reassess his black and white thinking that pain equaled to having to avoid pleasurable activities such as playing with his children. James began some behavioural experiment to assess where he was comfortable in playing with his kids and where he needed

to stop to mind himself. The iCBT program also gave him techniques for relaxation and meditation to help with self-management. This new-found knowledge and strategies allowed him to re-engage in the things he enjoyed whilst respecting his own limitations. In addition, for James, the anonymity that iCBT afforded and the 24-hour access to his account were noted advantages.



Understanding CBT model	Behavioural activation processes	Cognitive processes
Slideshow on CBT model	Interactive exercise to develop behavioural experiments to help assess strengths and comfort levels	Slideshow of typical negative automatic thoughts (NATs)
Educational video on relationship between chronic pain and comorbid anxiety and depression feelings and the application of CBT for successful management		The behavioural experiments also supports challenging his negative thoughts that he cannot do anything because of his pain

Figure 2 Thoughts, feelings, and behaviour cycle for James.

CBT core concepts and strategies

ICBT platform provision of CBT using interactive tools and exercises

Strengths and current limitations of iCBT

ICBT affords service users as much time as is required to understand the content entirely. Service users have access to their archive of work for a more extended period to revisit and re-engage with content and skills. For service providers, maintaining fidelity to the CBT treatment protocol is retained in the standardised delivery of iCBT.

ICBT increases access to services for users who cannot attend face-to-face therapy because of geographical location, physical mobility issues, or stigma in accessing treatment.

Service providers are better enabled to deliver services to regions and individuals who may not otherwise receive these services.

The flexibility of iCBT is apparent, and service users can fit the time spent online around their schedule, important for those with demanding work schedules or other commitments that can be difficult to "sacrifice" in favour of face-to-face services. This flexibility is also true for the service providers, and supporters can fit the feedback sessions into their working week as they see fit.

Finally, the cost-reduction of iCBT vs face-to-face therapy is logical. ICBT realises greater throughput than face-to-face therapy. Healthcare services are beginning to leverage this compelling advantage. It is also true that iCBT is a relatively new field, and thus some limitations exist that merit further study. For instance, poor adherence has plagued the institution of iCBT in regular clinical practice. Although it is also true that recent technological developments that focus on the user experience, specifically engagement, are helping to turn this trend toward the positive. It is also the case that some aspects of therapy, such as gentle encouragement to move into exposure, or activation, are not possible. But with careful scaffolding and user design features, these can hopefully be overcome. Lastly, there may be less control over service users' utilisation of information (may only read and not complete assignments), but this is not necessarily just true of iCBT.

Future directions

As a priority, the dissemination and integration of iCBT on a large scale into clinical practice is still outstanding. Outside of innovative services in the UK, Australia, and Sweden, for instance, there is much work to be done in achieving a state where iCBT forms an integral part of service user care pathways. Successful integration of iCBT applies to both adult and child and adolescent mental health services. Integrating iCBT in addressing behavioural components

in the management of long-term conditions is also important. A significant step to progress is to establish the art of a successful implementation science to achieve large-scale dissemination.

Typically iCBT has been employed in the service of mild to moderate symptom severity. Some work has examined the utility of iCBT in the service of more severe anxiety and depression symptoms, and the maintenance of remission with iCBT are areas for future research to consider.

ICBT brings the possibility for the globalisation of evidence-based psychological treatments. There is much work to be completed in culturally adapting evidence-based treatments for use in various countries and populations, and not just concerning language translation. This job is a significant challenge, but work already achieved in culturally adapting psychotherapy for face-to-face can be used as a starting point for effectively adapting iCBT interventions (Salamanca et al., in review).

Lastly, technological developments may include the potential to use artificial intelligence and ecological momentary assessment. These may lead us to develop more responsive solutions that can more accurately meet service user needs at the individual level, thereby cultivating engagement and successful outcomes for service users (Pasarelu, Andersson, Bergman Nordgren, & Dobrean, 2016).

Conclusion

State of the art in iCBT is encouraging, and empirical support is swelling, especially for depression and anxiety disorders, leading us to be realistic in predicting new breakthroughs on the horizon. Blended approaches to care can support the use of iCBT in more severe, enduring and complex mental health problems. We know very little about the underlying mechanisms of change in iCBT. The more we can delve into the psychological experience of service users and clinicians, the more we can develop more effective solutions. There has been some discussion about who is most suitable to benefit from an iCBT intervention, and yet our

understanding of individual profiling for iCBT is rudimentary. Related is the field of adapting interventions for specific populations and cultures to aid global dissemination. The field of iCBT is burgeoning, and the future for iCBT is both challenging and exciting.

Practitioner take-home messages

- ICBT has a strong empirical base
- ICBT can be implemented flexibly in a wide variety of contexts
- ICBT offers great potential for the dissemination of evidence-based treatments
- ICBT has many significant benefits for service users

Suggested further reading

Andersson, G, The Internet and CBT: A clinical guide

Lindefors, N., Andersson A. (2016). Guided Internet-Based Treatments in Psychiatry. Switzerland: Springer

Questions for discussion

- What are the key conclusions from the literature on using iCBT treatments?
- What are the main advantages and disadvantages of iCBT?
- How would a mental health service incorporate iCBT into their day-to-day practice?
- What are some important applications of iCBT in the workplace?

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