

Department of Psychology – Faculty of Health Sciences

Implementation of Internet delivered cognitive behavioural therapy for depression: a review

From an implementation science theoretical framework perspective

Anne Ingebrigtsen Grørdahl

Main thesis for the Cand. Psychol. degree – May 2016

Supervisors: Prof. Martin Eisemann and Prof. Knut Waterloo



Implementation of Internet delivered cognitive behavioural therapy for depression: a
review
From an implementation science theoretical framework perspective

PSY-2901 Main thesis for the Cand. Psychol. degree

Anne Ingebrigtsen Grødahl, UiT

Supervisors:

Prof. Martin Eisemann, UiT

Prof. Knut Waterloo, UiT

University of Tromsø – The Arctic University of Norway

Department of Psychology

Faculty of Health Sciences

May 2016

Acknowledgements

The present review focused on Internet delivered cognitive behavioural therapy in relation to an implementation science theoretical framework. The field of Internet delivered cognitive behavioural therapy was brought to my awareness by my supervisors Prof. Martin Eisemann and Prof. Knut Waterloo. Thereafter I was given the freedom to further develop the research question and the thesis to my own preferences. I carried out literature searches and inclusion/exclusion processes. Throughout the process my supervisors have been helpful with expanding my horizons and providing relevant articles and information I myself had not yet discovered.

I would like to thank my supervisors for always being positive, available for questions as well as always giving me fast, valuable and constructive feedback. Working with the thesis has proved to be both challenging and enlightening. It has inspired me and further enhanced my interests in treatment of psychiatric conditions and new treatment options. Furthermore, I would like to thank my fellow students, family and partner for being supportive and available through both struggles and successes.

Implementation of Internet delivered cognitive behavioural therapy for depression: a
review

From an implementation science theoretical framework perspective

Anne Ingebrigtsen Grødahl

PSY-2901 Main thesis for the Cand. Psychol. degree

May 2016

Abstract

Effectiveness of Internet delivered cognitive behavioural therapy (iCBT) for depression has previously been extensively documented, however, uptake of iCBT into regular clinical practice is slow. This literature review aims to investigate iCBT in an implementation science theoretical context in order to better understand barriers towards uptake of iCBT and to elucidate areas well covered in the literature as well as areas in need of attention. To be included in the review, articles needed to describe implementation aspects in relation to Internet or computerised treatment for depression. The main results showed that studies tend to focus on similar implementation aspects while leaving others untouched. Political and economical aspects, organisational culture and knowledge levels among stakeholders are aspects well documented. The literature on specific implementation processes is, however, scarce. Many important aspects for successful implementation (e.g. readiness for implementation, implementation climate, individual characteristics, networking and communication between organisations, complexity of the intervention perceived by stakeholders, trialability of the intervention, design and packaging, and costs associated with implementation) were generally poorly described in the literature. In summary, this review identifies multiple aspects important to successful implementation of iCBT as well as a possible explanation to why uptake of iCBT into regular clinical care is slow.

Depression is a highly prevalent mental disorder affecting large numbers of both individuals and their families worldwide. Every year, approximately 30 million European citizens suffer from depression (Purebl et al., 2015) which is expected to be the leading cause of burden of disease in high-income countries by 2030 (Mathers & Loncar, 2006). Kringlen, Torgersen, and Cramer (2001) found that 7.3% of the population in Oslo experience depression during the course of one year. Additionally, they estimated a lifetime prevalence for depression of 17.8 %. Prevalence rates among adolescents in Norway were in a meta-analysis by Sund, Larsson, and Wichstrøm (2011) estimated to 9.4 %. Furthermore, a study by Sandanger, Nygård, Ingebrigtsen, Sørensen, and Dalgard (1999) found no difference in depression rates between large cities and smaller towns in Norway.

The term depression is used to describe a psychiatric condition affecting how the brain controls a person's mood (Purebl et al., 2015). It leads to experiences of negative emotion, loss of interest, fatigue, sleep and sexual disturbances, changes in weight or appetite, pessimism, low self-esteem and suicidal ideation (American Psychiatric Association, 2013; Purebl et al., 2015). The onset of depression can occur at any age, with an average age of onset in a person's thirties (Purebl et al., 2015). All areas of the individual's life are affected: wellbeing, work and social relations (Purebl et al., 2015). Therefore, the magnitude of depression is of high costs, for the person suffering, their families and for society (Wang, Simon & Kessler, 2003).

Causes for depression are several, with some authors describing depression as multi-causal, resulting from interactions between social, psychological and biological factors (Purebl et al., 2015). It can also be described as somewhat circular, where the depression can affect aspects of the person's life negatively, resulting in a worsening of the disease (Purebl et al., 2015). Unfortunately, depression is also, more often than not, a recurring disease (Kessing, Hanen, & Andersen, 2004; Kennedy, Abbott, & Paykel, 2003). Lewinsohn, Zeiss, and Duncan (1989) examined the rate of relapse among people recovered from previous depression and found that the probability of future depression was positively related to previous episodes of depression. Furthermore, Solomon et al. (2000) reported an increased risk of recurrence of 16% with each previous recurring episode. According to a study by Judd (1997), persons suffering from depression will experience, on average, four episodes during the course of their lifetime. Wichers, Geschwind, van Os, and Peeters (2010) suggest that

'scars' might develop after a depressive episode as a result of the condition as well as other factors related to the cause of depression (e.g. stress exposure). In turn, these 'scars' lead to an increased risk of developing new depression after recovery (Wichers et al., 2010).

Psychological Treatment for Depression

Several treatment options for depression are available. Both psychological and medical treatment options exist and clinical practice guidelines recommend psychological treatment for mild and moderate states of depression (Helsedirektoratet, 2009). In such guidelines, cognitive behaviour therapy (CBT) is outlined as a highly effective type of psychological treatment (American Psychiatric Association, 2010; Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression, 2004; National Institute for Clinical Excellence (NICE) NICE Clinical Practice Guideline, 2009; Helsedirektoratet, 2009). CBT consists of both cognitive and behavioural techniques aimed at describing and testing non-functional misconceptions and assumptions made by the patient (Beck, Rush, Shaw, & Emery, 1979). This approach seeks to teach the patient to (1) monitor negative automatic thoughts, (2) recognise the relationship between thoughts, emotions and behaviour, (3) consider the evidence for and against the negative thoughts, (4) replace the negatively biased thoughts with more adaptable interpretations, and (5) learn to identify and change dysfunctional assumptions that influence ongoing experience (Beck et al., 1979).

Effect of psychological treatment for depression. Evidence for the effectiveness of psychological treatment options is well documented. Research emphasising CBT as the gold standard of psychological treatment, has been documented in numerous controlled trials and meta-analyses (Gloaguen, Cottraux, Cucherat, & Blackburn, 1998). Hofmann, Asnaani, Vonk, Sawyer, and Fang (2012) reviewed the 106 meta-analyses examining the effect of CBT on various disorders including depression, and found that CBT is highly effective and superior to or equally effective as other treatment options. CBT emerged to be more effective than control conditions (Hofmann et al., 2012)

The well-known positive effects of CBT for depression advocate the need to improve accessibility and dissemination of such treatments. In countries like Australia and Norway, where settlements can be both small and separated by vast distances,

challenges exist with regard to providing health care of equal quality and availability to the entire population.

Economic burden of depression. The burden depression is placing on health care system is not reflected in the care and management of depression in the health services (Purebl et al., 2015). As a matter of fact, in the European Union, major depressive disorder is the leading cause of loss of productivity (Wahlbeck, 2009). Leal, Luengo- Fernández, Gray, Petersen, and Rayner (2006) indicate that the level of lost productivity for people suffering from major depression, is more than double the estimate for productivity loss due to cardiovascular disease. In Norway, it is estimated that 1.5 billion NOK will be spent by treating depression every year (McCracken et al. 2006). Consequently, depression is the second most economically profitable disease to prevent for society (Dalgard & Bøen, 2008).

Barriers to help seeking. The number of people seeking treatment for depression is low according to prevalence statistics, thus uncovering another challenge met when attempting to treat depression (Wang, Demler & Kessler, 2002). It is estimated that around 56% of people suffering from depression receive no treatment at all (Purebl et al., 2015). Without treatment, depression can develop in a chronic manner, with frequent recurrences and increasing levels of disability (Andrews, 2001; Solomon et al., 2000). According to Kohn, Saxena, Levav & Saraceno (2004) the lack of treatment is caused by multiple factors including: (1) not seeking help because the problem is not acknowledged, (2) thoughts about treatment being ineffective, (3) believing the problem will go away regardless and desiring to handle the problem oneself, (4) lack of knowledge about mental disorders and stigma, (5) accessibility issues: limited or lack of available health services, or (6) financial factors. In fact, Mohr et al. (2010) showed that suffering from depression reinforces barriers towards psychotherapy already existing in the general population.

Accessibility issues. Furthermore, psychological treatment requires significant therapist time. Hence, accessibility issues can partly be explained by lack of treatment resources; lack of clinicians providing face-to-face treatment results in long waiting lists leaving many depressed individuals untreated (Cameron & Thompson, 2005). Access challenges also include lack of affordable care, living in rural locations, difficulty attending treatment during working hours and physical and psychological challenges to commute etc. (Purebl et al., 2015). In fact, about 75% of people in need

of mental health care have identified one or more structural barriers to access treatment (Purebl et al., 2015).

Stigma. Stigma remains an important issue in mental health disorders. Alonso et al. (2007) showed that almost half of a sample of people with a 12-month prevalence for a mental health disorder did not attempt to access any kind of treatment. The main reason was the fear of being identified as having a mental health disorder (Alonso et al. 2007). Delays in help seeking, especially among severely ill people, predicts a lowered quality of life and decline in functionality. There also exists also a strong relationship between the length of untreated mental health problems and poor treatment outcome (Addington, van Mastrigt, Hutchinson, & Addington, 2002; Boydell, Gladstone, & Volpe, 2006).

Overcoming treatment barriers using the Internet. One option to overcome such barriers at the same time as delivering equally effective evidence based treatment to all patients, is the use of Internet delivered cognitive behavioural therapy. Internet delivered programmes have been developed and subjected to rigorous research in terms of randomised controlled trials (RCT trials; Perini, Titov & Andrews, 2009). The use of these programmes for delivering structured psychoeducation, administering questionnaires and providing feedback to users can allow clinicians to spend time on more sophisticated and specialised components of psychological treatment (Marks, Cavanagh, & Gega, 2007; Titov, 2007; Proudfoot et al., 2003; Proudfoot, 2004), as well as to help patients overcome barriers, such as, stigma and accessibility.

Internet Delivered Cognitive Behavioural Therapy (iCBT)

Regardless of the growing research body on Internet delivered treatment for depression, a uniform, generally accepted definition has not yet been provided. In this paper, the term iCBT is used to describe Internet delivered programmes for treating depression, including some degree of therapist support. Less specific terms will also be used for more general concepts that do not include both an online CBT intervention and therapist support.

What does iCBT consist of? iCBT generally follows a structured treatment plan that can be described as a simplified version of face-to-face CBT (Andrews & Williams, 2015). Andrews and Williams (2015) summarise the content of most iCBT treatments, including (1) psychoeducation focusing on the specific disorder, (2) providing a model of understanding of the disease, and (3) developing a way to

recovery. Furthermore, iCBT generally presents a model incorporating control of thoughts, emotions and behaviours specific to the disorder in focus (Andrews & Williams, 2015). Most of these programmes are based on consecutive weekly sessions, focusing on dysfunctional thoughts, emotions and behaviours (Andrews & Williams, 2015). Homework is also an essential part of an iCBT programme, as it is in face-to-face CBT (Andrews & Williams, 2015). An advantage of iCBT is that participants have the opportunity to go back and revisit session material as well as the frequent completion of questionnaires to keep track of development and changes in the course of the disease (Andrews & Williams, 2015). This keeps the clinician updated on progress and potential need for further intervention (Andrews & Williams, 2015).

Support. iCBT programmes vary in amount of support, how/if support is given and by whom it is given. A meta-analysis by Andersson and Cuijpers (2009) showed that Internet delivered treatments combined with support were significantly more effective compared to unsupported treatments. Titov (2011) differentiates between low-intensity-guided Internet delivered psychotherapy (<3h) and high-intensity-guided Internet delivered psychotherapy (>3h). The author concludes that there is little to no difference in outcome between low-intensity and high-intensity-guided Internet delivered psychotherapy (Titov, 2011). Hence, the relationship between outcome and support seems to be highly important, with supported treatments showing significantly better outcomes compared to unsupported treatments (Andersson & Cuijpers, 2009). However, the support given does not necessarily need to be extensive or provided by an experienced clinician (Titov et al., 2010). As a matter of fact, Titov et al. (2010) conducted a study where participants received support from either experienced clinicians or less experienced administrative personnel (not permitted to provide clinical advice, only support and encouragement) or were assigned to a control group. The results revealed significant improvements for both treatment groups in comparison to the control group, whilst there emerged no significant differences shown between the intervention groups (Titov et al. 2010). This study implies that guided Internet delivered treatment does neither need to be time-consuming nor demanding for clinicians and most likely requires less training for therapists than regular CBT.

Efficacy and effectiveness. The research on Internet delivered treatment options for depression constitutes mainly two different forms of trials: efficacy trials

and effectiveness trials (Andersson & Hedman, 2013). Efficacy trials are based on randomised controlled trials (RCTs) (Andersson & Hedman, 2013). Here, internal validity and consequently experimental control are important (Andersson & Hedman, 2013). As a result, the participants are a highly selected, homogenous group that is self-referred, and the therapists tend to be equally well trained and monitored (Andersson & Hedman, 2013). Efficacy has been, in this fashion, documented in many reviews and meta-analyses of iCBT (e.g. Griffiths, Farrer, & Christensen, 2010; Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Richards & Richardson, 2012; Johansson & Andersson, 2012; Hedman, Ljotsson, & Lindefors, 2012). Collectively these reviews and meta-analyses conclude that iCBT is an efficacious treatment for many psychiatric disorders, including depression. In fact, Hedman, Ljótsson, and Lindefors (2012) used the APA criteria for evidence status and concluded that iCBT for depression met the criteria and thereby can be recognised as a well-established type of treatment.

The strict research criteria characterising RCT trials do generally not fit in routine clinical practice. As a result, effectiveness trials have been outlined and conducted as an answer to these translational problems occurring from efficacy trials to the real world (Hunsley & Lee, 2007). Such studies aim to represent a more ecological setting and focus on examining treatment effects in real-world settings and situations that are encountered in regular clinical care (Lutz, 2003). The distinction between effectiveness and efficacy trials is not clear within research on therapeutic interventions (Andersson & Hedman, 2013), as it is the case within iCBT research. However, research on effectiveness of Internet delivered treatments for depression complies with efficacy research and meta-analyses showing promising effects (e.g. Andrews et al., 2010; Hedman et al., 2012). The overall results in these studies show that iCBT interventions can be highly effective, similar indeed to the results of face-to-face CBT (Andrews et al., 2010; Hedman et al., 2012).

Long term effects. Research on long-term effects of iCBT is limited. However, a study conducted by Andersson, Hesser, Hummerdal, Bergman-Nordgren, and Carlbring (2013) compared iCBT for mild to moderate depression to live group CBT with a follow-up condition after three years. Subjects were recruited from the general population and randomised to one of the two groups (Anderson et al., 2013). Measurements were undertaken before and after the intervention, as well as after a one-year and a three-year period (Anderson et al., 2013). The results showed similar

effects of the two interventions and long-term effects were sustained at the three-year follow-up (Anderson et al., 2013). The iCBT condition showed a non-significant tendency towards a better outcome at three-year follow-up compared to the group CBT condition (Anderson et al., 2013).

iCBT vs. face-to-face CBT. Overall studies show similar effect sizes for iCBT as for face-to-face CBT (Andersson & Cuijpers, 2009; Andersson et al., 2005; Berger, Hämmerli, Gubsner, Andersson, & Caspar, 2011; Cuijpers, Donker, van Straten, Li, & Andersson, 2010; Johansson et al., 2012). However, few studies that directly compare the two exist. Andersson et al. (2013) compared a seven-module iCBT programme with a group face-to-face CBT programme based on the same modules as the iCBT. Their results showed a significant reduction in depressive symptoms in both groups, with a non-significant difference between the groups (Anderson et al., 2013). The effect remained at a three-year follow-up (Anderson et al., 2013).

Using the Internet to Prevent Depression

As mentioned above, depression is foreseen to become the largest burden of disease within 15 years. Sub-threshold depression rates are high, particularly among adolescent populations (Purebl et al., 2015). Therefore, not only increasing availability of treatment is important, but also prevention is equally crucial. The fact of having previously suffered from depression increases the risk of a new depressive episode (e.g. Mueller et al., 1999; Kessing et al. 2004; Kennedy et al., 2003; Lewinsohn et al., 1989), highlights the importance of prevention. Cuijpers, van Straten, Smit, Mihalopoulos, and Beekman (2008) conducted a meta-analysis to summarise the results of efficacy studies on prevention of development of depression. The results showed that preventing depression is highly possible and that reductions in incidence of depressive disorder after preventive interventions are up to 22% higher than in treatment-as-usual control groups (Cuijpers et al., 2008). Meta-analyses also indicate that recurrence of depression is lower among patients having undergone CBT compared to patients having discontinued pharmacotherapy (Cuijpers et al. 2013).

Using the Internet for delivery of preventative services has many advantages over face-to-face solutions, including easy access (time and place), anonymity and avoidance of stigma, working at ones own pace, elimination of burden affected by travel, as well as limiting use of clinician resources (Buntrock et al. 2015). Buntrock et al. (2015) conducted a randomised controlled trial examining the efficacy of an

Internet based intervention for sub-threshold depression compared to treatment as usual (TAU). Participants in the intervention group showed significant reductions in depressive symptoms and the effect was prolonged: at 6-month follow-up significant differences between the groups still remained (Buntrock et al., 2015). The authors conclude that delivery of preventive interventions using the Internet might be a promising strategy for making psychological interventions widely available (Buntrock et al., 2015).

Cost-Effectiveness

Cost-effectiveness can be regarded as the cost of one additional case of improvement in an experimental treatment as compared with a control treatment (Hedman et al., 2012). Hedman et al. (2012) conducted a review of cost-effectiveness trials of iCBT. iCBT was predominantly compared to waiting list control conditions in the cost-effectiveness analyses, and these studies showed an average probability of being a cost-effective treatment of 57%, at a willingness to pay zero (Hedman et al., 2012). Furthermore, one study in the review compared iCBT to live CBT and suggested that iCBT had a 79.5% probability of being more clinically efficacious at a lower cost compared with live CBT.

A study by Lintvedt, Griffiths, Eisemann, and Waterloo (2013) performed a cost-effectiveness analysis of a translational project where two Internet delivered CBT programmes were translated from English to Norwegian and estimations of outcome and cost-effectiveness were performed. The study showed that the language translation corresponded to only 27% of the original developmental costs, making it necessary to treat 46 patients in order to recover costs (Lintvedt et al., 2013). Furthermore, quality adjusted life years (QALY) was used to estimate cost-effectiveness, showing that an intervention yields an additional quality-adjusted life year (Lintvedt et al., 2013). The results showed that for every 1000 persons treated seventeen QALYs were gained and investments were returned 21 times, thus making the intervention highly cost-effective (Lintvedt et al., 2013).

Patient Empowerment

E-mental health has the potential to allow people to take control over their own health and wellbeing (Purebl et al., 2015). It is often recommended to shift one's focus from preoccupation with problems and difficulties, to more strength-based cognitive style (Purebl et al., 2015). E-mental health interventions can offer the opportunity for people to choose their treatment more explicitly, to control what

happens in their care, and to monitor their treatment progress and outcomes with professionals in a transparent way. This can strengthen the sense of having overcome one's problems predominantly by one's own effort, allowing for pride and feeling in control of own wellbeing (Purebl et al., 2015). A qualitative study by Lillevoll et al. (2013) explored patients' experiences with guided iCBT for depression and found that patients perceived taking action in addressing their own problem as highly valuable and experienced it as an achievement.

Therapist Attitudes Towards Internet Delivered Treatment

It is possible that mental health professionals can experience online mental health interventions as threatening (Purebl et al., 2015). Possible explanations for this include fear for traditional face-to-face treatment becoming redundant and consequent changes in funding; face-to-face treatment is more costly than Internet delivered interventions (Purebl et al., 2015). Furthermore, many professionals are concerned about the quality of Internet delivered care, specifically the quality of the particular intervention, concerns about the therapeutic relationship and concerns about patients experiencing feelings of rejection if referred to an online intervention (Purebl et al., 2015). Therapists also express concerns about Internet delivered interventions absorbing more of their time, which usually is limited (Purebl et al., 2015).

Becker and Jensen-Doss (2013) conducted a study of clinician willingness and ability to use computer assisted therapies among a national sample of mental health clinicians in the USA. The results showed that the majority of clinicians had the equipment needed available, as well as reporting high levels of computer fluency (Becker & Jensen-Doss, 2013). The therapists in this study showed positive attitudes towards Internet delivered interventions, but were worried with regard to technology damaging patient's rapport and did not believe that such interventions could improve treatment outcomes (Becker & Jensen-Doss, 2013). Furthermore, the results imply that therapists with limited technological access, low computer fluency and lower levels of openness towards new treatments in general, might be particularly resistant to adopting computer-assisted therapies (Becker & Jensen-Doss, 2013). Wangberg, Gammon & Spitznogle (2007) conducted a study exploring the attitudes towards online interventions and communication with patients in a sample of Norwegian clinical psychologists. Overall, the psychologists were neutral towards Internet interventions. In addition, they found that age and having a psychodynamic orientation was associated with negative attitudes towards online interventions.

Implementation Science

There is a substantial focus on evidence based practice and patient empowerment in today's health services and politics. Patient access to medical records is becoming widely accepted and is thought of as a step towards greater patient control and empowerment over one's own medical and psychological treatments. At the same time, the increasing trend towards evidence based practice and patient involvement makes Internet delivered treatments highly relevant, due to its ability to close some of the gaps in today's health services. There have been multiple programmes developed for treating depression using the Internet and, as referred to above, plenty of research ascertains to their efficacy and effectiveness (e.g. Griffiths et al., 2010; Andrews et al., 2010; Richards & Richardson, 2012; Johansson & Andersson, 2012; Hedman et al., 2012). Despite this, the process of implementing evidence-based practice is often challenging (Backer, 2000; Bond, Drake, McHugo, Rapp, & Whitley, 2009; Institute of medicine, 2007). A relatively new field in health research is implementation science. The goal of implementation science is to close the existing gap between research and evidence based practice and the strategies and interventions used in regular clinical settings. It aims to identify factors that facilitate or restrict application of research evidence in regular routine practice and thereby manage such factors in order to implement evidence-based practice consistently and reliably to improve health outcomes (Fixen, Naoom, Blase, & Friedman, 2005). In fact, research indicates that two-thirds of attempts to implement change in organisations fail (Burnes, 2004).

Multiple theories have been developed in implementation science with many common components, however, the evidence base is currently not allowing to clearly prioritise which variables are likely to play the most important roles in any given implementation effort or context (Arons, Hulburt & Horwitz, 2011). Taking into account that implementation of different methods into differing contexts always requires specified implementation plans and varying key factors, Damschroder et al. (2009) developed a consolidated framework for advancing implementation science (CFIR). The intention of this framework is to embrace earlier theories and research into a summarised, structured framework of constructs, without taking into account specific ecological levels or specific hypotheses (Damschroder et al., 2009). On account of the flexibility of the framework, and the varying aspects of implementation

studies, this theory will form the base for the upcoming review of the evidence regarding implementation of iCBT into regular clinical practice.

A Consolidated Framework for Advancing Implementation Science (CFIR)

The consolidated framework for advancing implementation science (CFIR) was developed as a suggestive theory organising the current implementation science literature and synthesising common constructs from different implementation theories (Damschroder et al., 2009). The theory seeks to promote implementation theory development and verification about what works, where it works and why it works, across multiple contexts (Damschroder et al., 2009). It is constructed in a way that allows researchers to select constructs from the theory, seen as most relevant for their specific implementation research, procedure, evaluation or explanation of findings (Damschroder et al., 2009). The development of the framework consisted of reviewing terminology used in the literature and constructs used in existing implementation theories, primarily with focus on theories of translating research into practice within the health care sector (Damschroder et al., 2009). The starting point and basis of the framework was Greenhalgh, Robert, Macfarlane, Bate, and Kyriakidou's (2004) compilation of constructs derived from over 500 sources (Damschroder et al., 2009). The CFIR describes a range of domains important to implementation science, however, it does not specify the relation or interaction among these themes (Damschroder et al., 2009). The theoretical framework consists of five major domains; (1) the intervention, (2) inner and (3) outer setting, (4) the individuals involved and (5) the implementation process (Damschroder et al., 2009).

Characteristics of the intervention. Interventions aiming to be implemented into practice are already developed and have been the subject of rigorous testing. Hence, interventions often need to be adapted in order for successful implementation in a specific setting (Damschroder et al., 2009). Interventions can thereby be seen as having 'core components' that are essential to the intervention and 'adaptable periphery' that can be adapted to fit the organisation in which the intervention is being implemented (Damschroder et al., 2009).

Inner and outer setting. These two constructs are often influenced by each other, where changes in the outer setting can influence the implementation through changes in the inner setting (Damschroder et al., 2009). In general, the outer setting consists of political, economic, and social contexts that the organisation resides within, and the inner setting consists of structural, political and cultural

contexts in which the implementation process will proceed (Damschroder et al., 2009). The distinction between these two constructs is not clear and what is considered inner setting and outer setting depends on the organisation, intervention and context (Damschroder et al., 2009).

Individuals involved in the implementation process. The health care professionals are often the ones who are going to carry out the implementation by adopting the intervention into their daily clinical tasks and routines. They make choices and influence each other and are carriers of cultural, organisational, professional and individual mindsets, norms and interests, hence they have the power to influence the implementation process to a high extent (Damschroder et al., 2009).

Implementation process. In order for implementation of new interventions to be successful, an active change process aimed towards both individual and organisational level of use is crucial (Damschroder et al., 2009). This is often cast in the form of an implementation plan specifically aiming towards successful and effective implementation in the particular context (Damschroder et al., 2009). Further description of the elements in which these five constructs build upon are outlined in Table 1.

Aim of the Thesis

The main objective of this thesis is to explore the scientific literature regarding whether Internet delivered CBT for depression can be implemented into regular clinical practice. Relevant scientific literature will be systemised according to an implementation science paradigm, specifically the CFIR model, in order to highlight areas that are well covered within the literature and to identify areas of the literature where knowledge gaps may exist.

Table 1

Detailed Description of the Five Elements of the CFIR Modell as Described by
Damschroder et al. (2009).

CFIR constructs

Intervention characteristics

- Intervention source:
externally or internally
developed, as perceived by
stakeholders
- Evidence strength and
quality, as perceived by
stakeholders
- Relative advantage, versus
differing solution
- Adaptability
- Trialability, ability to test
intervention in small scale
in organisation before
major implementation
- Complexity of
implementation process, as
perceived by stakeholders
- Design quality and
packaging
- Cost of the intervention and
costs associated with
implementing the
intervention

Outer setting

- Priority of patient needs and resources
- Cosmopolitanism/the organisations degree of network to other organisations
- Peer pressure/competitiveness between/within organisations
- External policies and incentives

Inner setting

- Structural characteristics/social architecture
- Social formal/non-formal networks and communications
- Culture, local/overarching, stable/unstable
- Implementation climate: tension for change, compatibility, relative priority, organisational incentives and rewards, goals and feedback, learning climate
- Readiness for implementation: leadership engagement, available

	resources, access to information and knowledge
Characteristics of the individual	<ul style="list-style-type: none"> - Knowledge and beliefs about the intervention - Self-efficacy/belief in own capability to execute actions needed for implementation goals - Individual stage of change - Individual identification with the organisation - Other personal attributes
Implementation process	<ul style="list-style-type: none"> - Planning - Engaging: opinion leaders, formal internal implementation leaders, champions, external change agents - Executing - Reflecting and evaluating

Method

The review was conducted in line with narrative review principles outlined by Green, Johnson, and Adams (2001). A narrative literature review is somewhat less strictly designed methodologically compared to a systematic literature review, thus being less powerful in its conclusions (Green et al., 2001). However, a narrative literature review aims to present information in a structured, synthesised manner conveying a clear message, using rigorous search methods and selection criteria (Green et al., 2001).

Design and Selection of Studies

To be included in this review the topic of a paper had to be Internet delivered treatment for depression and needs to present material describing implementation into regular clinical settings, or otherwise specify material relevant to implementation of iCBT. Papers reporting on both outcome and process of implementation were included. Participants in the papers needed to be adults, as this group can provide informed consent and thus is the easiest group to prescribe Internet delivered treatments to. All types of articles and research designs were included, as research on both implementation and iCBT is scarce. No time frame was set for the search, as both research on implementation science and iCBT is relatively new. Papers presenting unguided iCBT or other unguided self-help delivered online were excluded, due to the reduced relevance in the context of implementation into regular clinical care. Inclusion and exclusion was determined by three steps; firstly by review of titles, followed by abstracts and lastly by full text. The first author conducted all inclusion/exclusion and data extraction.

Search Strategy

Articles were retrieved using systematic searches of the electronic bibliographic databases PubMed, psychINFO and Google Scholar, for English language papers. Search terms can be found in Table 1. Experienced library personnel at the University of Tromsø were consulted for quality assurance of the search. To complement the search, reference lists of included meta-analyses, reviews and individual studies were hand searched for additional journal articles meeting the inclusion criteria. The Journal of Implementation Science was also hand searched for papers reporting on implementation and iCBT. The last searches were conducted in April 2016. Search terms are presented in Table 2.

Data Extraction

Data was extracted qualitatively in regard to the constructs outlined in the implementation science theoretical framework; consolidated framework for advancing implementation science (CFIR) described earlier. This theory was used to systemise the data into categories in order to clearly identify implementation strategies already described in the literature and areas less well explored.

Table 2

Search Terms Used in the Review

	AND	AND
Internet delivered	implementation	depression
cognitive behavio* therap*		
iCBT	dissemination	
online therap*		
Internet delivered		
treatment		
e-mental health		

Results

The literature search resulted in 12 articles fulfilling the inclusion criteria. The exclusion process is presented in Figure 1. The CFIR model will be used to organise and systemise the data derived from the review of included articles. Further information on the individual studies is outlined in Table 3.

Intervention Characteristics

All studies described their intervention programme. However, few studies included information on the characteristics of the intervention necessary for evaluating or understanding it in an implementation mindset. All studies gave little to no information regarding important aspects of the interventions used, such as, perceived difficulty of implementing the intervention, ability to test the intervention in a small scale prior to major implementation in the organisation, and costs of the intervention and its implementation. The majority of studies describing the use of a specific iCBT programme reported an externally developed intervention, normally developed by a research group (Hedman et al, 2014; 2013; Wilhelmsen et al., 2014; Hadjistavropoulos et al., 2011; Hadjistavropoulos, Thompson, Klein, & Austin, 2012; Kivi et al., 2015; Friesen, Hadjistavropoulos, & Pugh, 2014), and one study describes therapists thoughts about possible unwillingness to adopt the changes because they were seen as ‘force fed’ to the staff by outside parties and management, although the clinicians participating in the research did not share this opinion (Kivi et al., 2015).

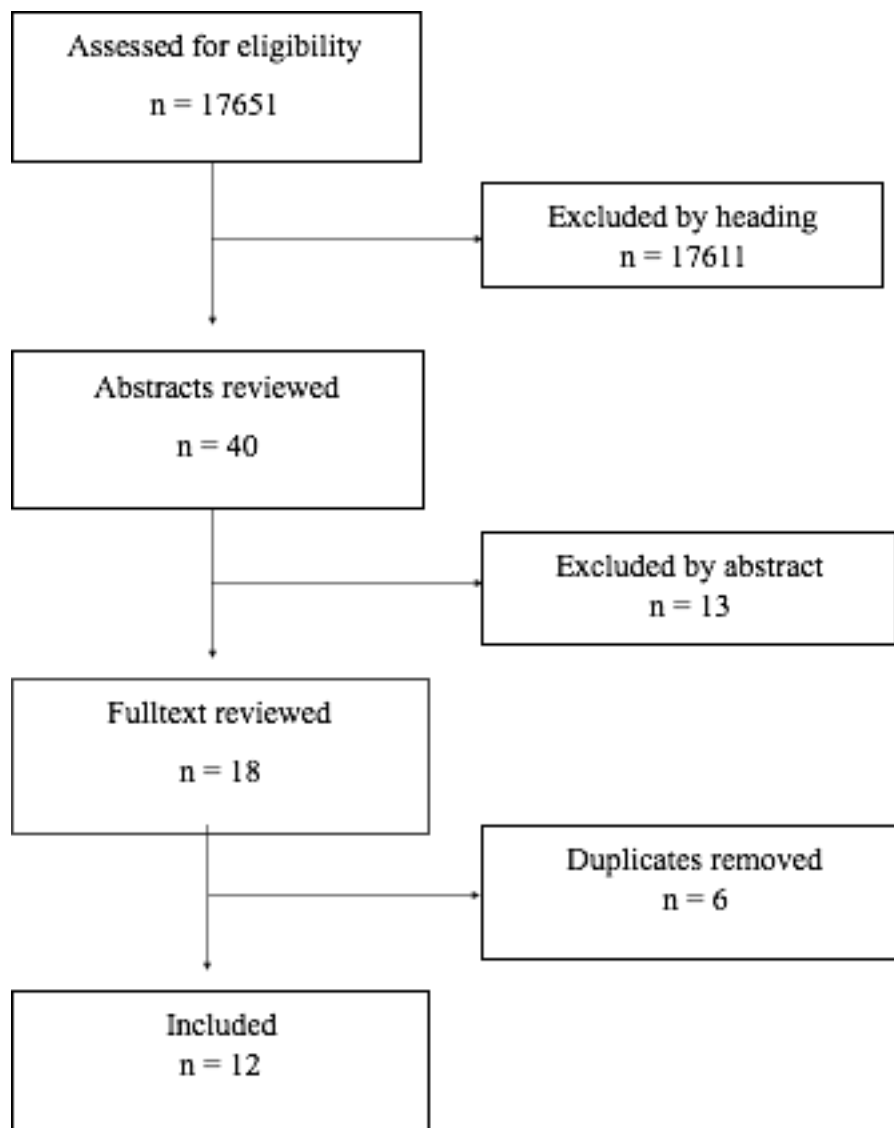


Figure 1. Description of assessment for eligibility of included papers.

Stakeholders' perceptions of evidence for the intervention. One study explored the attitudes of clinicians and a patient group towards different means of delivery of psychological treatment; face-to-face, computer delivered and bibliotherapy (Carper, McHugh, & Barlow, 2013). 55 participants completed a survey and results showed that the patient group held views ranging from neutral to negative towards computer delivered treatment, whilst clinicians held neutral views (Carper et al., 2013). Patients also reported low intentions of future use, whilst clinicians were neutral to this aspect as well (Carper et al., 2013). The authors conclude that their results are in line with the low adoption rates, and they emphasise the lack of knowledge about computerised treatments as an available treatment option for psychiatric disorders (Carper et al., 2013).

A study by Ebert et al. (2015) explored attitudes of patients with depressive symptoms towards Internet delivered treatment. Patients were randomly assigned to either an intervention group, who received a video of an expert and a model patient providing information about an Internet based intervention seeking to influence patients' attitudes positively, or to a control group (Ebert et al., 2015). A questionnaire was used to examine acceptability towards iCBT (Ebert et al., 2015). Results showed that acceptance towards Internet delivered treatment for depression was significantly higher in the intervention group compared to the control group (Ebert et al., 2015). Furthermore, the intervention group reported higher scores on performance expectancy, effort expectancy, concerns regarding data security (less concern), and knowledge about Internet interventions, whilst the control group scored significantly higher on Internet anxiety (Ebert et al., 2015). The authors conclude that acceptance of Internet delivered treatment options in the general population is relatively low, but can be increased by presenting a brief video in a general practitioners waiting room (Ebert et al., 2015).

Hadjistavropoulos et al. (2012) describe the development of a workshop on iCBT and learning to become an iCBT therapist, as well as results of measurements of attitudes towards iCBT and the evidence for its effect among graduate clinical psychology students. The students completed questionnaires after having attended the workshop (Hadjistavropoulos et al., 2012). The results showed increased levels of knowledge on all areas and a positive change in attitude towards iCBT and its evidence after the workshop (Hadjistavropoulos et al., 2012).

Furthermore, Ashurst, Jones, Williamson, Emmens, and Perry (2012) conducted a study investigating the feasibility of undertaking short online courses focusing on Internet delivered mental health interventions involving both mental health professionals and users. Three online courses consisting of a live interactive webcast, access to a discussion forum and a final live interactive webcast were run (Ashurst et al., 2012). Focus was on 12 e-health topics including computerised CBT for depression, implementation and requirements for supporting Internet use (Ashurst et al., 2012). Outcome measures for mental health professionals were Internet self-efficacy, general confidence using the Internet for mental health practice, and e-health attitudes and awareness. Measures were questionnaires as well as open text responses (Ashurst et al., 2012). The results for mental health professionals showed that three

quarters reported an opinion about good evidence for the interventions to be beneficial to patients (Ashurst et al., 2012).

In summary, stakeholders seem somewhat sceptical towards Internet delivered treatments, however, studies show that it is possible to change the views of stakeholders to become positive towards evidence and quality of Internet delivered mental health interventions.

Perceived relative advantage of the intervention as seen by stakeholders.

A study reporting on stakeholders perceptions of relative advantages of implementing the intervention, as opposed to treatment as usual (TAU), was conducted by Wilhelmsen et al. (2014). Primary care therapists (11 GPs) were interviewed using semi-structured in-depth interviews to explore their perspectives and practices when implementing iCBT into their work (Wilhelmsen et al, 2014). Participants undertook a course in the programme MoodGym prior to recommending the programme to patients they saw as fitting, and were expected to conduct face-to-face follow-up sessions (Wilhelmsen et al., 2014). The results showed general agreement among clinicians that the programme introduced a meaningful theoretical approach, structured agenda and increased perceived quality of care compared to treatment as usual (Wilhelmsen et al., 2014). However, contradictorily to these positive attitudes and perspectives, the GPs failed to complete follow-up sessions (Wilhelmsen et al., 2014). Participants described execution of follow-up sessions as challenging due to lack of time and knowledge, with regards to both the intervention and content of the follow-up sessions (Wilhelmsen et al., 2014). Participants expressed difficulty changing their role from being attentive and listening to exerting control in the session, and some experienced this as a role conflict (Wilhelmsen et al., 2014).

Kivi et al. (2015) showed similar results. iCBT for depression was implemented in 16 primary care centres in Sweden between 2010 and 2013; 14 therapists participated in a survey and in-depth interviews were conducted with four experienced therapists (Kivi et al., 2015). Patients worked with the programme individually with weekly contact with their therapist who they had met prior to iCBT for assessment (Kivi et al., 2015). The results showed that the therapists regarded iCBT as a viable treatment option and an asset for primary care therapists (Kivi et al., 2015).

A somewhat contradictory finding is expressed in Sinclair, Holloway, Riley and Auret's (2013) study of clinicians' perceptions of acceptability of Internet

delivered mental health treatments in rural areas. Clinicians were provided with a brief guide resource sheet to increase interest and knowledge about Internet delivered mental health resources prior to being interviewed (Sinclair et al., 2013). This was also aimed at reducing the number of clinicians not participating due to an experience of lacking knowledge (Sinclair et al., 2013). Furthermore, the participants were presented with three vignettes describing hypothetical scenarios in which Internet delivered treatment could be considered and were asked to rate their plausibility as well as opinion on acceptability of referral to Internet delivered treatment (Sinclair et al., 2013). Analysis of the interviews resulted in five key themes: (1) perceptions of resources, (2) clinician factors, (3) client factors, (4) the rural and remote context, and (5) integration with existing services (Sinclair et al., 2013). Attitudes towards the use of Internet delivered interventions were generally positive. However, clinicians preferred to be familiar with what they were prescribing and many had challenges finding the time to do so (Sinclair et al., 2013). Being younger and more recently trained were linked to acceptance towards integrating Internet interventions (Sinclair et al., 2013). Clinicians expressed a preference for integration of these services alongside already existing services, thereby implying that the intervention was not seen as a relative advantage to treatment as usual, but rather as a supplement.

Quality of design and packaging. Few studies report on stakeholder's perceptions of the intervention's design and presentation. Although, a qualitative study examining perceptions towards iCBT of students undertaking a learning programme mentioned these aspects (Friesen et al., 2014). Twelve students participated in a semi-structured interview regarding their perceptions of the workshop, the screening process, the modules, their experiences forming therapeutic relations online, supporting a patient, the web application, supervision, policies and procedures, and ethical issues (Friesen et al., 2014). Furthermore, participants were asked about ideas for improvement, barriers and facilitators for delivering iCBT (Friesen et al., 2014). Regarding the web application, participants saw the programme as logical and thorough, perceived the quality of videos and documents as being good and described the programme as easy to use (Friesen et al., 2014). However, participants also saw challenges, such as, having to change between windows to see patient's modules and client e-mails, absence of a spell check system, the application logging out without notice, and clients at times not receiving e-mails due to the e-mails not being prominent enough within the application (Friesen et al., 2014).

Participants also experienced some modules to be very lengthy, thus, making the time frame for the treatment unrealistic (Friesen et al., 2014).

Outer Setting

Outer setting variables are important in implementation processes, as they need to be in line with intervention characteristics for implementation to be possible. One outer setting variable that found most research on mental health interventions is the priority of patient needs in organisations. Many articles in this review regard this as an important aspect in arguing for implementing iCBT in regular clinical care, as the aim of the intervention is to improve current treatment options and extend the availability of interventions. However, the study reported above by Sinclair et al. (2013) showed that clinicians held patient needs very highly and, therefore were sceptical towards Internet delivered interventions, as they were perceived as possibly having adverse effects on patients.

Aspects of outer setting that are generally not reported in the literature are the degree of networking between organisations and competitiveness within and between organisations, and the impacts of these on implementation processes. One article does, however, mention the cooperation between four mental health clinics, implying networking between organisations in their implementation and development of an iCBT clinic, however, it is not discussed in regard to how this influences the implementation process (Hadjistavropoulos et al., 2011).

External policies and incentives. The majority of the included articles argue for adjustment of external incentives and funding systems to fit better with Internet delivered treatment options in mental health care (Hedman et al., 2014; Andrews & Williams, 2015; Batterham et al., 2015; Kivi et al., 2015; Kencier, McClay, & Williams, 2012).

The iCBT clinic set in a regular psychiatric outpatient clinic outlined by Hedman et al. (2014) explain that iCBT is subsidised in line with other psychiatric care in the clinic. Hadjistavropoulos et al. (2011) also describe the development of an iCBT clinic, cooperating with four outpatient community mental health clinics. Here, the development of the iCBT clinic was financed through research grants and the clinics it cooperated with were subsidised by the government (Hadjistavropoulos et al., 2011). However, the authors describe that the clinic does not receive enough funding to pay mental health professionals, resulting in students being the main available workforce.

Furthermore, Batterham et al. (2015) performed a review of the existing effectiveness literature and developed an implementation plan for e-mental health services for depression in Australia. The aim of the plan was to identify key translational activities that needed to be in place to optimise use of Internet delivered programmes for depression (Batterham et al., 2015). Barriers and facilitators for dissemination were identified according to the Australian Government's e-mental health strategy (Department of Health and Ageing, 2012), and the suggested plan highlights the need for funding and accreditation of iCBT in order for implementation to be possible (Batterham et al., 2015).

A nationwide survey in Scotland also identified external policies and incentives that hindered implementation of iCBT (Kencier et al., 2012). A survey was conducted which examined patients accessibility to computers for computerised treatment, as well as access to means of communication between clinicians and patients (Kencier et al., 2012). Findings showed that most health boards did not allow contact with patients via Skype, and over a third did not allow contact through personal e-mail addresses (Kencier et al., 2012). Only one of the 14 health boards compensated for this by providing a secure communication for correspondence (Kencier et al., 2012). These factors are of significant hindrance when it comes to implementation processes.

Inner Setting

In general, the inner setting is separated from the outer setting by being the context through which the implementation process is taking place (Damschroder et al., 2009). Some of the constructs within the inner setting variable are incompletely described in the included articles, e.g., structural characteristics, such as social architecture, is predominantly described using only the description regular clinical care. One paper does, however, describe how their iCBT clinic was initiated, how work groups were formed, and their means of communication with each other, tapping on some aspects of social architecture (Hadjistavropoulos et al., 2011).

Table 3

Results Presented in Terms of CFIR Constructs.

Study	Intervention characteristics	Outer setting	Inner setting	Characteristics of the individuals involved	Implementation process
Hedman et al., 2014	- Permanent iCBT clinic integrated in regular outpatient clinic	- Economic refund adapted to fit the outpatient refund system - External policies adjusted to fit iCBT			
Hadjistavropoulos, Thompson, Klein, & Austin, 2012	- Workshop for students learning about and to distribute iCBT - Evidence perceived as strong		- Learning climate good, satisfaction among participants high	- Increased knowledge, self-efficacy and confidence for delivery	

Batterham et al., 2015

- Argues for development of external policies and incentives that better suit iCBT
- Argues for acknowledgement of need
- Lays out implementation plan focusing on outer setting variables
- General societal implementation focus, not focus on specific implementation of a program or in a clinic

Hadjistavropoulos et al., 2011	<ul style="list-style-type: none"> - Externally developed iCBT - Adaptable - Funding specific to the cost of the implementation 	<ul style="list-style-type: none"> - Intervention implemented in four community mental health clinics in same city - Governmental funding of the clinics 	<ul style="list-style-type: none"> - Social architecture: initiator/director, full-time coordinator, computer science students, clinical psychology students - Large multidisciplinary group: project leader communicate with smaller groups - Development of iCBT clinics: high tension for change, high leadership engagement 	<ul style="list-style-type: none"> - Knowledge and beliefs increased by workshop 	<ul style="list-style-type: none"> - Planning: unit policies and procedures, implementation plan - Formal internal implementation leaders, opinion leaders, champions - Execution - Record keeping, outcome assessment and evaluation
--------------------------------	--	--	--	---	---

Wilhelmsen et al., 2014	<ul style="list-style-type: none"> - Externally developed iCBT - Seen as superior alternative compared to standard treatment - Lack of adaptability of the intervention due to the research project - Lack of time in sessions seen as barrier 	<ul style="list-style-type: none"> - No economic compensation 	<ul style="list-style-type: none"> - Challenges in the culture, no social or professional arena for discussing the new intervention. - Not given priority - Not a learning climate 	<ul style="list-style-type: none"> - Feelings of inadequate knowledge - Positive attitudes, eagerness to improve practice - iCBT seen as non-compliant with views of ones professional role
----------------------------	--	--	---	--

Kivi et al., 2015	<ul style="list-style-type: none"> - Externally developed iCBT - Strict research design, limited adaptability 	<ul style="list-style-type: none"> - Lack of external policies and incentives favouring the intervention 	<ul style="list-style-type: none"> - Lack of resources and time - Focus on financial outcome, efficiency and productivity, less focus on introduction of new methods in the culture - Culture of somatic/medical understanding and treatment. - Boundaries and peer influences, GP role/fix the problem themselves. - Autonomy inherent in the professions and unwillingness to change practice. - Not learning climate 	<ul style="list-style-type: none"> - Lack of knowledge and skill regarding the intervention 	<ul style="list-style-type: none"> - Presence of champions
-------------------	---	---	---	--	---

Kencier, McClay & Williams, 2012

- External policies that limit potential iCBT, e.g. access to media which patient-therapist communication/support can be given
- Limited access to on-site computers.

Ashurst, Jones, Williamson, Emmens & Perry, 2012

- Online course for professionals and users about e-health.
- Evidence perceived as moderately strong by stakeholders

- Increase in knowledge, attitudes and incentive to use e-health

- Outlines possible methods for teaching during future implementation processes

Ebert et al., 2015

- Affects knowledge, beliefs and self-efficacy of the patients involved

Sinclair et al., 2013

- Relative advantage not seen as strong compared to normal face-to-face treatment
- Costs of the intervention (time) seen as a challenge
- Patient needs perceived as important, fear that the intervention will undermine patient needs
- Negative peer pressure within networks, some experience of peers being negative towards internet delivered treatment

- Friesen et al., 2014
- Externally developed iCBT
 - Internally developed learning programme
 - Adaptability possible
- Intervention introduced in a learning environment
 - Policies and procedures seen as clear and helpful
 - Possibly competitiveness as opposed to other universities
- Supervision available
 - Peer support available
 - Good learning climate
 - Leadership engagement (research group), available resources
- Knowledge and beliefs positive due to learning programme
- Planned rigorously in a research environment
 - Opinion leaders, formal implementation leaders
 - Execution in iCBT clinic
 - Reflecting and evaluating through research

- Carper et al., 2011
- Neutral to somewhat negative perceptions by patients overall
 - Neutral perceptions towards intervention by clinicians
 - Low future use intentions by patients
 - Future use intentions for clinicians neutral
-

Networks and communication. Networks and communication within the organisation in which iCBT is being implemented is described by Sinclair et al. (2013). In an interview, one clinician reported receiving criticism from some colleagues when raising a question about experiences using online mental health resources (Sinclair et al., 2013). Another study that explores these constructs is Kivi et al.'s (2015) who found that some participants had heard murmurs about the extra workload the project brought along, especially among staff not directly involved in the programme. Participants thought that a solution to this problem would be to make everyone feel involved in the ongoing changes (Kivi et al., 2015). One study outlines that professionals in a primary care setting do not experience having opportunities to discuss new interventions at the workplace, which was perceived as a challenge towards using iCBT (Wilhelmsen et al., 2014).

Culture. Culture refers to the norms, values and the basic assumptions within an organisation (Damschroder et al., 2009). Kivi et al. (2015) outline cultural aspects that stand in the way of implementation of an iCBT programme in a primary care context. Participants described general unwillingness to expose lack of knowledge to their peers among colleagues, thereby not perceiving the work climate as a good learning arena (Kivi et al., 2015). Furthermore, the participants experienced a lack of general knowledge about psychology among non-therapist staff at their workplace, hence, the culture was seen as holding a medical view and understanding of patients and of how problems should be solved (Kivi et al., 2015). Thereby, the participants suggested that prescription of a psychological intervention could be seen as a role conflict, as opposed to prescribing medication (Kivi et al., 2015). Another cultural challenge exposed was that production and budget were described as highly important in the primary care culture, and also the main subject of conversation among colleagues (Kivi et al., 2015).

As mentioned above, Wilhelmsen et al. (2014) discovered cultural challenges to the implementation of iCBT in primary care. Here, participants hypothesised that prescription of iCBT and particularly conducting follow-up sessions with clients might be somewhat conflicting to a GP's perceived role in depression treatment (Wilhelmsen et al., 2014).

Implementation climate. This is a wide category including a number of constructs such as tension for change, compatibility, relative priority, organisational incentives and rewards, goals and feedback, and learning climate (Damschroder et al.,

2009). Further it involves readiness for implementation, consisting of leadership engagement, available resources and access to information and knowledge. None of the included articles has specifically described the implementation climate, however, some have included information on some of the constructs. Hadjistavropoulos et al. (2012) express that clinicians are ready to change and are interested in iCBT, with the hope that it will be time efficient in their daily clinical practice.

Relative priority has been touched upon by Wilhelmsen et al. (2014) showing that primary care therapists do not seem to prioritise iCBT follow-up sessions over standard treatment, even though they expressed a positive attitude towards iCBT. The authors suggest that this can be due to an experience of lack of knowledge about what to do in the follow-up sessions, resulting in down prioritising (Wilhelmsen et al., 2014).

Learning climate was seen as poor in the study by Kivi et al. (2015), where therapists did not feel that the culture allowed for expression of weaknesses. Learning climate was experienced as challenging in Wilhelmsen et al. (2014) as well, where resources such as time were standing in the way of learning new treatments. The studies exploring learning courses for iCBT did, however, show more promising results, where learning climate was seen as positive and therapists saw learning of the new approach as valuable (Friesen et al., 2014; Hadjistavropoulos et al., 2012). This implies that the surrounding variables make a difference to the learning climate for iCBT, not exclusively the iCBT per se.

Readiness for implementation has not been outlined in detail in any of the included studies. However, some studies imply that there are not sufficient available resources and despite existing information and knowledge, it is not easily accessible for clinicians. On the contrary, the studies that outline development of iCBT clinics (Hadjistavropoulos et al., 2011; Hedman et al., 2014) imply important aspects of readiness for implementation, such as, high levels of leadership engagement, access to information and knowledge, and available resources.

Characteristics of the Individual

Research on the characteristics of the individual and how the interplay between individuals and an organisation affects individual or organisational behaviour change is limited and difficult to obtain (Damschroder et al., 2009). All organisational change starts with behavioural change on the individual level and knowledge and beliefs, as well as attitudes towards changing behaviour and self-efficacy to make the

change, are the most commonly used measures of individual characteristics reported in the literature (Damschroder et al., 2009). Both these constructs, as well as individual identification with the organisation and other personal characteristics, are included in the CFIR model. None of the studies included in the review reported information regarding individual stage of change, individual identification with the organisation or other personal attributes.

Knowledge and beliefs about the intervention and self-efficacy. As mentioned above, Hadjistavropoulos et al. (2012) outlined the development of a guided iCBT workshop for clinicians, with positive results showing increased levels of knowledge in all areas and a positive change in attitude towards iCBT. Confidence with delivery was also strengthened, and satisfaction with the workshop was very high, indicating increased levels of self-efficacy (Hadjistavropoulos et al., 2012).

The study by Friesen et al. (2014) was an extension of the research by Hadjistavropoulos et al. (2012) and examined perceptions towards iCBT among students undertaking the learning programme. In general, participants experienced and added value in learning to become guides for iCBT and reported higher levels of understanding and knowledge on all aspects of the learning programme (Friesen et al., 2014). They highlighted that learning iCBT also contributed to developing skills in face-to-face CBT, and that the time lapse before replying to e-mails enhanced learning by providing the possibility to seek supervision and feedback (Friesen et al., 2014). Participants also regarded learning iCBT as useful for the future, as it was expected that they would provide iCBT in future jobs (Friesen et al., 2014).

The study by Ashurst et al. (2012) also outlined improvements on self-efficacy and general Internet confidence after completion of a series of online courses and 12 out of 16 professionals indicated plans using the Internet with patients in the future.

In summary, learning programmes seem to increase knowledge about iCBT. Studies in primary care, however, indicate that clinicians are not confident using iCBT and express lack of knowledge (Kivi et al., 2015; Wilhelmsen et al., 2014). In Wilhelmsen et al. (2014) despite undertaking a three-day introduction course in MoodGym prior to using iCBT with clients, the therapists did not feel confident with the material. Similarly, in Kivi et al.'s (2015) study clinicians were provided with all materials needed, including education in the specific iCBT programme. However, barriers to implementation of iCBT in their general practice were described, among others lack of knowledge and skills to perform guided iCBT (Kivi et al., 2015).

Implementation Process

Descriptions of the implementation process itself were limited in the included papers. The search failed to find studies directly examining the implementation process of iCBT, implying that such papers do not seem to exist in the literature. However, one paper presenting development of an iCBT clinic was found (Hadjistavropoulos et al., 2011). The CFIR model outlines important constructs related to the implementation process; planning, engaging, executing, and reflecting and evaluating. Hadjistavropoulos et al. (2011) outline planning of unit policies and procedures as elements of critical importance in the development of an iCBT clinic. They also outline how engaging came forth, which will be discussed further below, as well as how the development was executed. The main goal of the article describing this development was to present their experiences to others interested in implementing or developing a clinic for iCBT, which results in reflection upon the implementation process and evaluation of the outcomes (Hadjistavropoulos et al., 2011). Records of outcomes are natural in iCBT, as participants regularly complete assessment. This was used in the iCBT clinic to determine need for further treatment, as well as for assessing the effect of their work (Hadjistavropoulos et al., 2011).

As mentioned previously, Batterham et al. (2015) presented an implementation plan for optimising use of e-mental health programmes. This plan includes mainly outer setting variables, including endorsement, education and funding, accreditation of e-mental health programmes for quality assurance, as well as development of the field of translational research to close the research-practice gap (Batterham et al., 2015). This plan also focuses on the last constructs in the CFIR, evaluation of the implementation, and underlines the importance of recognising the rapid pace of technological change (Batterham et al., 2015).

Engaging - opinion leaders and champions. The CFIR presents engagement as an important aspect in the implementation process, where opinion leaders and champions are figures engaging other individuals and become role models (Damschroder et al., 2009). In the paper by Hadjistavropoulos et al. (2011) the first author who initiated the development became a strong opinion leader. Furthermore, formal change agents were elected, and champions were possibly developed in the remaining staff and students working at the iCBT clinic. By providing students with training in guided iCBT Friesen et al. (2014) found that students intended to use iCBT in future practice, possibly leading to these individuals becoming future champions

for iCBT as they experienced having sufficient knowledge and being engaged in the treatment after completion of the course. Similarly, results by Ashurst et al. (2012) indicated the intention of future use of the Internet among clinicians, possibly also turning these individuals into champions. Furthermore, the clinicians interviewed by Kivi et al. (2015) were all interested in Internet based treatments, some having earlier experience, therefore making it possible to hypothesise that these participants might be champions of iCBT at their workplace. Formal opinion leaders and formally appointed internal implementation leaders might also more probably be present in the exclusive iCBT clinics described in some of the included articles (Friesen et al., 2015; Hadjistavropoulos et al., 2012; Hadjistavropoulos et al., 2011; Hedman et al., 2014), although this is not specified in the articles.

Discussion

The main objective of this review was to explore the scientific literature on implementation of iCBT into regular clinical practice in terms of the implementation science model CFIR. The major findings elucidate how the current literature tends to investigate similar implementation constructs while leaving other constructs untouched. The findings show that 9 of the 12 included studies gave some information about characteristics of the intervention. In general, the intervention seems to be externally developed, not adaptable to the specific clinic/clinicians needs, and stakeholders mainly perceive the evidence for the intervention as moderate or strong. None of the included papers report on the complexity of the implementation process as seen by stakeholders. Costs of the intervention and the implementation process are rarely described, however, some studies state that stakeholders experience lack of resources (time), and one study mentions specific funding for implementation.

Seven of the included studies reported information on outer setting variables. The majority of papers either argue for development of external policies and incentives, or report on whether external policies and incentives were available and favoured the intervention. Priority of patient needs was described in one study, but was used to argue for treatment as usual rather than Internet delivered treatment. Two papers implied a degree of networking with other organisations, however, it was not mentioned how this influenced the implementation or use of the intervention.

Six studies provided information regarding inner setting variables. Learning climate and culture were the main aspects reported on, with culture mainly described as an inhibiting factor of the adoption of the intervention. Learning climate was

generally described more positively, however, some studies reported it as bad. One study reported on social architecture, with descriptions of the group in which the implementation process was completed, as well as opinion leaders and formal communication pathways. The same study also reported on implementation climate variables such as high tension for change and high levels of leadership engagement.

Eight studies reported information of inner setting variables. Mainly information regarding knowledge levels of the participants was reported on, with the learning programme studies reporting increasing levels of knowledge, and the studies set in regular clinical care reported experiences of lack of knowledge among the clinicians. Some studies also mentioned self-efficacy among the participants.

Five studies give information about the implementation process either by providing suggestions of what an implementation plan should include (mainly with focus on outer setting variables), developing learning programmes that can be used in future implementation efforts, or by describing engagement aspects of the implementation process (presence of opinion leaders and champions). One project also included execution and reflection and evaluation of the implementation and results of the intervention.

Summarised, many aspects important in order for implementation processes to succeed are reported on in the included articles. There are, however, many important constructs that do not seem to have been taken into account in the existing literature. For instance, the implementation process is only outlined for one project (the same clinic has been described in multiple studies included). Furthermore, aspects of individual characteristics other than knowledge and self-efficacy are not described. However, some of these constructs (e.g., individual stage of change, individual identification with the organisation, personal attributes) can be very hard to operationalise and explore using current research standards. Descriptions of inner setting variables were limited to cultural and learning climate aspects, as well as one project reporting on structural characteristics, leaving many important constructs unexplored. Implementation climate and readiness for implementation is necessary to outline before implementation processes, but was scarcely described in the included papers. Outer setting variables were more thoroughly explored, perhaps due to external policies and incentives being very obviously important for implementation. However, some outer setting constructs such as competitiveness between/within organisations and networking with other organisations were not described. Many

aspects of intervention characteristics were described, leaving aspects regarding complexity of intervention processes as perceived by stakeholders, trialability, design and packaging and costs associated with the implementation as less fully described.

One limitation of the present review is the challenge met when searching the literature for relevant articles, as few papers found reported on the actual implementation of iCBT into regular clinical settings. This forced inclusion of articles describing material not only describing an actual implementation process of iCBT but also material somewhat besides the research question in order to find information on CFIR constructs as well as iCBT implementation, and limited the review to inclusion of only 12 studies. Furthermore, only English language papers were included, possibly missing important information presented in papers written in other languages. Another challenge met when searching the evidence base, was the lack of one uniform, agreed upon term to describe Internet delivered treatment for depression. This resulted in the need to perform searches constituting of multiple search words (e.g. iCBT AND online therapy AND Internet delivered treatment) in order to find the relevant information. Furthermore, being based on a narrative approach, and not including important methodological aspects included in systematic reviews (e.g. strict a priori search and data extraction plans, inclusion reviewed by multiple authors to reduce bias, and statistical analyses), this review might be subject to bias. However, searches and inclusion/exclusion were attempted performed as systematically as possible, thus aiming to be more like a systematic review than a traditional narrative review.

These limitations taken into account, the review identifies multiple aspects important to implementation processes that are yet to be explored in terms of iCBT. It also offers an explanation to why uptake of iCBT into regular clinical care is slow and limited. Further exploration of implementation variables can result in better and more successful implementation, more engagement regarding the intervention by stakeholders, better understanding and evaluation of implementation processes and reduced costs as implementation processes are less likely to fail.

This review separates itself from the current knowledge base by reporting on iCBT in terms of implementation as opposed to the majority of other reviews reporting of efficacy and effectiveness. iCBT has been shown to be effective in recent reviews including large number of participants and reliable outcome measures (e.g., Williams & Andrews, 2013; Andrews & Williams, 2015). Despite the general

agreement in the evidence base that iCBT is an effective treatment for depression one study criticises methodological aspects of this research (So et al., 2013). Their analysis showed that computerised CBT had moderate effects when measured at treatment end, whereas long-term effect was limited (So et al., 2013). They also highlight dropout rates for computerised CBT (So et al., 2013). Furthermore, they uncovered a potential publication bias with asymmetry toward larger effect size in smaller studies, and suggest that small studies are more likely to be published, and hence more likely to influence the field of research (So et al., 2013). Accordingly, the authors imply that the positivity and eager to implement computerised CBT into clinical practice may be counterproductive (So et al., 2013). However, the study did not separate guided and unguided treatment options from each other, possibly affecting their analysis of dropout and effect. When implementing computerised treatments into regular clinical practice, the patient will be guided by a therapist and interviewed by a clinician prior to treatment. So et al. (2013) did not take this concern into account in their critique.

Moreover, one concern regarding translation of research into practice is the substantial time lag between efficacy/effectiveness trials and implementation (Douglas, Campbell, & Hinckley, 2015). It has been estimated that when using only passive strategies for dissemination (i.e., scientific publications and conferences) of evidence based practice into regular care it takes about 17 years for only 14% of research to be incorporated into practice (Balas & Boren, 2000; Green, Ottoson, Garcia, & Robert, 2009). Thus, the aim of the implementation science is to reduce this gap between practice and research, as well as ensure best treatment for patients. The time lag might be particularly important when it comes to Internet delivered treatments, as technological advances develop at a much higher pace than rigorous research trials. Implementation science researchers have developed hybrid designs in order to increase the speed of uptake of evidence based practice into regular clinical care (Douglas et al., 2015). Hybrid designs simultaneously measure the interventions effectiveness in a real world implementation (Douglas et al., 2015). Stakeholder engagement is increased in hybrid research designs, possibly making stakeholders identify to a higher extent, thus making the implementation easier. Adaptability of the intervention might also be increased in such trials, as required changes become obvious at an earlier stage of the process.

Another important aspect regarding Internet delivered interventions is cost-

effectiveness; arguments for these types of interventions are partly based on them being more cost-effective than regular face-to-face treatment. As mentioned initially, cost-effectiveness research seems to be favourable for iCBT compared to more traditional methods of delivery (e.g. Hedman et al., 2012), even when costs of language translation of programmes are necessary (Lintvedt et al., 2013).

Funding of health services varies greatly between countries. The funding of health services in Norway is built up both by subsidises from the government and a fee payed by the individual. As of 2016 the governmental framework has been changed to include a subsidy for completed Internet delivered psychological treatment programmes. To receive this subsidy the treatment needs to be a part of an outpatient treatment programme, be used instead of (or partly instead of) face-to-face treatment, there has to be at least one evaluation session at the institution before starting the programme as well as an evaluation session finishing the programme (Helse- og omsorgsdepartementet, 2008). The Internet delivered treatment programme also needs to fulfil the criteria for information security over the Internet. These new policies greatly reduce the outer setting barriers for implementation of iCBT in regular outpatient clinics in Norway.

Nevertheless, patient empowerment and transparency of health services will remain an important issue in health politics and the health care system in the future. The Internet has the potential to be an important tool to increase patient empowerment (Alpay, van der Boog, & Dumaij, 2011). Empowerment can be seen as consisting of six parameters: (1) communication, (2) education and health-literacy, (3) information, (4) self-care, (5) decision aids, and (6) contact with fellow patients, all of which can easily be embedded in Internet delivered treatment programmes (Alpay et al., 2011). Lillevoll et al. (2013) produced valuable information regarding patient's experiences with Internet delivered CBT. Patients felt satisfied and relieved due to own engagement and empowerment, experienced acquisition of knowledge relevant to their problems easily adapted to their situation, as well as valuable communication with their therapist. The study highlights the potential for patient empowerment existing within iCBT programmes.

Importance of patient empowerment over progress and treatment can be extended to what Purebl et al. (2015) call the "monitored self movement". This refers to the growing trend of monitoring data of ones own health, behaviour and mental functioning using sensors measuring e.g. heart rate, pulse, accelerometers and EEG

headsets (Purebl et al., 2015). A potential result of the increasing acceptance for monitoring and sharing such data about oneself is reductions in stigma associated with monitoring and expressing issues related to mental health (e.g. moods, emotions and behaviours; Purebl et al., 2015). The normalisation of such data collection might enable more tailored interventions, and feedback by professionals can be provided based on information collected and shared by clients themselves (Purebl et al., 2015).

Conclusion

In conclusion, iCBT has the potential to enclose many gaps in today's mental health care by providing a cost-effective, time-efficient, patient empowering alternative or supplement to regular face-to-face treatment. Effectiveness of iCBT has been established and implementation science frameworks have been developed to help translate research into practice. This paper outlines important implementation science aspects in combination with the existing literature on implementation of iCBT, providing knowledge about aspects well covered in the literature and aspects that remain unexplored potentially influencing the slow adoption rates of iCBT. In summary, the evidence base reporting on specific implementation of iCBT programmes into regular outpatient clinics seems to be limited, demonstrating the need for future studies in order to specify what works when implementing iCBT and which facets are crucial to be conscious of.

References

- Aarons, G. A., Hurlburt, M., & Horwitz, S. M. (2011). Advancing a conceptual model of evidence-based practice implementation in public service sectors. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(1), 4-23. doi: 10.1007/s10488-010-0327-7
- Addington, J., van Mastrigt, S., Hutchinson, J., & Addington, D. (2002). Pathways to care: Help seeking in first episode psychosis. *Acta Psychiatrica Scandinavica*, 106(5), 358-364. doi: 10.1034/j.1600-0447.2002.02004.x
- Alonso, J., Buron, A., Rojas-Farreras, S., de Graaf, R., Haro, J. M., de Girolamo, G., ... Vilagut, G. (2009). Perceived stigma among individuals with common mental disorders. *Journal of Affective Disorders*, 118(1-3), 180-186. doi: 10.1016/j.jad.2009.02.006
- Alpay, L., van der Boog, P., & Dumaij, A. (2011). An empowerment-based approach to developing innovative e-health tools for self-management. *Health Informatics Journal*, 17(4), 247-255. doi: 10.1177/1460458211420089
- American Psychiatric Association. (2010). *Practice guideline for the treatment of patients with major depressive disorder*. Retrieved from https://psychiatryonline.org/pb/assets/raw/sitewide/practice_guidelines/guidelines/mdd.pdf
- American Psychiatric Association. (2013). Depressive disorders. In *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing.
- Andersson, G., & Cuijpers, P. (2009). Internet-based and other computerized psychological treatments for adult depression: A meta-analysis. *Cognitive Behaviour Therapy*, 38(4), 196-205. doi: 10.1080/16506070903318960
- Andersson, G., & Hedman, E. (2013). Effectiveness of guided Internet-based cognitive behavior therapy in regular clinical settings. *Verhaltenstherapie*, 23(3), 140-148. doi: 10.1159/000354779
- Andersson, G., Bergström, J., Holländare, F., Carlbring, P., Kaldø, V., & Ekselius, L. (2005). Internet-based self-help for depression: Randomised controlled trial. *The British Journal of Psychiatry*, 187(5), 456-461. doi: 10.1192/bjp.187.5.456
- Andersson, G., Hesser, H., Hummerdal, D., Bergman-Nordgren, L., & Carlbring, P. (2013). A 3.5-year follow-up of Internet-delivered cognitive behavior therapy

- for major depression. *Journal of Mental Health*, 22(2), 155-164. doi:
10.3109/09638237.2011.608747
- Andrews, G. (2001). Should depression be managed as a chronic disease? *British Medical Journal*, 322(7283), 419-421. doi:10.1136/bmj.322.7283.419
- Andrews, G., & Williams, A. D. (2015). Up-scaling clinician assisted Internet cognitive behavioural therapy (iCBT) for depression: A model for dissemination into primary care. *Clinical Psychology Review*, 41, 40-48. doi: 10.1016/j.cpr.2014.05.006
- Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *PloS one*, 5(10), e13196. doi: 10.1371/journal.pone.0013196
- Ashurst, E. J., Jones, R. B., Williamson, G. R., Emmens, T., & Perry, J. (2012). Collaborative learning about e-health for mental health professionals and service users in a structured anonymous online short course: Pilot study. *BMC Medical Education*, 12(37). doi: 10.1186/1472-6920-12-37
- Australian Government, Department of Health and Ageing. (2012). *Annual report (vol. 1)*. Retrieved from
[http://www.health.gov.au/internet/main/publishing.nsf/Content/annual-report2012-13/\\$File/Volume%201.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/annual-report2012-13/$File/Volume%201.pdf)
- Backer, T. E. (2000). The failure of success: Challenges of disseminating effective substance abuse prevention programs. *Journal of Community Psychology*, 28(3), 363-373. doi: 10.1002/(SICI)1520-6629(200005)28:3<363::AID-JCOP10>3.0.CO;2-T
- Balas, E. A., & Boren, S. A. (2000). Managing clinical knowledge for health care improvement. *Yearbook of medical informatics*, 2000, 65-70. Retrieved from Institute for Healthcare Improvements website:
<http://www.ihl.org/resources/Pages/Publications/Managingclinicalknowledgeforhealthcareimprovement.aspx>
- Batterham, P. J., Sunderland, M., CEAR, A. L., Davey, C. G., Christensen, H., Teesson, M., ... Butow, P. N. (2015). Developing a roadmap for the translation of e-mental health services for depression. *Australian and New Zealand Journal of Psychiatry*, 49(9), 776-784. doi: 10.1177/0004867415582054

- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford press.
- Becker, E. M., & Jensen-Doss, A. (2013). Computer-assisted therapies: Examination of therapist-level barriers to their use. *Behavior Therapy, 44*(4), 614-624. doi: 10.1016/j.beth.2013.05.002
- Berger, T., Hämmerli, K., Gubser, N., Andersson, G., & Caspar, F. (2011). Internet-based treatment of depression: A randomized controlled trial comparing guided with unguided self-help. *Cognitive Behaviour Therapy, 40*(4), 251-266. doi: 10.1080/16506073.2011.616531
- Bond, G. R., Drake, R. E., McHugo, G. J., Rapp, C. A., & Whitley, R. (2009). Strategies for improving fidelity in the national evidence-based practices project. *Research on Social Work Practice, 19*(5), 569-581. doi: 10.1177/1049731509335531
- Boydell, K. M., Gladstone, B. M., & Volpe, T. (2006). Understanding help seeking delay in the prodrome to first episode psychosis: A secondary analysis of the perspectives of young people. *Psychiatric Rehabilitation Journal, 30*(11), 54-60. doi: 10.2975/30.2006.54.60
- Buntrock, C., Ebert, D., Lehr, D., Riper, H., Smit, F., Cuijpers, P., & Berking, M. (2015). Effectiveness of a web-based cognitive behavioural intervention for subthreshold depression: Pragmatic randomised controlled trial. *Psychotherapy and Psychosomatics, 84*(6), 348-358. doi: 10.1159/000438673
- Burnes, B. (2004). *Managing change: A strategic approach to organisational dynamics*. Harlow: Pearson Education.
- Cameron, P. A. & Thompson, D. R. (2005). Changing the health-care workforce. *International Journal of Nursing Practice, 11*(1), 1-4. doi: 10.1111/j.1440-172x.2005.00499.x
- Carper, M. M., McHugh, R. K., & Barlow, D. H. (2013). The dissemination of computer-based psychological treatment: A preliminary analysis of patient and clinician perceptions. *Administration and Policy in Mental Health and Mental Health Services Research, 40*(2), 87-95. doi: 10.1007/s10488-011-0377-5
- Cuijpers, P., Berking, M., Andersson, G., Quigley, L., Kleiboer, A., & Dobson, K. S. (2013). A meta-analysis of cognitive-behavioural therapy for adult depression,

- alone and in comparison with other treatments. *Canadian Journal of Psychiatry*, 58(7), 376-385.
- Cuijpers, P., Donker, T., van Straten, A., Li, J., & Andersson, G. (2010). Is guided self-help as effective as face-to-face psychotherapy for depression and anxiety disorders? A systematic review and meta-analysis of comparative outcome studies. *Psychological Medicine*, 40(12), 1943-1957. doi: 10.1017/S0033291710000772
- Cuijpers, P., van Straten, A., Smit, F., Mihalopoulos, C., & Beekman, A. (2008). Preventing the onset of depressive disorders: A meta-analytic review of psychological interventions. *American Journal of Psychiatry*, 165(10), 1272-1280. doi: 10.1176/appi.ajp.2008.07091422
- Dalgard, O. S., & Bøen, H. (2008). *Forebygging av depresjon med hovedvekt på individuelle metoder* (Report No. 1). Nydalen: Nasjonalt folkehelseinstitutt.
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4(50). doi: 10.1186/1748-5908-4-50
- Douglas, N. F., Campbell, W. N., & Hinckley, J. J. (2015). Implementation science: Buzzword or game changer? *Journal of Speech, Language, and Hearing Research*, 58(6), 1827-1836. doi: 10.1044/2015_JSLHR-L-15-0302
- Ebert, D. D., Berking, M., Cuijpers, P., Lehr, D., Pörtner, M., & Baumeister, H. (2015). Increasing the acceptance of Internet-based mental health interventions in primary care patients with depressive symptoms. A randomized controlled trial. *Journal of Affective Disorders*, 176, 9-17. doi: 10.1016/j.jad.2015.01.056
- Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature* (FMHI Publication No. 231). Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.610.6226&rep=rep1&type=pdf>
- Friesen, L. N., Hadjistavropoulos, H. D., & Pugh, N. E. (2014). A qualitative examination of psychology graduate students' experiences with guided

- Internet-delivered cognitive behaviour therapy. *Internet Interventions*, 1(2), 41-48. doi: 10.1016/j.invent.2014.04.001
- Gloaguen, V., Cottraux, J., Cucherat, M., & Blackburn, I. M. (1998). A meta-analysis of the effects of cognitive therapy in depressed patients. *Journal of Affective Disorders*, 49(1), 59-72. doi:10.1016/S0165-0327(97)00199-7
- Green, B. N., Johnson, C. D., & Adams, A. (2001). Writing narrative literature reviews for peer-reviewed journals: Secrets of the trade. *Journal of Sports Chiropractic and Rehabilitation*, 15(1), 5-19. doi: 10.1016/S0899-3467(07)60142-6
- Green, L. W., Ottoson, J., Garcia, C., & Robert, H. (2009). Diffusion theory and knowledge dissemination, utilization, and integration in public health. *Annual Review of Public Health*, 30, 151-174. doi: 10.1146/annurev.publhealth.031308.100049
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82(4), 581-629. doi: 10.1111/j.0887-378X.2004.00325.x
- Griffiths, K. M., Farrer, L., & Christensen, H. (2010). The efficacy of Internet interventions for depression and anxiety disorders: A review of randomised controlled trials. [Supplemental article]. *Medical Journal of Australia*, 192(11), 4-11.
- Hadjistavropoulos, H. D., Thompson, M. J., Klein, B., & Austin, D. W. (2012). Dissemination of therapist-assisted Internet cognitive behaviour therapy: Development and open pilot study of a workshop. *Cognitive Behaviour Therapy*, 41(3), 230-240. doi: 10.1080/16506073.2011.645550
- Hadjistavropoulos, H. D., Thompson, M., Ivanov, M., Drost, C., Butz, C. J., Klein, B., & Austin, D. W. (2011). Considerations in the development of a therapist-assisted Internet cognitive behavior therapy service. *Professional Psychology: Research and Practice*, 42(6), 463. doi: 10.1037/a0026176
- Hedman, E., Ljótsson, B., & Lindefors, N. (2012). Cognitive behavior therapy via the Internet: A systematic review of applications, clinical efficacy and cost-effectiveness. *Expert Review of Pharmacoeconomics & Outcomes Research*, 12(6), 745-764. doi: 10.1586/erp.12.67

- Hedman, E., Ljótsson, B., Kaldø, V., Hesser, H., El Alaoui, S., Kraepelien, M., ... Lindefors, N. (2014). Effectiveness of Internet-based cognitive behaviour therapy for depression in routine psychiatric care. *Journal of Affective Disorders, 155*, 49-58. doi: 10.1016/j.jad.2013.10.023
- Hedman, E., Ljótsson, B., Rück, C., Bergström, J., Andersson, G., Kaldø, V., ... Falk, L. (2013). Effectiveness of Internet-based cognitive behaviour therapy for panic disorder in routine psychiatric care. *Acta Psychiatrica Scandinavia, 128*(6), 475-467. doi: 10.1111/acps.12079
- Helse- og omsorgsdepartementet. (2008). *Forskrift om utgifter til poliklinisk helsehjelp* (last updated 05.02.2016). Retrieved from https://lovdata.no/dokument/SF/forskrift/2007-12-19-1761?q=forskrifter+utgifter+helsehjelp+poliklinisk#KAPITTEL_4
- Helsedirektoratet. (2009). *Nasjonale retningslinjer for diagnostisering og behandling av voksne med depresjon i primær- og spesialisthelsetjenesten*. Retrieved from <https://helsedirektoratet.no/Lists/Publikasjoner/Attachments/217/Nasjonale-retningslinjer-for-diagnostisering-og-behandling-av-voksne-med-depresjon-IS-1561.pdf>
- Hofman, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research, 36*(5), 427-440. doi:10. 1007/ s10608-013-9595-3
- Hunsley, J., & Lee, C. M. (2007). Research-informed benchmarks for psychological treatments: Efficacy studies, effectiveness studies, and beyond. *Professional Psychology: Research and Practice, 38*(1), 21. doi: 10.1037/0735-7028.38.1.21
- Institute of Medicine (IOM). (2007). *The Learning Healthcare System: Workshop Summary*. Washington, DC: The National Academies Press. Retrieved from <http://www.nap.edu/catalog/11903.html>
- Johansson, R., & Andersson, G. (2012). Internet-based psychological treatments for depression. *Expert Review of Neurotherapeutics, 12*(7), 861-870. doi: 10.1586/ern.12.63
- Johansson, R., Sjöberg, E., Sjögren, M., Johnsson, E., Carlbring, P., Andersson, T., ... Andersson, G. (2012). Tailored vs. standardized Internet-based cognitive

- behavior therapy for depression and comorbid symptoms: A randomized controlled trial. *PLoS One*, 7(5), e36905. doi: 10.1371/journal.pone.0036905
- Judd, L. L. (1997). The clinical course of unipolar major depressive disorders. *Archive of General Psychiatry*, 54(11), 989-991. doi: 10.1001/archpsyc.1997.01830230015002
- Kenicer, D., McClay, C. A., & Williams, C. (2012). A national survey of health service infrastructure and policy impacts on access to computerised CBT in Scotland. *BMC Medical Informatics and Decision Making*, 12(1), 102. doi: 10.1186/1472-6947-12-102
- Kennedy, N., Abbott, R., & Paykel, E. S. (2003). Remission and recurrence of depression in the maintenance era: Long-term outcome in a Cambridge cohort. *Psychological Medicine*, 33(5), 827-838. doi: 10.1017/S003329170300744X
- Kessing, L. V., Hanen, M. G., & Andersen, P. K. (2004). Course of illness in depressive and bipolar disorders. *The British Journal of Psychiatry*, 185(5), 372-377. doi: 10.1192/bjp.185.5.372
- Kivi, M., Eriksson, M. C., Hange, D., Petersson, E. L., Björkelund, C., & Johansson, B. (2015). Experiences and attitudes of primary care therapists in the implementation and use of Internet-based treatment in Swedish primary care settings. *Internet Interventions*, 2(3), 248-256. doi: 10.1016/j.invent.2015.06.001
- Kohn, R., Saxena, S., Levav, I., & Saraceno, B. (2004). The treatment gap in mental health care. *Bulletin of the World Health Organization*, 82(11), 858-866.
- Kringlen, E., Torgersen, S., & Cramer, V. (2001). A Norwegian epidemiological study. *The American Journal of Psychiatry*, 158(7), 1091-1098. doi: 10.1176/appi.ajp.158.7.1091
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The Phq – 9. *Journal of General Internal Medicine*, 16(9), 606-613. doi: 10.1046/j.1525-1497.2001.016009606.x
- Leal, J., Luengo-Fernández, R., Gray, A., Petersen, S., & Rayner, M. (2006). Economic burden of cardiovascular diseases in the enlarged European Union. *European Heart Journal*, 27(13), 1610-1619. doi: 10.1093/eurheartj/ehi733
- Lewinsohn, P. M., Zeiss, A. M., & Duncan, E. M. (1989). Probability of relapse after recovery from an episode of depression. *Journal of Abnormal Psychology*, 98(2), 107. doi: 0021-843X/89/S00.75

- Lillevoll, K. R., Wilhelmsen, M., Kolstrup, N., Høifødt, R. S., Waterloo, K., Eisemann, M., & Risør, M. B. (2013). Patients' experiences of helpfulness in guided Internet-based treatment for depression: Qualitative study of integrated therapeutic dimensions. *Journal of Medical Internet Research*, *15*(6), e126. doi: 10.2196/jmir.2531
- Lintvedt, O. K., Griffiths, K. M., Eisemann, M., & Waterloo, K. (2013). Evaluating the translation process of an Internet-based self-help intervention for prevention of depression: A cost-effectiveness analysis. *Journal of Medical Internet Research*, *15*(1), e18. doi: 10.2196/jmir.2422
- Lutz, W. (2003). Efficacy, effectiveness, and expected treatment response in psychotherapy. *Journal of Clinical Psychology*, *59*(7), 745-750. doi: 10.1002/jclp.10169
- Marks, I. M., Cavanagh, K., & Gega, L. (2007). Computer-aided psychotherapy: Revolution or bubble? *The British Journal of Psychiatry*, *191*(6), 471-473. doi: 10.1192/bjp.bp.107.041152
- Mathers, C. D., & Loncar, D. (2006). Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Medicine*, *3*(11), 2011–2030. doi: 10.1371/journal.pmed.0030442
- McCracken, C., Dalgard, O. S., Ayuso-Mateos, J. L., Casey, P., Wilkinson, G., Lehtinen, V., & Dowrick, C. (2006). Health service use by adults with depression: Community survey in five European countries. *The British Journal of Psychiatry*, *189*(2), 161-167. doi: 10.1192/bjp.bp.105.015081
- Mohr, D. C., Ho, J., Duffecy, J., Baron, K. G., Lehman, K. A., Jin, L., & Reifler, D. (2010). Perceived barriers to psychological treatment and their relationship to depression. *Journal of Clinical Psychology*, *66*(4), 394-409. doi: 10.1002/jclp.20659
- Mueller, T. I., Leon, A. C., Keller, M. B., Solomon, D. A., Endicott, J., Coryell, W., ... Maser, J. D. (1999). Recurrence after recovery from major depressive disorder during 15 years of observational follow-up. *American Journal of Psychiatry*, *156*(7), 1000-1006.
- National Institute for Health and Clinical Excellence. (2009). *Depression in adults: recognition and management*. Retrieved from <https://www.nice.org.uk/guidance/cg90/resources/depression-in-adults-recognition-and-management-975742636741>

- Perini, S., Titov, N., & Andrews, G. (2009). Clinician-assisted Internet-based treatment is effective for depression: Randomized controlled trial. *Australian and New Zealand Journal of Psychiatry*, *43*(6), 571-578. doi: 10.1080/00048670902873722
- Proudfoot, J. G. (2004). Computer-based treatment for anxiety and depression: Is it feasible? Is it effective? *Neuroscience & Biobehavioral Reviews*, *28*(3), 353-363. doi: 10.1016/j.neubiorev.2004.03.008
- Proudfoot, J., Goldberg, D., Mann, A., Everitt, B., Marks, I., & Gray, J. A. (2003). Computerized, interactive, multimedia cognitive-behavioural program for anxiety and depression in general practice. *Psychological Medicine*, *33*(02), 217-227. doi: 10.1017/S0033291702007225
- Purebl, G., Petera, I., Shields, L., Tóth, M. D., Székely, A., Kurimay, T., ... Martin Abello, K. (2015). Joint action on mental health and well-being, depression, suicide prevention and e-health: Situation analysis and recommendations for action. Retrieved from <http://www.mentalhealthandwellbeing.eu/assets/docs/publications/WP4%20Final.pdf>
- Richards, D., & Richardson, T. (2012). Computer-based psychological treatments for depression: A systematic review and meta-analysis. *Clinical Psychology Review*, *32*(4), 329-342. doi: 10.1016/j.cpr.2012.02.004
- Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression. (2004). Australian and New Zealand clinical practice guidelines for the treatment of depression. *Australian and New Zealand Journal of Psychiatry*, *38*, 389-407. doi: 10.1080/j.1440-1614.2004.01377.x
- Sandanger, I., Nygård, J. F., Ingebrigtsen, G., Sørensen, T., & Dalgard, O. S. (1999). Prevalence, incidence and age at onset of psychiatric disorders in Norway. *Social Psychiatry and Psychiatric Epidemiology*, *34*(11), 570-579. doi: 10.1007/s001270050177
- Sinclair, C., Holloway, K., Riley, G., & Auret, K. (2013). Online mental health resources in rural Australia: Clinician perceptions of acceptability. *Journal of Medical Internet Research*, *15*(9), e193. doi: 10.2196/jmir.2772
- So, M., Yamaguchi, S., Hashimoto, S., Sado, M., Furukawa, T. A., & McCrone, P. (2013). Is computerised CBT really helpful for adult depression? A meta-

- analytic re-evaluation of CCBT for adult depression in terms of clinical implementation and methodological validity. *BMC Psychiatry*, 13(113). doi: 10.1186/1471-244X-13-113
- Solomon, D. A., Keller, M. B., Leon, A. C., Mueller, T. I., Lavori, P. W., Shea, T., ... Endicott, J. (2000). Multiple recurrences of major depressive disorder. *American Journal of Psychiatry*, 157(2), 229-233. doi: 10.1176/appi.ajp.157.2.229
- Sund, A. M., Larsson, B., & Wichstrøm, L. (2011). Prevalence and characteristics of depressive disorders in early adolescents in central Norway. *Child and Adolescent Mental Health*, 5(28). doi: 10.1186/1753-2000-5-28
- Svanborg, P., & Åsberg, M. (1994). A new self-rating scale for depression and anxiety states based on the Comprehensive Psychopathological Rating Scale. *Acta Psychiatrica Scandinavica*, 89(1), 21-28. doi: 10.1111/j.1600-0447.1994.tb01480.x
- Titov, N. (2007). Status of computerized cognitive behavioural therapy for adults. *Australian and New Zealand Journal of Psychiatry*, 41(2), 95-114. doi: 10.1080/00048670601109873
- Titov, N. (2011). Internet-delivered psychotherapy for depression in adults. *Current Opinion in Psychiatry*, 24(1), 18-23. doi: 10.1097/YCO.0b013e32833ed18f
- Titov, N., Andrews, G., Davies, M., McIntyre, K., Robinson, E., & Solley, K. (2010). Internet treatment for depression: A randomized controlled trial comparing clinician vs. technician assistance. *PloS one*, 5(6), e10939. doi: 10.1371/journal.pone.0010939
- Wahlbeck, K. (2009). Background document for the Thematic Conference on Prevention of Depression and Suicide. Luxembourg: European Communities. © European Communities, 2009. Retrieved from http://ec.europa.eu/health/ph_determinants/life_style/mental/docs/depression_background_en.pdf
- Wang, P. S., Demler, O., & Kessler, R. C. (2002). Adequacy of treatment for serious mental illness in the United States. *American Journal of Public Health*, 92(1), 92-98. doi: 10.2105/ajph.92.1.92

- Wang, P. S., Simon, G., & Kessler, R. C. (2003). The economic burden of depression and the cost-effectiveness of treatment. *International Journal of Methods in Psychiatric Research, 12*(1), 22-33. doi: 10.1002/mpr.139
- Wangberg, S. C., Gammon, D., & Spitznogle, K. (2007). In the eyes of the beholder: Exploring psychologists' attitudes towards and use of e-therapy in Norway. *CyberPsychology & Behavior, 10*(3), 418-423. doi: 10.1089/cpb.2006.9937
- Wichers, M., Geschwind, N., van Os, J., & Peeters, F. (2010). Scars in depression: Is a conceptual shift necessary to solve the puzzle? *Psychological Medicine, 40*(3), 359-365. doi: 10.1017/S0033291709990420
- Wilhelmsen, M., Høifødt, R. S., Kolstrup, N., Waterloo, K., Eisemann, M., Chenhall, R., & Risør, M. B. (2014). Norwegian general practitioners' perspectives on implementation of a guided web-based cognitive behavioral therapy for depression: A qualitative study. *Journal of Medical Internet Research, 16*(9). doi: 10.2196/jmir.3556
- Williams, A. D., & Andrews, G. (2013). The effectiveness of Internet cognitive behavioural therapy (iCBT) for depression in primary care: A quality assurance study. *PLoS One, 8*(2), e57447. doi: 10.1371/journal.pone.0057447

