INTERNET-BASED COGNITIVE BEHAVIOURAL THERAPY

Evidence summary

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CONTENTS

In this document, we address the following questions:

- Is there evidence to support the use of iCBT with young people as an effective solution to address access barriers to psychotherapy?
- What is the evidence related to outcomes of iCBT for young people experiencing depression and/or anxiety?
- What guidance does the evidence provide on processes and resources required to support effective implementation of iCBT for delivery to young people?

In this evidence review, we focus on the use of iCBT with young people (ages 10 to 19) where possible with a particular emphasis on the:

- effectiveness of iCBT for anxiety and depression
- limitations of iCBT
- clinical and organizational considerations when implementing iCBT

Search strategy

Data was collected using both EBSCO and OVID interfaces, from five electronic databases: CINAHL, PsycINFO, Medline, Embase, and ERIC. A keyword search was performed using the following terms: 1) child, youth, adolescent, teen and/or young adult, 2) structured psychotherapy and/or psychotherapy and 3) internet-delivered cognitive behavioral therapy (iCBT). From these keywords, a combination of search terms was used in a non-systematic manner. We complemented this with a search on Google and Google Scholar. Grey literature sources identified through this search were examined and organized using the same approach as for peer-reviewed journal articles. This is not an exhaustive review and new evidence may have emerged since the time of this writing.

Inclusion and exclusion criteria

- date range: 2000 – 2019
- literature available in English
- peer-reviewed studies
- studies in full-text format

INTRODUCTION

Internet-delivered cognitive behavioural therapy (iCBT) is a structured form of psychotherapy in which clients receive psychological support through email or online modules. The level of therapist support involved in guiding therapy, the duration, and specific program elements vary across individual programs. Overall, the evidence suggests that iCBT is an effective alternative (or complement, in some cases) to traditional in-person cognitive behavioural therapy (CBT), while addressing common access barriers associated with in-person CBT (e.g., perceived stigma, cost, geographical access in rural and remote areas, wait times) (CADTH, 2018; Karbasi & Haratian, 2018).

What is the evidence to support the use of iCBT with young people as an effective solution to address access barriers to psychotherapy?

Traditional CBT has been associated with challenges, such as perceived stigma, high cost, poor access to treatment in rural areas, long wait times, privacy issues (e.g. sharing of personal information with clinicians or with other patients in group CBT programs) and a lack of trained clinicians. iCBT has been identified as an alternative to overcome some of these barriers.

However, iCBT comes with its own issues, such as (Canadian Agency for Drugs and Technologies in Health, 2018b):

- concerns related to security (e.g. internet connections, online sharing of personal information, or use of shared computers to access treatment).
- the requirement for changes to clinical culture.
- lack of trained providers.
- financial considerations.
- negative perceptions of the clinical effectiveness of the type of treatment.
- issues with communication technology.

Nevertheless, iCBT supports can increase access to psychotherapy in two key ways (Gratzer & Khalid-Khan, 2016): 1) by promoting client-centred/client-directed care, and 2) by improving clinical efficiency.

First, iCBT empowers clients to coordinate care on their own schedule and to engage in therapy from any location with internet access. This is particularly beneficial for clients in rural and remote areas with limited access to services in their communities (Gratzer & Khalid-Khan, 2016). iCBT enables family members to participate in treatment sessions without missing school or work because they can align sessions to their family's schedules. Since clients can access care from their homes without visiting a therapist, iCBT may also reduce the stigma associated with seeking help for mental illness (El Alaoui, Hedman-Lagerlöf, Ljótsson, & Lindefors, 2017; Vigerland et al., 2016).

Second, iCBT requires less of the therapist time than in-person group CBT, often about ten minutes weekly compared to 2.5 hours per week per client (Hedman et al., 2011). This enables therapists to treat more clients thereby increasing treatment availability and shortening waitlists (El Alaoui, Hedman-Lagerlöf, Ljótsson, & Lindefors, 2017; Gratzer & Khalid-Khan, 2016). Vigerland et al. (2016) report that therapists see more clients when service delivery is not tied to standard office hours. Even with intermittent therapist support, iCBT is less time-consuming and requires fewer resources overall than traditional in-person CBT (Gratzer & Khalid-Khan, 2016). According to El Alaoui et al. (2017), iCBT is as effective as in-person CBT group therapy in the treatment of clients with social anxiety disorder, while being more cost-effective.

What is the evidence related to outcomes of iCBT for young people experiencing depression and/or anxiety?

Anxiety and depression

- In a review of clinical effectiveness of iCBT for depression and anxiety by the Canadian Agency for Drugs and Technologies in Health (CADTH), evidence suggests that iCBT interventions are effective for mild to moderate depression, generalized anxiety disorder, panic disorder with or without agoraphobia and social anxiety disorder when compared to waitlist control, treatment as usual (defined as scheduled contacts with general practitioners, nurses or other medical professionals at the client's primary care center) or improved treatment as usual (defined as care provided by general practitioners, who had received three hour training program to update their knowledge on how to diagnose and treat depression in primary care according to the National Institute for Health and Care guidelines) (CADTH, 2018).
- In a rapid review of e-mental health interventions, iCBT among adults with anxiety and depression was found to be as effective or more effective than treatment as usual (Lal & Adair, 2013).

Anxiety

- iCBT for anxiety has been evaluated in numerous randomized controlled trials with evidence indicating increased benefits for clients across age ranges (8 to 83), and efficiency for healthcare professionals (Gratzer & Khalid-Khan, 2016).
- In an iCBT model that takes place over 10 weeks, a total of 11 modules are presented in a combined parent-child intervention. Participants have access to an online psychologist through written messages and feedback on exercises provided 48 hours after admission, with three scheduled telephone calls over the treatment period. In a randomized controlled trial, 93 families with children aged 8 to 12 years were randomly assigned to either the iCBT or a waitlist control group. Results showed that 21% of children in the treatment group no longer met the criteria for an anxiety disorder at the end of treatment. This number increased to 50% at a 3 month follow up (Vigerland et al., 2016).
- Karbasi & Haratian (2018) showed that iCBT significantly reduced anxiety symptoms (as measured by the SCARED questionnaire) in adolescent females aged 10 to 18 years.

- A clinical trial examining the efficacy of an automated, unassisted iCBT program found that iCBT was effective in reducing symptoms of generalized anxiety disorder among clients aged 16 to 80 years, regardless of level of severity (Mewton, Wong, & Andrews, 2012).

Depression

- Predictors of use of internet interventions for depression include immediate accessibility, low cost and alternative to face-to-face therapy when access to in-person treatment is limited (Donker et al., 2013).
- Evidence from a randomized controlled trial in a primary care setting with clients under 18 years of age found iCBT to be as effective as treatment-as-usual in reducing depressive symptoms. In three month post-treatment follow-up (as measured by the Beck Depression Inventory-II and the Montgomery & Asberg Depression Rating Scale), no significant differences were found between treatment conditions (Kivi et al., 2014).
- In another randomized controlled trial comparing iCBT to internet-delivered Interpersonal Psychotherapy across young people and adults experiencing depression, Donker et al. (2003) found treatment outcomes were moderated by age. Participants under 18 years of age found internet-delivered Interpersonal Psychotherapy to be the preferred treatment choice, and participants over 18 years of age were observed to benefit more from iCBT programs.
- iCBT and Interpersonal Psychotherapy self-help interventions for depression are shown to be effective; however, results vary based on individual client characteristics (e.g. age, severity of illness). In their study comparing iCBT to internet-delivered Interpersonal Psychotherapy, Donker et al. (2013) identified predictors in 3 iCBT and Interpersonal Psychotherapy programs for depressive symptoms. In particular, females and those with a negative attitude towards treatment showed greater reductions in depressive symptoms post-iCBT and Interpersonal Psychotherapy compared to baseline. Older participants (over 24 years) in iCBT-based conditions had larger improvements in depression scores than those in the Interpersonal Psychotherapy condition. Conversely, younger participants (aged 16 to 24 years) in the Interpersonal Psychotherapy condition had greater improvements in depressive symptoms than those in iCBT-based conditions (Donker et al., 2013).

OUTCOMES OF EXISTING ICBT PROGRAMS AND APPS

BRAVE-ONLINE

- *BRAVE-ONLINE* is a ten session, iCBT program for child and adolescent anxiety that is delivered with minimal therapist's assistance (Stasiak et al., 2018).
- In a feasibility study involving young people aged 7 to 17 years, Stasiak et al. (2018) showed moderate to high satisfaction ratings reported by children and adolescent participants.
- It was found that self-reported anxiety decreased significantly over time, with effects being greater as the number of sessions completed by youth increased (Stasiak et al., 2018).

MoodGYM

- *MoodGYM* is an online self-help program based on CBT that aims to help clients prevent and cope with depression. It has modules containing texts explaining the basic principles of CBT, a variety of self-tests and self-help exercises, and homework in which the client is invited to analyze some personal experience in accordance with the principles of the program (Lillevoll et al., 2013).

Master Your Mood

- *Master Your Mood* is an online cognitive behavioural group that offers treatment for depression for young people. It consists of six weekly 90-minute sessions with no parental involvement. This program is professionally facilitated and provides social support and mutual recognition from other group members while remaining anonymous (van der Zanden, Kramer, Gerrits, & Cuijpers, 2012).
- A study by van der Zanden et al. (2012) involving youth 16 to 25 years, showed significant improvements in depressive symptoms. The anonymity of participants provided in the program resulted in decreased stigmatization. In-home access to treatment increased privacy and reduced the number of contact hours between professionals and clients (van der Zanden et al., 2012).

Camp Cope-A-Lot

- *Camp Cope-A-Lot* is a 12-session computer-assisted CBT program for children aged 7 to 13 years with anxiety. It consists of twelve 35-minute levels; the first six are completed individually and the remaining six are completed with a therapist. Two parent sessions are conducted while children work on two levels of the program independently (Khanna & Kendall, 2010).
- In their study, Khanna and Kendall (2010) randomly assigned 49 children to 1 of 3 treatments (i.e. Camp Cope-A-Lot, individual CBT or a computer-assisted educational support and

attention condition also identified as a control group). Results showed that 81% of children in the Camp Cope-A-Lot group no longer met the criteria for an anxiety diagnosis compared to 70% in the individual CBT group and 19% in the control group. These findings were consistent at a 3-month follow up with no significant difference between the Camp Cope-A-Lot group or individual CBT group specifically (Khanna & Kendall, 2010).

- The Camp Cope-A-Lot model of iCBT was also found to reduce the total number of hours therapists were contacting individual clients, thereby allowing therapists to see more clients (Khanna & Kendall, 2010).

BounceBack

- *BounceBack* is an online skill-building program available in British Columbia and Ontario that is designed to help individuals aged 15 and up manage symptoms of anxiety and depression along with crisis support (Centre for Innovation in Campus Mental Health, 2018). It offers support through (Bounceback, 2019; BounceBack Ontario, 2019):
    - Online self-directed videos where viewers learn tips on how to manage their mood, achieve better sleep, build confidence, increase activity, and live healthily.
    - Telephone coaching and workbooks where a coach helps the user select the workbooks best suited to the current needs of the user throughout 3 to 6 25-minute telephone sessions
    - Online access to a series of nine self-directed CBT modules on varying topics (only offered in British Columbia).
- The Centre for Innovation in Campus Mental Health promotes BounceBack for students but advises that it is only appropriate for those with mild or moderate anxiety and/or depression; it is inappropriate for those with severe levels of depression or anxiety or those who are in crisis or at immediate risk (Centre for Innovation in Campus Mental Health, 2018).
- In an evaluation study by Lau and Davis (2019), 68.8% of participants with depression or anxiety at the start of BounceBack in British Columbia no longer showed clinical symptoms of anxiety or depression at the end of the program. Effectiveness of this intervention was found to be higher with increasing levels of severity (i.e. the more severe the baseline rating of depression and/or anxiety, the greater the improvement at the end of the program); however, group variability of effectiveness also increased as severity increased (i.e. the more severe the baseline rating of depression and/or anxiety, the more variability in levels of effectiveness) (Lau & Davis, 2019).

Pacifica

- Pacifica is a mobile app targets stress and anxiety symptoms through a mixture of cognitive behavioural therapy, mindfulness and relaxation approaches (Poon, 2016). Users choose a goal they want to work on such as improve mood, feel less stress or anxiety, feel less stress in social situations or live a healthier lifestyle (Poon, 2016). The app tracks exercise and directs people through breathing exercises but does not explicitly state how cognitive behavioural therapy forms the basis of the program.

- One entry could be found on clinicaltrials.gov indicating that a trial was completed in 2018 to compare the effectiveness of the app at improving depression, anxiety and stress in adults aged 18+ but results of the study have not been published ("Impact of a Mobile Application (Pacifica) on Stress, Anxiety, and Depression - Full Text View - ClinicalTrials.gov," n.d.).
    - No other studies could be found for this app.

TruReach

- TruReach is a mental wellness app based in cognitive behavioural therapy principles that is intended to help users deal with depression or anxiety ("Badge of Life Canada Partners with the TruReach Mental Wellness App - Badge of Life Canada," n.d.).
- Users watch 18 videos that must be watched in sequence as video number two is only unlocked after video one has been watched, for example ("Hot off the App Press – TruReach Health - Canadian Counselling and Psychotherapy Association," n.d.).
- No information is available about the intended age range of this app, nor are there any published studies of effectiveness.

WoeBot

- Woebot is an app that uses a cognitive behavioural therapy chatbot to interact with users through daily conversations and mood tracking (Fitzpatrick, Darcy, & Vierhile, 2017).
- The bot walks users through concepts related to CBT to teach users about cognitive distortions (Fitzpatrick et al., 2017).
- One study has looked at the effectiveness of Woebot at reducing symptoms of anxiety and depression, as well as the acceptability of using an app (Fitzpatrick et al., 2017). The study was conducted in college students (ages 18 to 28) and found significant decreases in those with depressive symptoms after two weeks compared to the control condition, which referred people to an eBook on depression in college students (Fitzpatrick et al., 2017). No significant differences were found between those in the anxiety group and the control group.
- In terms of acceptability, participants in the Woebot group reported significantly higher levels of overall satisfaction and content than the control group, as well as a significantly greater amount of increased emotional awareness (Fitzpatrick et al., 2017).
- Woebot notes that, although a psychologist monitors users in the background, this does not happen in real-time, and the bot should not be used as a replacement for therapy (Fitzpatrick et al., 2017).
- The app was designed for college and graduate students, but the terms of service stipulate that users be "of legal age to form a binding contract" but does not specify what this age range is ("Woebot - Terms of Service," n.d.).

GUIDANCE ON ICBT FOR YOUNG PEOPLE

In a Health Quality Ontario (2019) assessment of how safe, effective and cost-effective iCBT is for the treatment of individuals aged 16 years and older with mild to moderate major depression or anxiety disorders, key findings were:

- iCBT is especially beneficial for those individuals whose symptoms may prevent them from leaving home.
- Guided iCBT represents the most economical option for the short-term treatment of adults with mild to moderate major depression or anxiety disorders.
- Compared with those on a waiting list, guided iCBT improves symptoms of mild to moderate major depression, generalized anxiety disorder, panic disorder and social phobia.

The implementation of iCBT in the general population poses several clinical challenges (Gratzer & Khalid-Khan, 2016):

- Blending iCBT with other therapies, such as pharmacotherapy or in-person support is difficult. More research is required to identify effective combinations of iCBT and other treatments or pharmacotherapies.
- The availability of trained physicians using iCBT as part of a treatment plan is often lacking.

Results have shown that clients aged 10 to 18 years who use iCBT are culturally diverse and have varying levels of education (Karbasi & Haratian, 2018). Accessible design and delivery of iCBT programs can be challenging because the intervention involves limited face-to-face communication, which allows more opportunities for clients and therapists to ensure clarity and understanding (Karbasi & Haratian, 2018).

Radomski et al. (2019) conducted a realist review to understand how iCBT is designed and delivered for children and adolescents aged 12 to 19 years with anxiety. Key findings include:

- iCBT programs tend to be longer in duration (included more modules) than traditional in-person prevention-based programs provided in schools with a teacher facilitating program administration.
- Treatment-based iCBT programs were delivered in the community (some included occasional health care clinic visits) and involved weekly web- or email-based therapist interaction and parent-dedicated modules.
- Most iCBT programs were online adaptations of traditional in-person mental health prevention or treatment resources.

Although iCBT can provide treatment options to clients between the ages of 16 to 80 years who are geographically isolated, when compared to their urban counterparts, clients in rural locations with limited access to services were almost twice as likely to terminate treatment before completion (Mewton et al., 2012). Drawing on these findings, Mewton and colleagues

highlighted the need to develop iCBT courses tailored to those living in rural and remote areas. Specific recommendations, however, were not provided.

To understand implementation issues associated with the use of iCBT in individuals aged 16 years and older in Canada, the Canadian Agency for Drugs and Technologies in Health distributed a 25-question survey to relevant stakeholders (i.e. physicians, psychologists, psychiatrists, nurses, social workers, other mental health professionals, information management professionals, online CBT platform developers, employee assistance program providers, administrators of health care facilities and policymakers) to identify facilitators and barriers. Facilitators include (Canadian Agency for Drugs and Technologies in Health, 2018b):

For clients:

- Improved user interface and chat box navigation.
- Confidentiality.
- Lack of a waitlist.
- Convenience.
- Richness of data to show clinical improvement.
- Preference over face-to-face CBT.
- Absence of feasible alternatives.
- Greater self-management.
- Privacy (compared to face-to-face CBT).
- Satisfaction with care.
- Option for choice of language of instruction. For clinicians:
- Convenience to therapists working remotely.
- Better assessment and triage capabilities.
- Development of clinical workflow plans.

For clinicians:

- Convenience to therapists working remotely.
- Better assessment and triage capabilities.
- Development of clinical workflow plans.
- Ongoing symptom monitoring and reduction measurement.
- Ability to consider comorbidities to coordinate care.
- Therapy that fits into clients' routine schedule.
- Efficiency in clinical practice.
- Reaching clients that otherwise would be unreachable.
- Training, knowledge or experience with iCBT.
- Preference for this treatment option over other forms of therapy.
- Financial benefits.
- Desire to improve skills.

For organizations:

- Improving provider fidelity to iCBT.

- Better understanding of the return on investment to organizations.
- Guaranteed longer-term funding.
- Interest of funders in technology-based solutions.
- Integrating transitions to and from community care.
- Using multidisciplinary teams in the implementation of iCBT.
- Strong leadership.
- Developing economic models that support the use of iCBT.
- Improvement in client's experiences.
- Allows more efficient use of resources.
- Improvement in clinician's experiences.
- Reaching more clients or serving a broader population.
- Commitment to improving services.
- Easier option to track outcomes.

Barriers include (Canadian Agency for Drugs and Technologies in Health, 2018b):

For clients:

- Lack of knowledge about iCBT.
- Preference for in-person or other treatment options.
- Negative perceptions about the effectiveness of iCBT.
- Financial issues impeding the use of technology.
- Higher severity and complexity of diagnosis.
- Difficulty using the program due to limited literacy skills, anxiety related to computer use, lack of familiarity with technology.
- Lack of available devices or adequate connection to the Internet.
- Lack of privacy.

For clinicians:

- Preference for in-person treatment or other treatment options.
- Lack of education and training on CBT.
- Lack of training on iCBT and delivering services via distance.
- Concerns about financial losses and professional liability.
- Lack of available devices or adequate connection to the Internet.
- Difficulty using the program due to limited computer skills.

For organizations:

- Organizational culture.
- Concerns about liability/legal issues.
- Resources.
- Not within mandate or lack of relevant policies and procedures to support iCBT delivery.

Self-guided iCBT vs therapist-guided iCBT

Our search did not reveal studies examining the effectiveness of self-guided iCBT compared to therapist-guided iCBT for young people specifically. However, evidence from a systematic review exploring iCBT programs for adults showed that guided online treatment models were found to produce better treatment outcomes compared to unguided treatments. The qualifications of those guiding the intervention did not impact outcomes (Baumeister, Reichler, Munzinger, & Lin, 2014).

Evidence from a randomized controlled trial comparing internet-based treatment for generalized anxiety disorder in participants under 30 years of age across three groups, 1) clinician-assisted (licensed professional), 2) technician-assisted (non-licensed staff) and 3) waitlist control demonstrated that there were no differences between the two treatment groups in clinical outcomes (Robinson et al., 2010). This study showed that 50% of participants in the treatment groups were classified as recovered compared to 10% participants in the control group (Robinson et al., 2010).

Parental support of adolescent self-guided iCBT

In an internet exposure therapy model, a parental self-efficacy questionnaire for dental anxiety was constructed to help parents gauge their ability to help their children in anxious situations (Shahnavaz et al., 2018). In their study, Shahnavaz et al. (2018) reported that participants who had weekly access to a psychologist via a chat window (where psychologists would guide participants and their parents throughout the 12-week period) helped participants cope with their dental procedures.

In a 10-week iCBT model with combined parent-child intervention (for children between 8 and 12 years of age), content in weeks 1, 2, and 10 was directed specifically to the parents (Vigerland et al.,2016). Tools targeting parents were psychoeducational materials on emotions, fear and anxiety; anxiety disorders and CBT; goals and exposure hierarchies; exposure, coping techniques and worry time/social skills training; reward systems; managing obstacles; problem-solving and maintenance planning (Vigarland et al., 2016).

Young people's experience of and preference toward iCBT

In a 10-week iCBT model, Vigerland et al. (2016) reported that children aged 8 to 12 years and parents were moderately satisfied with this treatment approach. Eighty-six percent of parents in the treatment group "agreed" or "strongly agreed" that they would recommend the treatment, and 82% of children "agreed" or "strongly agreed" that the treatment was effective (Vigerland et al., 2016).

Limitations of iCBT

Evidence suggests that iCBT is not recommended for severely ill clients. In fact, most studies excluded severely ill clients on the assumption that this form of therapy is better suited for clients with early-stage mental health concerns and sufficient social supports (Gratzer & Khalid-Khan, 2016).

A disadvantage of iCBT is that clients with some diagnoses benefit less from a transdiagnostic treatment (such as iCBT) compared to a disorder-specific treatment (Karbasi & Haratian, 2018). Specific diagnoses that did not benefit from iCBT were not mentioned. For clients with more intense or complex needs, iCBT may not be recommended as a stand-alone treatment but may be beneficial as a complement to face-to-face therapies (Karbasi & Haratian, 2018).

LIMITATIONS OF THIS BRIEF

In our review of the literature, we did not find relevant findings relating to:

- Clinical resources required to support effective delivery to young people.
- Evidence-based guidance on processes for (and outcomes of) parent-mediated iCBT (particularly for younger children).

One important caveat of iCBT literature, and implementation of these programs, is around medical decision-making regulations. One article from Sweden explicitly limited the age of participants in the program to under age 15 as that is the self-determination age in Sweden; to include those ages 15-18 would have required separate logins for parents their child participating in the program and parents would not be able to see their child's progress as they are not able to see that information (Shahnavaz et al., 2018). Likewise, in Ontario, those aged 16 and above are presumed to have the capacity to consent or refuse to treatment (Coughlin, 2018). While this likely explains why so many of the programs found during this literature review cite study participants as ages 16+, it does make it difficult to draw conclusions about effectiveness in those ages 16-18 years of age and makes studying these programs in individuals ages 10-18 years of age particularly difficult; especially if there is parental involvement in the program. Additionally, all programs found during this review that looked at those younger than age 15 were parent-child combined programs. This ensured that children and youth were not using the internet in an unsupervised manner.

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