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Computerized Cognitive Behavioral Therapy for Depression

by Rebecca Janis

Depression goes untreated at high rates due to a variety of treatment barriers. Computerized Cognitive Behavioral Therapy (CCBT) provides an alternative to face-to-face therapy that addresses those treatment barriers by reducing the cost of therapy, moving the location of therapy to the participants' homes, and providing therapy for those who cannot be seen by a therapist due to excess demand for therapy. Although much research has been done showing CCBT's effectiveness, there is a lack of literature describing the actual implementation of computerized therapy. This review outlines the integration of CCBT into therapeutic practice, including what factors determine its effectiveness. Finally it explores CCBT's effects on therapy and areas of future research.

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Depression is one of the most common health conditions affecting over 21 million people in the United States alone (Levin et al., 2011). According to Mental Health America (2012), this debilitating mental illness accounts for upwards of \$30 billion a year in lost productive time among workers and is the cause of over 30,000 suicides each year, among other detrimental effects. Additionally, it inhibits the body's natural ability to fight pain and combat disease, resulting in increased illness among depressed individuals (Stover, Fenton, Rosenfeld, & Insel, 2003). Because of its prevalence and detrimental effects, depression is the biggest existing concern in today's mental health field.

Despite its overwhelming prevalence, depression goes untreated at an alarming rate. On average, only one-third of those suffering from depression receive help (Mental Health America, 2012). Many people cite limited access to therapy due to long waitlists and lack of therapists in their location as their main reasons for not seeking treatment (NICE, 2006; Spence et al., 2011). Additional reasons cited include cost, time commitments, and the perceived social stigma of receiving therapy (Kaltenthaler, Parry, & Beverly, 2004). This lack of treatment is a serious problem in the mental health field and requires an innovative reform to address it.

Cognitive behavioral therapy (CBT) is the most commonly used and supported therapeutic technique for depression. CBT mainly utilizes cognitive restructuring—a technique that involves identifying negative cognitive biases and teaching patients to replace these distorted thought patterns with more accurate ones. There are many published and empirically tested CBT manuals with session-

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session outlines, so its established therapeutic techniques and structured format make it ideal to transfer to a computerized setting over other therapeutic techniques that are less structured. Transferring established therapies to a computerized setting is an increasingly viable option as computers and the Internet have become an integral part of most people's daily lives (Spek et al., 2007). Computerized cognitive behavioral therapy (CCBT) refers to any delivery of cognitive behavioral therapy via computerized interactions (NICE, 2006). It seeks to incorporate the traditional aspects of face-to-face CBT, such as cognitive restructuring, with elements such as multimedia presentation, and technology such as email and instant messaging.

Although each pilot program of CCBT has been slightly different in presentation and methods of patient interaction, several basic components are included across programs. Each session teaches cognitive behavioral principles and builds on the information learned in previous sessions. Computerized therapy typically also includes a patient-generated answer portion, and either the program or a remote therapist gives feedback based on the patient's responses, making it interactive. Patients receive homework at the end of the session, which aims to increase retention across sessions and application of techniques between sessions (Abeles et al., 2009; Spence et al., 2008). Programs may be entirely self-guided or may involve interaction with a therapist, usually through emails and periodic phone conferences.

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they being used to their full potential. In this literature review, I outline the effectiveness and benefits of CCBT, as well as factors that influence its effectiveness. I then outline the possible ways of implementing CCBT by discussing several distinct applications, including as a stand-alone therapy, a therapy adjunct, and a preventative program.

Effectiveness and Benefits

Numerous studies show promising results on the efficacy of CCBT for the treatment of depression (Newman, Consoli, & Taylor, 1999; NICE, 2006; Proudfoot et al., 2003; Spek et al., 2007). In a meta-analysis, six out of eight studies showed it to be as or more effective than therapist-led cognitive behavioral therapy (TCBT) for a clinically depressed population in an outpatient setting (Kaltenthaler et al., 2004). One pilot study on a CCBT program for adolescent depression showed a dramatic reduction in the number of participants meeting criteria for clinical depression after completion, from 95% before treatment to 7% at a three-week follow-up after completing the program (Abeles et al., 2009). These outcomes match, and in some cases even surpass, results from TCBT.

Research on CCBT shows some benefits over TCBT, and several of these benefits even address many of the earlier noted barriers to traditional therapy. These main benefits include convenience, technological advantages, affordability, and increased patient control. Many people cite therapist inaccessibility as a main reason for not being able to obtain treatment (Spence et al., 2011). Unlike traditional therapy, computerized programs require minimal therapist time. Consequently, long waitlists for therapy appointments are

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not a hindering factor. While therapists are plagued with fatigue and burnout from seeing too many patients, computerized therapy programs could treat an unlimited number of patients per day, even simultaneously (NICE, 2006). As a result, computerized therapy helps eliminate the problem of therapist inaccessibility. Additionally, CCBT is significantly more convenient than TCBT. Patients can use the programs from their homes, receive therapy even in remote locations, and participate in therapy sessions on their own schedule instead of having to work around a therapist's schedule—all invaluable added benefits (Griffiths & Christensen, 2007). Computerized therapy also minimizes the social stigma of receiving therapy by moving the therapeutic process to the privacy of one's own home.

Technology allows for many additional components to be incorporated into CCBT that are not present in TCBT. For example, online discussion groups and forums incorporated into computerized programs would allow users to give and receive support and advice on dealing with depression. An e-diary to record thoughts could also be included in the program for users to write about their thoughts and emotions. Writing on the computer may be easier and more convenient for some people to complete this journaling and may facilitate better outcomes, since writing is associated with a decrease in depression (Krpan et al., 2013). Technology would also make it easier for users to track their moods and recognize patterns in what influences their mood, which is associated with greater emotional self-awareness and better treatment outcomes (Kauer et al., 2012). Since the therapeutic process is computer-based, it also

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increases the ease of data collection and analysis, which would be of great use in gauging therapeutic outcomes (Abeles et al., 2009; Robertson, Smith, Castle, & Tannenbaum, 2006). This data could be used to easily track the progress of a single patient or aggregate data to obtain standardized treatment information across multiple patients.

One of the major barriers to traditional therapy is the perceived cost, which CCBT may be able to lower. Although CCBT may be costly to initially implement and get running in the short term, in the long term it has the potential to be economically beneficial. Computerized therapy relieves part of the monetary burden on both the patient and the health care system (NICE, 2006). By reducing therapist time, computerized therapy could be offered at lower rates than face-to-face therapy. Patients could complete their online sessions independently, and a remote therapist could review their progress and reply with feedback, effectively seeing several patients in the hour that they would traditionally only be able to see one. Despite considerable debate among researchers as to just how much money CCBT would save, studies have suggested yearly savings of up to \$630 per patient when compared to TCBT (Newman et al., 1999). Additionally, using CCBT as a preventative program for adolescents may decrease future costs by preventing potential depressive episodes (Landback et al., 2009). In a broader scope, CCBT may also help cut down on the estimated \$30 billion per year in lost productive time among workers due to depression (Mental Health America, 2012). Computerized therapy is potentially more cost-

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effective than face-to-face therapy for patients and may partially alleviate the detrimental economic effects of depression.

Simply starting therapy has been shown to increase self-efficacy by giving patients the feeling that they are in control. CCBT may further enhance this effect because it places the mechanism for change in patients' own hands and gives them more responsibility for their improvement, as opposed to placing the responsibility on the therapist (Ehrenberg, Cox, & Koopman, 1991). Confirming this, one CCBT pilot study showed the greatest improvement in depression scores after the second session of treatment, which focused on starting a therapy regimen and getting activated (Abeles et al., 2009). Researchers attributed this initial improvement to an increased sense of self-efficacy. After the completion of the program, this greater feeling of self-efficacy results in fewer relapses compared to traditional therapy because patients feel more personally responsible for their change as opposed to attributing the change to the therapist (Tucker, Brust, Pierce, Fristedt, & Pankratz, 2004). Starting a CCBT therapy program provides hope and a sense of self-efficacy for many participants, which will enhance their therapeutic outcomes.

An important factor in the effectiveness of traditional therapy, and consequently CCBT, is the patient's desire for change (Ritterband, Thorndike, Cox, Kovatchev, & Gonder-Frederick, 2009). The therapeutic process requires active participation from the patient and not just the therapist acting on the patient. In the case of CCBT, users who are motivated to complete the sessions on their own may be more suited to computerized therapy (Bendelin et al.,

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2011). Because it is more self-directed, CCBT will require more patient initiative than TCBT in order for patients to see a change. First and foremost, this means completing the sessions. In addition to that, the patient must make an effort to apply the CBT principles taught in the sessions by completing the provided homework. Although short-term symptom improvement is correlated with use of the program and many other factors, only homework completion is correlated with long-term improvement (de Graaf, Huibers, Riper, Gerhards, & Arntz, 2009). Those who begin therapy with an active desire to see results from the CCBT program will likely benefit the most from it.

Applications

Studies clearly show that CCBT is effective for treating depression and has benefits beyond traditional therapy. These findings beg the question of how best to integrate CCBT into therapeutic methods already in practice and extend computerized treatment to those who are not receiving treatment. There are several distinct applications of CCBT: as a preventative program, in place of therapy, and as an adjunct to therapy.

CCBT as a Preventative Program

Beyond treating those already suffering from clinical depression, CCBT programs can also be used as a preventative intervention program (O'Kearney, Gibson, Christensen, & Kathy, 2006; Landback et al., 2009). Such programs provide valuable cognitive behavioral coping techniques for dealing with stressful situations and can teach people how to respond to future life events in ways that will not lead to depression. Evidence shows that individuals who are

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prone to depression may have certain early indicators, and CCBT preventative programs could target these vulnerabilities (Landback et al., 2009). Such early interventions have proven successful in a TCBT setting and would likely translate well to a computerized setting. In one study on a non-clinically depressed population, adolescents who received training in adaptive cognitive styles reported less depressive symptoms a year after therapy than those in a control group who did not receive cognitive training (Cukrowicz & Joiner, 2007). It equipped them to better handle difficult situations in a constructive way. CCBT as a preventative program shows promise for preventing symptoms of depression in those who are at risk for developing depression, and its ease of accessibility would allow more individuals to access it and use it for prevention than TCBT.

CCBT in Place of Therapy

One possible way to utilize CCBT is in place of TCBT through online programs without therapist interaction (Helgadóttir, Menzies, Onslow, Packman, & O'Brian, 2009). Users could access this stand-alone treatment by searching online or by referral from a doctor. Therapists could also refer patients to a computerized program in order to accommodate patients requesting therapy in excess of what they can accommodate. This method would result in the least amount of therapist interaction, requiring at most a referral from a therapist; additionally, it would provide more access to therapy and solve the problem of therapist inaccessibility.

Although this would undoubtedly make therapy possible for more people, the lack of therapist contact may result in lower pa-

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tient satisfaction and poorer outcomes. Computerized therapy as a stand-alone treatment would likely be more effective for mild cases of depression or for those highly motivated individuals without severe initial pathology who are seeking to learn coping mechanisms (Almlöv et al., 2011). Without therapist support, CCBT offers a perfect solution for those individuals and would free up therapists to treat other, more severely affected, patients.

CCBT as an Adjunct to Therapy

A more practical application of CCBT is using it in conjunction with therapist interaction. This has the dual benefit of making therapy available to more people and reducing demand on therapists' time, allowing them to see more patients. Ideally, patients would complete a majority of the therapy through the computerized program and have periodic check-ins or feedback from the therapist. This interaction would take less time from the therapist than a full session, while the patient still benefits from the interaction with the therapist.

The key to incorporating therapist interaction into CCBT lies in finding a balance between making therapy readily available to the masses and not completely losing the human aspect of therapy. The seamless integration and balance of the two therapies can be achieved through a variety of mediums that allow for therapist-patient interactions, both synchronous and asynchronous. New technologies such as instant messaging and Skype would allow the patient to remotely interact with their therapist in addition to completing the computerized therapy sessions. Email also offers a way for therapists to easily send messages to patients regarding their

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progress and to offer support. Both participating clinicians and users of one CCBT program reported that adding it to already occurring face-to-face therapy enhanced their relationships (Robertson et al., 2006). When used together, CCBT and therapist interactions may provide a stronger therapeutic relationship than either one alone. In order for the two to be successfully integrated, the computerized therapy sessions and the therapist involvement need to complement each other and build on one another.

Conclusion

Although CCBT is a viable treatment for depression that can realistically be put into practice, many areas still need further research to ensure that it operates smoothly and effectively and has the maximum benefit. One specific area that needs to be researched more is the optimal level of therapist involvement for CCBT programs. Although studies have shown that CCBT with therapist support yields better results than without therapist interaction, further studies have also shown that increasing therapist time beyond a certain threshold may not yield further gains. Studies comparing programs with varying levels of therapist involvement would determine how much therapist interaction is needed to produce a positive therapeutic outcome for patients. Additionally, studies need to be performed to determine how well CCBT will operate in a primary care setting, since much of CCBT's dissemination will be through general practitioners. Finally, because of CCBT's relative newness, ethical and professional guidelines for its safe use must be researched, developed, and enforced, including standardizing CCBT programs to maintain consistent therapeutic practices

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and quality. As with the release of new drugs, CCBT programs should be tested for positive treatment outcomes based on empirical evidence and implemented only after being approved. Computerized therapy shows encouraging results, and it is undoubtedly a field of psychology that will expand rapidly in the future with the daily advent of new technology.

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