Effective Structure and Contents of Guidance in the Treatment of Common Mental Disorders with Internet-Based Cognitive Behavioral Therapy: A Review of the Literature

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Abstract

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Background: Depression and anxiety disorders are the most common mental disorders among adults and are associated with a high burden of disease. While there are effective treatments for these disorders, many do not get help. Today, new technologies enable Internet-based treatment programs to be delivered directly to patients at low cost, available at any time. Research has demonstrated a promising effect on guided Internet-based cognitive behavioural therapy (iCBT), and its routine care implementation is increasing. Guidance is considered one of the three main components of iCBT. The role of guidance in this treatment, however, is not yet determined. This paper aims to review the existing literature on the structure and content of effective iCBT guidance in the treatment of depression and anxiety.

Method: The thesis will be presented as a review of the literature of RCTs on guidance in iCBT. The paper is twofold, (1) comparing different degree or modes of guidance in iCBT and (2) retrospective analysis of therapist behaviours. Based on the systematic search in PyscINFO and hand search, 28 studies were included.

Results: Six subgroups of trials exploring guidance in iCBT were identified: guided versus unguided iCBT (n=16); level of therapist expertise (n=5); human versus automated guidance (n=1); communication modality and synchronicity of guidance (n=2); scheduling of human guidance (n=3), and intensity of guidance (n=1). Two trials were included in the analysis of therapist behaviour. The results suggest that iCBT can provide good treatment effect independent of human guidance, and automated guidance provides similar results to human guidance. Based on the included trials, the level of therapist expertise, intensity, and guidance modality appear to be of minor importance. However, scheduling of the guidance may provide better treatment effect than unscheduled guidance. That therapists reinforce and strengthen clients' positive behaviour also appears to be an essential part of the guidance.

Discussion/conclusions: There were few trials in each category and there is still limited knowledge of the distinct components of the guidance in iCBT. The findings from this review highlight that in predicting the effect in iCBT, some guidance factors may be more important than others. It is a promising way to overcome common barriers in mental health care. However, it requires new roles for the psychologists who provide this treatment and underlines the need for updated research and guidance information.

Forord

Å skrive hovedoppgave er noe jeg har gledet meg til som en avslutning på studiet, og etter en lang prosess er jeg stolt og glad for alt jeg har lært. Jeg vil først takke hovedveilederen min Bjørn Lau for engasjement, justeringer og spennende diskusjoner rundt oppgaven, og jeg har alltid sett frem til møtene våre. Jeg vi også takke Henrik H. Jahren som er den som har gjort meg interessert i feltet og lært meg aller mest om mulighetene som finnes i nye behandlingsmetoder. Takk til de som har vært så snille og lest gjennom deler av oppgaven, Pål Nystuen, Eirik K. Kristianslund og pappa. Og takk for at vi er et team, Simen!

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1 Introduction

Despite the prevalence and impact of mental disorders, strong indicators show that most potential patients do not seek or receive mental health treatment (Reneflot et al., 2018). Hence, we can talk about a treatment gap. Effective therapies are available, but unfortunately, many people do not have access to professionals who are skilled in delivering these types of treatments, do not know where to get help, or do not consult existing health services. Therefore, the gap between each person in need of help and the treatment available can be caused by both barriers to seek help and the society not being able to provide help to all.

Over the past decades, there has been a rapid development of communication technology that have been adopted by other fields such as communication, business, marketing, and education. This technological revolution has not had a similar impact on mental health care. Nevertheless, there is a growing interest in new technological devices and information sources delivered via the Internet. Examples of new treatment methods are apps, health registration, virtual reality, chatbots, e-therapy, and Internet-based treatment. A majority of the population in Norway (84 per cent) are generally positive about the use of new technology in health services (Flesland, 2018).

Internet-based treatment programs, such as guided Internet-based cognitive behavioural therapy (iCBT), can be delivered directly to clients at a low cost, available at any time. iCBT uses modern technology to communicate tools from cognitive behavioural therapy. Guidance in these treatment programs requires a new role for psychologists and a need for updated knowledge on how to deliver this treatment. This paper is a contribution to clarifying the updated research knowledge of guidance in iCBT so that therapists can contribute with evidence-based guidance in the treatment of mental disorders. Therefore, I will examine the effect of different forms of guidance in iCBT, both in terms of guidance structure and content.

I will begin with a brief theoretical introduction on depression and anxiety, but the main focus of this paper will be on the intervention, as the studies include a broad population. Then, I will introduce self-help before I define Internet-based psychological treatments and specifically iCBT. I will describe the content of iCBT and summarise the effect of these interventions. I close the introduction with the thesis statement. Furthermore, I present the methodological work with a description of the literature search and the collection of data.

Then I will present the results of the literature search based on different categories of the structure of guidance, as well as the content in the guidance in iCBT. Finally, I will discuss the results presented, clinical implications and direction in further research.

2 Background

2.1 Description of the Condition: Depression and Anxiety

Depression and anxiety disorders are the most common mental disorders for adults in Norway and are associated with much distress (Reneflot et al., 2018). Depression ranks fourth in the global burden of disease (WHO, 2008) and is largely a recurring disorder (Halvorsen, Wang, Eisemann, & Waterloo, 2010; Kessing, Hansen, Andersen, & Angst, 2004). When compared to other chronic diseases, mental disorders involves high indirect costs, such as sick days, disability, and early retirement (Wittchen & Jacobi, 2005).

The primary treatment for anxiety and depression has been pharmacotherapy and psychotherapy, and cognitive behavioural therapy is commonly used. However, only a minority of people with depression and anxiety in Norway seek or receive treatment for their struggles (Reneflot et al., 2018). Treatment barriers include costs, long waiting lists, limited access to treatment where one lives, perceived stigma, or expectations that the problem itself will go away on its own (Kohn, Saxena, Levav, & Saraceno, 2004).

2.2 Description of Intervention: Internet-Based Cognitive Behavioural Therapy (iCBT)

First, the treatment rationale of cognitive behavioural therapy will be presented, before continuing with guided self-help and, more specifically, self-help via the Internet. Definitions of Internet-based psychological treatments will be discussed and eventually Internet-based cognitive behavioural therapy including the guidance will be described.

2.2.1 Cognitive Behavioural Therapy (CBT)

Cognitive behavioural therapy (CBT) is one of the best documented psychological therapies for a variety of mental disorders (Butler, Chapman, Forman, & Beck, 2006). Hence, CBT is an evidence-based treatment for mental disorders including depression, anxiety, and eating disorders, as well as several medical conditions (Lebow, 2017). The underlying principles of CBT posit that psychopathology, or emotional disturbances, are the result of cognitive

distortions and maladaptive behaviour (A. T. Beck, 1979). Most CBT programs incorporate psychoeducation about the mental disorder and present a model for recovery that includes learning techniques and strategies to reduce maladaptive thoughts, feelings, and behaviours that characterise and maintain symptoms of the mental disorder. CBT often includes psychoeducation, relaxation exercises, coping skills training, exposure, stress management, and assertiveness training (J. S. Beck, 2011). The treatment usually takes 15-20 sessions and requires active homework. The treatment can also be delivered with self-help.

2.2.2 Guided Self-Help

Self-help includes a clinician giving information or referring a client to sources of information, which can take form as a brochure, book, video, group or Internet, such as e-learning programs or a treatment program (Berge & Repål, 2012). It is a commonly used method to provide information or increase mental health. In a survey with 815 clinical psychologists in Norway, the majority (94 per cent) reported they recommend self-help materials to their clients (Nordgreen & Havik, 2011). Also, approximately half of the psychologists (55 per cent) in the survey had received requests from their clients regarding self-help materials.

Self-help can be categorised as both guided and unguided self-help (Cuijpers & Schuurmans, 2007). For a patient, guided self-help includes predictable cooperation with a clinician who gives information and support through the process (Nordgreen & Havik, 2011). It may include conversations with a clinician where the patient can ask questions or work with motivation (Berge & Repål, 2012). In unguided self-help, however, the patients have access to evidence-based methods and strategies, but the patients complete the process on their own (Nordgreen & Havik, 2011). Bibliotherapy is treatment with self-help literature, and this form of guided self-help using text material or books has been studied in controlled trials for a long time. Results have shown moderate to large effects for a range of psychiatric and somatic conditions (Clum & Watkins, 2008).

2.2.3 The Development of Internet-Based Psychological Treatments

Internet-based psychological treatments such as iCBT were developed later but are inspired by and use a lot of the same content as bibliotherapy. Computerised CBT (cCBT) was first introduced in 1990 in the form of a CBT manual delivered via CD-ROM (Selmi, Klein, Greist, Sorrell, & Erdman, 1990). Also, programs developed from bibliotherapy of treatment manuals, delivered through PDF modules sent by paper or email have previously been

defined as Internet treatment. In the development from cCBT to iCBT, the programs were delivered through a treatment platform on the Internet. In addition, these platforms often included new and safe communication modalities such as text messages. Some iCBT platforms may also include interactive homework and allow clinicians to see the information the client writes in their homework.

Australia, the Netherlands, England, and Sweden were among the first countries to implement Internet treatment: Australia with their research of MoodGYM (Christensen & Griffiths, 2001) and the Netherlands with *Interapy* (Lange, van de Ven, Schrieken, & Emmelkamp, 2001). With their first controlled trial in 2000, Sweden also began early. They used a static web page and emailed text documents to the participants (Ström, Pettersson, & Andersson, 2000). Internet-based treatment has been part of ordinary healthcare in both England and Sweden since 2007 (Berge & Repål, 2012). In Norway, Haukeland University Hospital was the first to offer guided Internet-based treatment in the specialist health services with eMeistring (Helse Bergen, 2019). In the national guidelines for treatment of mild depression in Norway, self-help programs with literature or Internet-based programs based on CBT are recommended (Helsedirektoratet, 2009). Today Internet-based treatment programs are available in a wide range of languages and for different diagnoses. However, there are still new possibilities in IT development, especially related to mobile applications, direct feedback, video consultation, apps, virtual reality, and chatbots.

2.2.4 Definition of Internet-Based Psychological Treatments and Internet-Based Cognitive Behavioural Therapy

Internet-based psychological interventions are developed as a form of self-help and often involve a structured, online program based on evidence-based psychological treatment methods. New technology has provided opportunities for the field, and with the rapid development, various names are used and have previously been used interchangeably to describe the same treatments (Barak, Klein, & Proudfoot, 2009).

Examples of terms used for interventions include web-based interventions, online counselling and therapy, Internet-operated therapeutic software, web-based therapy, e-therapy, eHealth, e-interventions, and other online activities (Barak et al., 2009). Also, terminologies such as telehealth, m-health, telemedicine, connected health (Hollis et al., 2015), Internet-based psychological interventions (IPI) (Shim, Mahaffey, Bleidistel, & Gonzalez, 2017) and digital interventions (DI) (Morton et al., 2017) are used.

There is a need for a distinction between various types of treatment since treatment over the Internet can include both videoconference and chats as well as apps and Internet-based programs with or without guidance. Barak et al. (2009) classify Internet-supported interventions into four categories, based on their primary approaches: (1) web-based interventions, (2) online counselling therapy, (3) Internet-operated therapeutic software, and (4) other online activities.

On the other hand, Purebl et al. (2015) classify e-health in several groups including psycho-education, e-interventions, e-screening, self-management e-interventions, self-help e-interventions, e-therapies, telehealth care, and serious games. In this paper, the most relevant are self-managing- and self-help e-interventions. *Self-managing e-interventions* aim to help people manage their symptoms and learn new strategies to cope with their mental health problems and can be both preventive and treatment-oriented (e.g., Moodgym). *Self-help e-interventions* gives techniques and tools, so people with mental health problems can learn to handle their problems on their own and improve their health (e.g., Free from Panic, Beating the Blues).

These interventions are described similarly to what Barak and colleagues defines as *web-based intervention*:

> A web-based intervention is a primarily self-guided intervention program that is executed by means of a prescriptive online program operated through a website and used by consumers seeking health- and mental-health related assistance. The intervention program itself attempts to create positive change and/or improve/enhance knowledge, awareness, and understanding via the provision of sound health-related material and use of interactive web-based components. (Barak et al., 2009)

Barak et al. (2009) further present three subtypes of web-based interventions: (1) web-based education interventions, (2) self-guided web-based therapeutic interventions, and (3) human-supported web-based therapeutic interventions. Web-based educational interventions are designed mainly to provide information about a particular problem. On the other hand, the self-guided and human-supported web-based therapeutic interventions are designed as treatment interventions. The content is based on a theory (e.g., cognitive behavioural therapy or psychodynamic therapy). This paper will focus on the second and third subtype, as it will

focus on the treatment of mental disorders with the use of Internet-based interventions both with and without guidance, based on cognitive behavioural therapy.

When the content of the interventions is based on cognitive behavioural therapy, Lindfors & Anderson define this as therapist-guided Internet-based cognitive behavioural therapy:

> A therapy that is based on self-help books, guided by an identified therapist which gives feedback and answers to questions, with a scheduling that mirrors face to face treatment, and which also can include interactive online features such as queries to obtain passwords in order to get access to treatment modules. (Lindefors & Andersson, 2016)

It can be somewhat unclear what distinguishes computerised or Internet-based interventions from self-help with books including guidance. As stated in the definition, the iCBT 'also can include interactive online features', but this is not mandatory. In addition, the example of interactive features was safe admission to the web page and not multimedia choices. Thus, according to Lindefors and Andersson (2016), guided iCBT can vary from technically online interactive programs to downloadable and printable text files. Others have called the latter approach net-biblio CBT. According to Marks, Cavanagh, and Gega (2007), some of the treatment decisions have to be delegated to the computer, to distinguish computerised interventions from classic self-help books. Also, Barak et al. (2009) define multimedia choices and interactive online activities as key features in a web-based intervention. There will probably be a need for new definitions alongside the rapid technological development.

As demonstrated in this section on definitions, this is still a relatively new research field with few consistent concepts. It will be impossible not to use different terms when referring to what has been done in research. In this review, I will focus on CBT delivered through the Internet: Internet-based cognitive behavioural therapy (iCBT). When not referring to iCBT, I will use the term used in the article or trial I am referring to. When several terms are included, I will use Internet-based psychological treatment.

2.2.5 Treatment Programs

After having discussed the definitions of the term Internet-based treatment programs, we can go deeper into the description of this form of treatment. Internet-based cognitive behavioural therapy contains several essential components that distinguish it from ordinary self-help or bibliotherapy. Barak et al. (2009) present a categorisation model with four key components

that are essential elements of a typical web-based intervention: (1) program content, (2) multimedia use/choices, (3) provision of interactive online activities, and (4) provision of guidance and supportive feedback. A few years later, in the book *Guided Internet-Based Treatments in Psychiatry*, edited by Lindefors and Andersson (2016), three indispensable parts of iCBT were identified: (1) secure electronic treatment platform, (2) proper treatment program, and (3) clinician guidance.

As with the definitions, different research teams focus on separate components of the treatment, and Barak and colleagues focus more intensively on the multimedia use and interactive activities, which is natural to consider related to the development and potential that lies in the technology related to pedagogy, engagement, and practise in the programs. I will use the latest and tripartite division made by Lindfors and Andersson to describe the iCBT programs and implement components from Barak and colleagues in the text.

1. Treatment Platform

The treatment platform is the software system where the treatment programs are uploaded. Given the risk of revealing sensitive information, data security is important. It is essential that the treatment platform can keep the client's information safe and have a secure login. To increase the utility of the programs, the platform should be available for different modalities such as computers, tablets, and smartphones. Modern smartphone applications (apps) are also increasingly integrated into iCBT programs. With the Internet, information and treatment are always accessible, and it can be updated. There are also increasing possibilities in interactive multimedia that can contribute to engagement that is not possible with conventional methods. When users leave information on the platform, it may also be possible to tailor the treatment components to the users need. Many platforms have a drip feed that makes modules locked until a user has worked with a module for a specific amount of time. As assignments and tasks are completed, the platform opens new modules. Alternatively, the therapist opens the next module when the user has done the assignments.

Assessment is often included in the platform. The Internet has made it much easier to collect data using computers, both for research and information related to treatment. A screening can often help users find a program related to their needs. Some platforms also can safely assess symptom level between every module and before and after a treatment program. Mason and Andrews (2014) compared automated Internet assessment and assessment with a therapist before iCBT and found that there was no difference in treatment outcome, and both groups

showed significant improvement. However, there is still limited research, and in a research setting or regular health care, a diagnostic interview is often done by a therapist.

2. Treatment Programs

The majority of treatment programs are based on face-to-face manuals or self-help materials, similar to text-books, and include psychoeducation and homework assignments. The programs are usually divided into modules to be completed, with 6-15 modules in a program. These often correspond to usual treatment sessions in CBT (e.g., *Learn about CBT* or *Automatic Thoughts*).

The primary format has been text, either as a PDF that can be downloaded or directly on the treatment platform. Internet-based intervention can vary between large use of text, or the inclusion of other multimedia options including pictures, graphics, animations, audio, and video (Barak et al., 2009). It is now both inexpensive and easy to stream videos and audio files, illustrations, and pictures, compared to earlier when Internet access was expensive. Also, interactive features, such as a quiz, are being used.

Treatment Content

Barak et al. (2009) broadly define two main types of content in the programs: educational content and content intended to create cognitively and/or behavioural therapeutic change.

There exist programs based on psychodynamic therapy (Johansson, Ekbladh, et al., 2012), interpersonal and attachment-focused theories (Donker et al., 2013), problem-focused therapy (Hoek, Schuurmans, Koot, & Cuijpers, 2012), mindfulness-based treatment (Boettcher et al., 2014), acceptance- and commitment therapy (Kelson, Rollin, Ridout, & Campbell, 2019), and cognitive behavioural therapy (Carlbring, Andersson, Cuijpers, Riper, & Hedman-Lagerlöf, 2018). Most programs to date are based on cognitive behavioural therapy (CBT).

In CBT, the treatment typically begins with psychoeducation and ends with relapse prevention. These courses often include core skills of CBT such as self-monitoring, cognitive restructuring, and behavioural experiments to change unhelpful cognitions, graded exposure to reduce avoidance, activity scheduling to increase engagement in physical exercise, pleasurable and achievement-related activities, and structured problem-solving (Andrews, 2015). CBT matches well with this type of treatment due to treatment manuals,

psychoeducation, and homework, and it is a well-established tradition in this approach to let the patient gain access to theories and tools (Nordgreen & Havik, 2011).

Internet programs often include fixed content and are linear in structure. However, clients differ, and it is a challenge to be both general and specific enough to touch the client's challenges and needs. Comorbidity is common, and the Internet program also can treat mixed diagnosis. Transdiagnostic and tailored programs are two alternative ways of combining program content. Through these programs, researchers and clinicians have tried to make programs based on the patient's combination of symptoms, not a diagnosis alone.

Transdiagnostic treatments combine underlying principles of treatment across mental disorders without tailoring the treatment to specific diagnoses (McEvoy, Nathan, & Norton, 2009). Hence, transdiagnostic CBT programs combine core components of the treatment to deliver a program relevant independent of diagnosis. These programs have shown similar effect as disorder-specific programs for depression and anxiety (Newby, Twomey, Li, & Andrews, 2016).

Tailored programs are similar to standard iCBT programs including psychoeducation and relapse preventions, but the treatment is set up according to case formulations and client preferences, not only based on diagnosis (Nordgreen & Repål, 2019). It is also possible to tailor programs with more or less difficult modules, based on the client's education level and motivation (Lindefors & Andersson, 2016). In a trial, Carlbring et al. (2011) divided different iCBT programs for generalised anxiety disorder, panic disorder, social anxiety disorder, and depression disorder into 16 modules. Based on a structured interview about symptoms and personal preference with a clinician, the patient received a custom-made program of 6-10 modules, with content based on their challenges. Participants in the treatment group demonstrated better outcomes than the active control group with a monitored online discussion forum (Carlbring et al., 2011). Also, in the trial by Silfvernagel et al. (2012), participants received individually tailored iCBT for anxiety, based on an online questionnaire and a face-to-face diagnostic interview. The results indicated statistically significant improvement. However, the trial was conducted with only eleven participants and not compared to non-tailored programs.

3. Guidance

Human guidance in iCBT has been defined as 'guidance by an identified therapist who gives feedback and answers to questions, with a scheduling that mirrors face-to-face treatment' (Lindefors & Andersson, 2016). However, as we will see throughout the trials conducted, the guidance can vary both in terms of the person not always being a therapist, and the scheduling of conversations.

When a therapist conducts the guidance, the therapist should evaluate whether Internet-based treatment is an appropriate treatment for the client, provide information about the treatment, guide the client through the program modules, and evaluate whether the client needs further help if they do not progress (Nordgreen & Repål, 2019). The guidance can be done through different modalities, and on average, the guidance takes about 10 minutes a week (Lindefors & Andersson, 2016). In the platform, it is often possible to have direct safe communication, and the client can go back and look at feedback and conversations with the therapist, something that is not possible in a face-to-face session where they do not record the conversation. Other modalities include phone, video, discussion forums, or chat.

Unguided interventions were more common in the early years of the research field (Richards & Richardson, 2012). An alternative to this has been developed with automated guidance, often through email reminders. When clients receive automated emails, however, they cannot ask questions that are defined as one of the main components in the definition mentioned above. This also applies to the use of technicians providing the guidance, when the clients can neither get answers to their treatment- or symptom-related questions. This alternative way of providing guidance, challenge the research field in what should be defined as guidance in iCBT.

2.2.6 Treatment Effects of Internet-Based Cognitive Behavioural Therapy

There is strong evidence that psychological treatment, particularly cognitive behavioural therapy, can be effectively delivered online with large effect sizes to treat anxiety (G Andrews et al., 2018; Olthuis, Watt, Bailey, Hayden, & Stewart, 2016) and depression (G Andrews et al., 2018; Karyotaki et al., 2017; Richards & Richardson, 2012). In the systematic review and meta-analysis by Andersson, Cuijpers, Carlbring, Riper, and Hedman (2014) and the updated version by Carlbring et al. (2018) with 20 studies included, results indicated that guided iCBT provided similar overall effects as face-to-face therapy when both psychiatric and somatic disorders were included. Andersson, Rozental, Shafran, and Carlbring (2018)

collected data from 14 studies that included measures on long-term effects with an average follow-up period of three years. The average results were an improvement from baseline with 50 per cent. Due to outliers, the effects may be overestimated, but results also show that it is likely that guided iCBT can have enduring effects.

2.2.7 Research of Guidance in Internet-Based Psychological Treatment

Reviews and meta-analysis have earlier collected results of guidance in Internet-based psychological treatment. In an early meta-analysis by Spek et al. (2007), differences were found between guided and unguided interventions, where interventions with therapist guidance (n=5) had a large mean effect size, while interventions without therapist guidance (*n*=6) had a small mean effect size.

Richards and Richardson (2012) conducted a review and meta-analysis on the RCTs of computer-based psychological treatments and examined variables related to outcome. In their subgroup analysis, they compared guided interventions versus unguided interventions (n=21), therapist guidance versus administrative guidance (n=13), and asynchronous versus synchronous guidance (n=10). The guided interventions had significantly higher effect sizes (mean *d*=.78) than the unguided interventions (mean *d*=.36). The meta-analysis did not find significant differences between guiding provided by a technician or a clinician nor when comparing synchronous or asynchronous guidance.

These two meta-analyses did not use trials that compared the conditions directly in the analysis; hence the programs might include very different components.

Baumeister, Reichler, Munzinger, and Lin (2014) presented a systematic review and meta-analysis specific for guidance in Internet-based mental health interventions. Their analysis included comparison of guided versus unguided interventions (n=8), dose-response relationship (n=1), qualification of e-coaches (n=4), and communication mode (n=1). They included only trials directly comparing these factors. The guided and unguided interventions did not significantly differ but showed a tendency towards better effect in guided interventions. They neither found significant differences in the trials comparing dose, qualification of the coaches, or communication modality.

In the scoping review by Shim et al. (2017) on Internet-based interventions (IPIs), they expanded the scope by including trials directly comparing one of seven different guidance

factors: presence of guidance (n=9), therapist expertise (n=5), human factor (n=3), delivery mode (n=2), synchronicity of communication (n=2), schedule of support (n=3), and intensity of support (n=1). Only the factor comparing scheduling of guidance had a significant effect on the treatment outcomes, with scheduled guidance resulting in better outcomes than unscheduled guidance.

3 Aim and Objectives

Research has shown promising effect for iCBT, and its implementation into routine care is increasing in several areas and countries. Guidance is considered one of the three main components of iCBT (Lindfors & Andersson, 2016). However, the role of the guidance in this treatment is still not established. The scope of this paper is to review the existing literature on the structure and content of effective guidance in iCBT in the treatment of common mental disorders. There will be a special focus on guidance factors related to the successful structure of guidance. By coding the guidance factors, I will be able to identify what components correlate with the effect of guidance and explore whether there exist any gaps in the literature, focusing on quantitative trials.

The gold standard for determining the effect of an intervention is the randomised controlled trial (RCT), where different methods are compared in a controlled setting. Comparative studies have been widely used in the research of guidance comparing different conditions related to structure. However, to this date, research comparing different content of guidance in iCBT does not exist. To understand mechanisms related to the most effective guidance content or therapist behaviour, I have, therefore, considered retrospective studies where researchers have analysed the guidance content and correlated this to treatment effect. However, such studies are only available for email guidance, and not for synchronous contact.

Thesis Statement

Based on the theory presented here, I will go through research on iCBT with focus on guidance to look further into the question:

> What are the most effective structure and content of guidance in internet-based cognitive behavioural therapy in the treatment of depression and anxiety?

4 Method

Study Design. The thesis is presented as a review of relevant literature. The paper is twofold, (1) comparing different degree or modes of guidance in iCBT, and (2) a retrospective analysis of the effect of therapist behaviours.

4.1 Inclusion Criteria for Reviewed Studies

Before I completed the search, I decided the inclusion criteria for the review of guidance in iCBT.

The inclusion criteria were: (1) published in a peer-reviewed journal January 2004 to January 2019, (2) in English, (3) participants over 18 years old, (4) the intervention studied was an Internet-based cognitive behavioural therapy, (5) treatment of anxiety or depression, (6) treatment was investigated with a randomised controlled trial (RCT) design, (7) included human guidance, (8) focus on the effect of guidance, (9) reliable and valid outcome measures for anxiety or depression, and (10a) comparing variations of iCBTs with regard to structure OR (10b) analyse content of guidance.

I included only RCTs because this design is considered the best to inform about the effect of an intervention (Helsebiblioteket, 2016). I have chosen to include studies from the past 15 years because of technical development with advanced multimedia and broader Internet access. Also, there has been a great development in handheld technologies (e.g., smartphones) during this time.

4.2 Search Methods for Identification of Studies

A systematic database search and additional hand searches were conducted.

4.2.1 Electronic Searches

In April 2018, I conducted a number of exploratory searches in PsycINFO and Google Scholar and reviewed the title, abstract, and keywords in relevant articles. Based on these searches and other relevant literature, I composed a list of keywords. This list (*table 1*) forms the basis for the search in the search engine OVID PsycINFO. OVID PsycINFO contains articles from more than 1,400 peer-reviewed journals in medicine, nursing, and health professions, behavioural science, basic research, humanities, and technology. OVID PsycINFO is administered by the American Psychological Association (APA). The search was last updated on 31 January 2019.

The search was carried out in PsycINFO as described in *table 1*. It was structured so that the first part (1-3) contains three synonyms to cover the term "online": web* OR Internet* OR online*. The second part (5-7) contained synonyms for the selected intervention: cognitive

therap* OR cognitive behavio* therap* OR self-help. The third part (9-10) sought to include synonyms of guidance: guid* OR support*. The next section (12-14) tried to include randomised controlled trials: random* OR control* OR RCT. These four parts were connected and limited to the period after 2004. The search identified 370 articles in PsycINFO.

Table 1.
Search terms used in OVID PsycINFO

No.	Search terms	
1	web*	
2	Internet*	
3	online*	
4	1 or 2 or 3	
5	cognitive therap*	
6	cognitive behavio* therap*	
7	self-help	
8	5 or 6 or 7	
9	guid*	
10	support*	
11	9 or 10	
12	random*	
14	control*	
15	12 or 13	
16	4 and 8 and 11 and 14	425
17	limit 15 to (peer reviews journal and English language and yr="2004-Current")	370

4.2.2 Searching in Other Resources

The search for relevant trials continued by looking for studies in reviews and meta-analysis from the past five years on the effect of iCBT, as well as searching relevant journals and the reference lists of the included studies. To find relevant reviews, I used the search terms "iCBT" and "review" and limited this to the past five years. A total of 18 reviews and meta-analyses of Internet-based treatment were included: Andersson (2016); Andersson et al. (2014); G. Andrews, Newby, and Williams (2015); Baumeister et al. (2014); Kampmann, Emmelkamp, and Morina (2016); Karyotaki et al. (2017); Kumar, Sattar, Bseiso, Khan, and Rutkofsky (2017); Königbauer, Letsch, Doebler, Ebert, and Baumeister (2017); Mewton,

Smith, Rossouw, and Andrews (2014); Mogoașe, Cobeanu, David, Giosan, and Szentagotai (2017); Newby et al. (2016); Olthuis et al. (2016); Shim et al. (2017); Sijbrandij, Kunovski, and Cuijpers (2016); Stefanopoulou, Lewis, Taylor, Broscombe, and Larkin (2018); Vaskinn (2015); Webb, Rosso, and Rauch (2017); Zhou, Li, Pei, Gao, and Kong (2016)

When searching for additional studies of therapist behaviour, I conducted hand searches based on relevant keywords from the systematic search and included terms such as "therapist behaviour" and "content". Besides, I searched the literature references of included studies and relevant literature.

4.3 Data Collection and Analysis

4.3.1 Selection of Studies

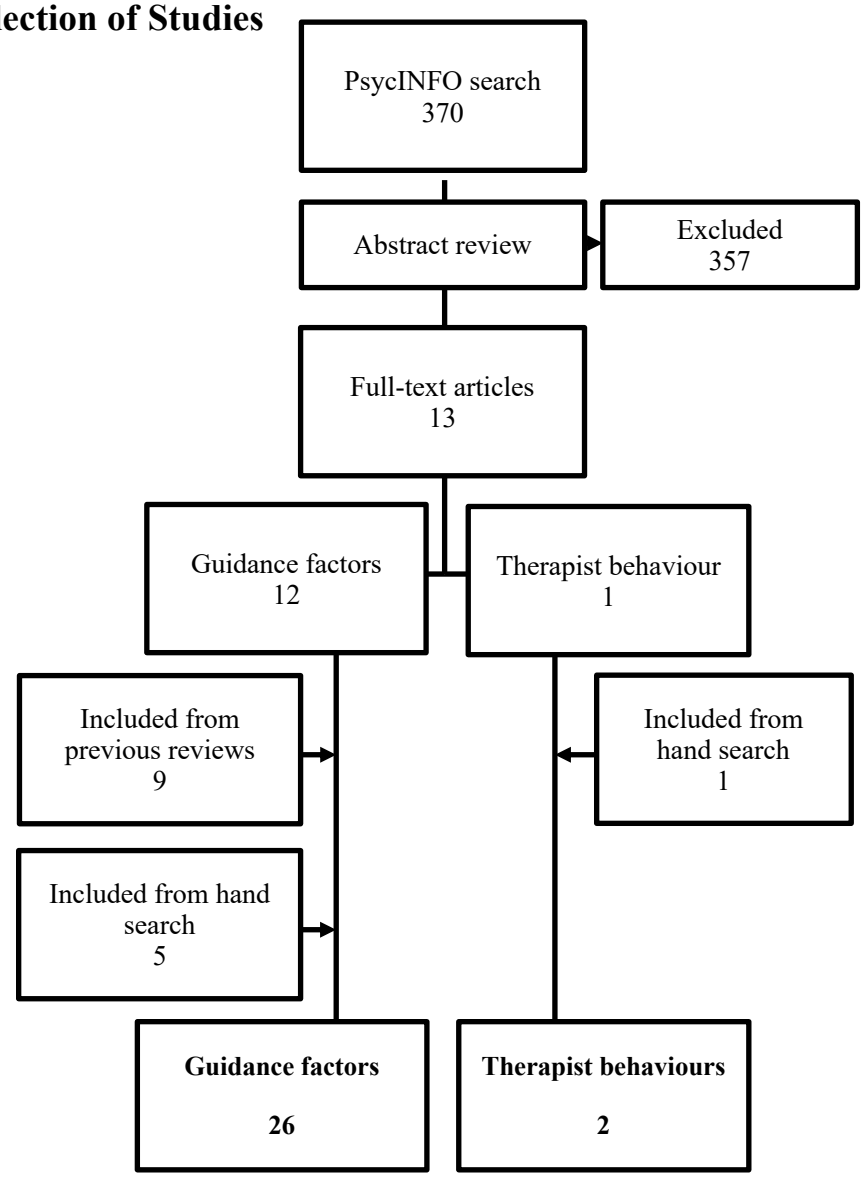

Fig 1. Flow chart of the literature search

4.3.2 Data Extraction and Management

I extracted relevant data from the included studies and collected them in tables. The following data described in the trials were extracted independently from the studies: study design and treatment conditions, type of intervention and therapeutic approach, basic sample characteristics such as sample size and diagnosis, outcome measures and effect sizes. For exploring potentially relevant guiding features, detailed information about the guidance, including modality and time used, the therapists' level of expertise, and instruction were extracted.

4.3.3 Methodological Quality of the Included Studies

The review only considers RCTs to optimise methodological quality, as the RCTs are often considered the gold standard for a clinical trial and aims to reduce bias when testing a new treatment. The subjects included in the trial are randomly allocated to either the group receiving the treatment under investigation or to a group receiving standard treatment as the control. Randomisation minimises selection bias, and the different comparison groups allow the researchers to determine any effects of the treatment when compared with the control group, while other variables are kept constant. However, it is important to emphasise that RCT itself is not a quality of evidence but a design that examines the effect of one or more interventions. Quality of results from an RCT depends on research questions, method, execution, and data collection and analysis, and these trials may still include risks of bias. For example, in most of the trials, it is not possible to blind the participants or the coaches in the allocation, introducing a risk of bias. Further limitations and biases in this review will be presented in the results and discussion.

4.3.4 Coding Procedure

Earlier reviews and meta-analyses have considered similar categories of guidance factors in Internet interventions. The most recent are Richards and Richardson (2012), Baumeister et al. (2014), and Shim et al. (2017). I used these as a starting point for an examination of guidance factors. However, there could be new variations of these in the data sample, and I, therefore, did not conclude on the categorisation of guidance factors before the data extraction process.

5 Results

I will first present the results of the studies examining the structure before continuing with the results of the content of guidance.

5.1 Results Part I: Guidance Factors in Guided iCBT

In this section, I will present the findings from the systematic literature review on guidance factors. In the systematic search, I identified six categories of trials exploring guidance in iCBT. These are similar to the guidance factors analysed in Shim et al. (2017). However, because Shim's categories, *synchronicity* and *mode,* will include the same studies and cover similar factors, I have decided to merge these into one category. Categories of guidance factors are presented in *table 2*. I will first give a short and general description of the trials and study samples before I present them in detail related to each guidance factor.

Table 2
Guidance factors in iCBT

Guidance factors	Direct comparison of ...
Guided versus unguided:	iCBT with and without any form of human guidance factor
Human versus automated guidance:	Human guidance compared to other sorts of automated technological guidance
Level of expertise:	Different levels of expertise, including education or experience
Scheduling of human guidance:	Scheduling of guidance, e.g., set by therapist or patient
Communication modality and synchronicity of guidance:	Different modes for giving human guidance, e.g., phone, SMS, email. The synchronicity of the different communication modalities
Intensity of guidance	Intensity of guidance, including therapist time, number of sessions, number of emails/SMS, etc.

5.1.1 Descriptive Statistics

The search procedure described above resulted in 26 included studies of iCBT/cCBT presented in *table 3*. The studies are described in more detail in tables related to each guidance factor.

Table 3
Included studies based on guidance factors.

Guidance vs unguided	Level of expertise	Human vs automated	Scheduling	Modality and synchronicity	Intensity
Berger, Caspar et al. (2011)	Andersson et al. (2012)	Kelders et al. (2015)	Berger, Caspar et al. (2011)	Lindner et al. (2014)	Klein et al. (2009)
Berger, Hammerli et al. (2011)	Johnston et al. (2011)		Hadjistavropoulos et al. (2017)	Titov, Andrews, Schwencke (2009)	
Ciuca et al. (2018)	Kobak et al. (2015)		Oromendia et al. (2016)		
Dear et al. (2015)	Robinson et al. (2010)				
Dear et al. (2016)	Titov et al. (2010)				
Dear et al. (2017)					
Farrer et al. (2011)					
Fogliati et al. (2016)					
Gershkovich et al. (2017)					
Hedman (2016)					
Kobak et al. (2015)					
Mira et al. (2017)					
Mohr et al. (2013)					
Titov et al. (2008)					
Titov, Andrews, Choi et al. (2009)					
Titov et al. (2015)					

Study samples included participants primarily treated for depression (n=8) or anxiety (n=16). Included anxiety disorders were generalised anxiety disorder (n=2), panic disorder (n=4), social anxiety disorder (n=7), obsessive-compulsive disorder (n=1), and hypochondriasis (n=1). There is also included transdiagnostic treatment including participants with depression and anxiety (n=3).

All treatment programs are based on cognitive behavioural therapy (CBT), as decided in the inclusion criteria. However, I also included two studies based on acceptance and commitment therapy (ACT). After consideration, they were included because ACT is a third-generation cognitive therapy building on previous cognitive therapy and, therefore, has a lot in common with CBT (Berge & Repål, 2015).

The selection includes both computer-based and Internet-based cognitive behavioural therapy because there seems to be minor differences between these programs other than the term used. The three included cCBT programs (Kobak, Greist, Jacobi, Levy-Mack, & Greist, 2015; Titov, Andrews, Choi, Schwencke, & Johnston, 2009; Titov, Andrews, Choi, Schwencke, & Mahoney, 2008) are provided through the Internet in the trials. Besides, meta-analysis such as Ebert et al. (2015) combines both Internet-based and computer-based treatment to 'cCBT'.

The intervention period in the included trials varies from five weeks (Dear et al., 2017) to 12 weeks (Hedman et al., 2014; Kelders, Bohlmeijer, Pots, & van Gemert-Pijnen, 2015; Kobak et al., 2015; A. Mira et al., 2017; Mohr et al., 2013). Email (n=19) and phone (n=16) contact are the most common modes of communication between therapist and patient. Many of the trials combine different modalities. Other modalities used are Internet forums (n=3), SMS (n=3), and video conference/call (n=2).

Included trials were conducted in Australia (n=13), United States (n=3), Sweden (n=3), the Netherlands (n=1), Spain (n=2), Switzerland and Germany (n=2), Canada (n=1), and Romania (n=1). The smallest sample is presented in Lindner et al. (2014) with 38 participants. The largest sample is in the trial by Dear et al. (2015) with 338 participants.

5.1.2 Guided versus Unguided iCBT

Sixteen studies compared guided iCBT and unguided iCBT directly, see *table 4*.

Treatment of Depression

As shown in *table 4*, five studies have explored the treatment of depression: Berger, Hammerli, Gubser, Andersson, and Caspar (2011) (n=76) Farrer, Christensen, Griffiths, and Mackinnon (2011) (n=155), Adriana Mira et al. (2017) (n=124), Mohr et al. (2013) (n=101) and Titov et al. (2015) (n=290). There are five different programs for the treatment of depression, from five (Titov et al., 2015) to 18 modules (Mohr et al., 2013). Three studies use a phone as a guidance modality, while Berger, Hammerli, et al. (2011) uses email, and Titov et al. (2015) use both email and phone in their guidance. Several trials include automated reminders by email or SMS both for the guided and the unguided group. For example, in Adriana Mira et al. (2017), all participants in the intervention groups received SMS twice a week as well as email if they were inactive for one week. Titov et al. (2015) examined the difference between disorder-specific and transdiagnostic programs in the same trial. Hence there were two different programs in both the guided and the unguided group.

Table 4
Guided versus unguided iCBT

Author (year)	Diagnosis	Country	N	Intervention	Guidance modality	Primary outcome	Treatment conditions* (Cohens d)
Berger, Caspar et al. (2011)	SAD	Switzerland	81	iCBT 10 modules 10 weeks	Email, phone (step-up)	SPS, SIAS, LSAS	1. Guided (1.43, 1.51, 1.53) 2. Unguided (1.38, 1.64, 1.48)
Berger, Hämmerli et al. (2011)	DEP	Switzerland, Germany	76	iCBT 10 modules, 10 weeks Deprexis	Email	BDI-II	1. Guided (1.24) 2. Unguided (0.80)
Ciuca et al. (2018)	PAD	Romania	111	iCBT, 16 modules, 10 weeks PAXPD	Video call	PDSS-SR	1. Guided (2.66) 2. Unguided (1.64)
Dear et al. (2015)	GAD	Australia	338	iCBT 5 modules, 8 weeks Worry / Wellbeing Course	Phone, email	GAD-7	1. Guided (1.56) 2. Unguided (1.47)
Dear et al. (2016)	SAD	Australia	233	iCBT 5 modules, 8 weeks Social confidence course / Wellbeeing course	Phone, email	MINI-SPIN	1. Guided (1.34) 2. Unguided (1.01)
Dear et al. (2017)	DEP, ANX	Australia	191	iCBT 4 modules, 5 weeks Mood Mechanic Course	Phone, email	PHQ-9, GAD-7	1. Guided (1.33, 1.39) 2. Unguided (0.92, 1.29)
Farrer et al. (2011)	DEP	Australia	155	iCBT 6 modules, 6 weeks BluePages / MoodGym	Phone	CES-D	1. Guided 2. Unguided
Fogliati et al. (2016)	PAD	Australia	145	iCBT 5 modules, 8 weeks Wellbeing course / Panic course	Phone, email	PDSS-SR	1. Guided (0.71) 2. Unguided (1.09)
Gershkovich et al. (2017)	SAD	USA	42	iAcceptence-based CBT 8 modules, 8 weeks	Video call, SMS	SPAI, LSAS-SR	1. Guided (1.18, 0.86) 2. Unguided (0.96, 0.67)

Hedman et al. (2016)	Hypochondriasis	Sweden	132	iCBT 12 modules, 12 weeks	Email	HAI	1. Guided (1.55) 2. Unguided (1.31)
Kobak et al. (2015)	OCD	USA	87	cCBT 9 modules, 12 weeks BT Steps	Phone	YBOCS	1. Guided with Therapist (1.13) 2. Guided with Non-therapist (1.42)** 3. Unguided (1.17)
Mira et al. (2017)	DEP	Spain	124	iCBT 8 modules, 12 weeks Smiling is fun	Phone, SMS	BDI-II	1. Guided (0.78) 2. Unguided (0.72)
Mohr et al. (2013)	DEP	USA	101	iCBT 18 modules, 12 weeks MoodManager	Phone	PHQ-9	1. Guided 2. Unguided
Titov et al. (2008)	SAD	Australia	98	cCBT 6 modules, 10 weeks Shyness program	Email, forum, (phone)	SIAS. SPS	1. Guided 2. Unguided
Titov, Johnston et al. (2009)	SAD	Australia	163	cCBT 6 modules, 8 weeks Shyness Program	Phone, email, SMS	SIAS, SPS	1. Guided (1.41, 0.98) 2. Unguided (0.98, 0.73)
Titov et al. (2015)	DEP	Australia	290	iCBT 5 modules, 8 weeks Mood course / Wellbeing course	Phone, email	PHQ-9	1. Guided (1.77) 2. Unguided (1.50)

Note: DEP: Depressive disorder; ANX: Anxiety disorder; GAD: Generalised anxiety disorder; OCD: Obsessive-compulsive disorder; PAD: Panic disorder; SAD: Social anxiety disorder; BDI-II: Beck Depression Inventory II; CES-D: Center for Epidemiologic Studies Depression Scale; PHQ-9: Patient Health Questionnaire-9; GAD-7: Generalised Anxiety Disorder-7; HAI: Health Anxiety Inventory; YBOCS: Yale-Brown Obsessive Compulsive Scale; PDSS-SR: Panic Disorder Severity Scale – Self Report; SPS: Social Phobia Scale; SIAS: Social Interaction Anxiety Scale; LSAS: Liebowitz Social Anxiety Scale.*Waiting list conditions and intervention groups not comparing guided versus unguided iCBT are not included in the table. **Only separate effect sizes for the therapist guidance and the lay guidance was available.

Mohr et al. (2013) and Titov et al. (2015) use the Patient Health Questionnaire (PHQ-9) as the primary measure for depression, while Berger, Hammerli, et al. (2011) and Adriana Mira et al. (2017) use the Beck Depression Inventory (BDI-II), and Farrer et al. (2011) use the Center for Epidemiologic Studies Depression Scale (CES-D). All treatment groups show symptom reduction for the treatment groups, but there are no significant between-group effects between the guided and the unguided intervention group in the trials for depression.

Treatment of Social Anxiety Disorder

The review includes five trials comparing guided versus unguided treatment for social anxiety disorder: Berger, Caspar, et al. (2011) (n=81), Dear et al. (2016) (n=233), Gershkovich, Herbert, Forman, Schumacher, and Fisher (2017) (n=42), Titov et al. (2008) (n=98), and Titov, Andrews, Choi, et al. (2009) (n=163). Three trials are conducted in Australia. The treatment program in the trial by Gershkovich et al. (2017) was based on acceptance and commitment therapy. The other trials used programs based on cognitive behavioural therapy. Both Titov et al. (2008) and Titov, Andrews, Choi, et al. (2009) use the treatment program *Shyness Program* (6 modules). The other programs varied from five (Dear et al., 2017) to 10 modules (Berger, Caspar, et al., 2011).

All trials used a combination of modalities to communicate with their participants, and all included email either as automated reminders or as a communication modality with the patients. Gershkovich et al. (2017) used video conversation in weekly communication with patients. The remaining trials used a combination of email and phone in the guidance. Furthermore, there is a use of automated reminders both in the guided and the unguided group. For example, Titov, Andrews, Choi, et al. (2009) compared cCBT including automated emails and SMS reminders for social anxiety disorder, with and without telephone-based human guidance every week. The automated emails were based on an algorithm defining 62 different emails that could be sent based on whether participants completed a module or if it was appropriate to provide further material. In Titov et al. (2008), both intervention groups had access to an Internet forum.

The Social Interaction Anxiety Scale (SIAS) and the Situational Pain Scale (SPS) are used as primary outcome measures in three of the trials. Dear et al. (2017) use the Mini-Social Phobia Inventory (MINI-SPIN), and Gershkovich et al. (2017) use the Social Phobia and Anxiety Inventory (SPAI) and the self-report version of the Liebowitz Social Anxiety Scale (LSAS-SR) to measure participants' symptom level. Titov et al. (2008) and Titov, Andrews, Choi, et

al. (2009) showed significant between-group differences between the guided and the unguided group, hence more symptom reduction in the group receiving guidance. There were no significant differences between the intervention groups in the remaining trials.

Treatment of Other Anxiety Disorders

Two studies explored the treatment of panic disorder: Ciuca, Berger, Crisan, and Miclea (2018) (n=262) and Fogliati et al. (2016) (n=145). Dear et al. (2015) (n=338) compared guidance in the treatment of generalised anxiety disorder; Kobak et al. (2015) (n=87) conducted treatment of obsessive-compulsive disorder, and Hedman, Axelsson, Andersson, Lekander, and Ljotsson (2016) (n=132) conducted treatment of hypochondriasis (somatic symptom disorder and illness anxiety disorder). The treatment programs varied from five (Dear et al., 2015) to 12 modules (Hedman et al., 2016), and two trials also compared transdiagnostic and disorder-specific programs with the same sample (Dear et al., 2015; Fogliati et al., 2016). Ciuca et al. (2018) were one of the first trials to use real-time video communication in iCBT. The video sessions were with a licensed psychotherapist for 15-45 minutes and there were a total of 10 video sessions per participant. Other modalities included phone (Kobak et al., 2015), email (Hedman et al., 2016), or a combination (Dear et al., 2015; Fogliati et al., 2016).

Both trials for panic disorder used the self-report version of the Panic Disorder Severity Scale (PDSS-SR) as the primary outcome. Kobak et al. (2015) used the Yale-Brown Obsessive Compulsive Scale (YBOCS) as a primary outcome for symptoms related to the obsessive-compulsive disorder. Hedman et al. (2016) used the Health Anxiety Inventory (HAI) in the treatment of hypochondriasis, and Dear et al. (2015) used the Generalised Anxiety Disorder 7-item (GAD-7) to measure symptom reduction in the treatment of generalised anxiety disorder. There were no significant differences in the primary outcome measures between the guided and unguided intervention groups in any of the presented trials for various anxiety disorders.

Transdiagnostic Treatment

As seen in table 4, Dear et al. (2017) (n=191) compared guidance in a trial with the text-based transdiagnostic treatment program *Mind Mechanic Course* for depression and anxiety. The trial was conducted for young adults from 18 to 24 years old, and the program included four modules in five weeks. Two psychologists guided through phone or email for 10-15 minutes per participant per week. Also, both intervention groups received automated emails

every week. Both PHQ-9 and GAD-7 were used as a primary measure for symptoms of depression and anxiety respectively. There were no significant between-group differences in any of the primary outcome measures.

5.1.3 Human versus Automated Guidance

Only one trial is included in the factor directly comparing human guidance with an alternative of technological automated guidance (Kelders et al., 2015). The included trial is presented in *table 5*. Trials exploring similar factors were considered but excluded because they were not only comparing human guidance with automated guidance but included the automated emails in the human guidance group. These trials were Titov, Christensen (2009) and Mira (2017).

Table 5
Human versus automated guidance

Author (year)	Diagn.	Country	N	Intervention	Guidance modality	Primary outcome	Treatment conditions (Cohen's d)
Kelders et al. (2015)	DEP	Netherlands	239	iACT 9 modules 12 weeks Living to the full	Email	CES-D, HADS-A	1. Guided, Human (0.82, 0.75) 2. Guided, Automated (0.46, 0.41)

Note: DEP: Depressive disorder; CES-D: Center for Epidemiologic Studies Depression Scale; HADS-A: Hospital Anxiety and Depression Scale.

Kelders et al. (2015) compared human and automated guidance for depression with a web-based intervention based on acceptance and commitment therapy (ACT). They conducted an eight-arm design to investigate several components, where four intervention arms included human guidance and four intervention arms included automated guidance. In both groups, email guidance was comparable in email length and layout, even with a picture of a virtual coach, giving a social presence to the automated feedback. This trial used persuasive technology, with the automated emails being tailored to the answers given by the participant in the exercises. Participants in the human guidance group were able to ask questions, while the group with automated feedback received one additional feedback message per session.

The between-group analysis showed that the group with automated guidance had significantly less improvement from pre to post than the human-guided group on the primary measures CES-D (d=0.46 vs 0.82) and the Hospital Anxiety Depression Scale (HADS-A) (d=0.41 vs 0.75). However, this group had improvement also from post-treatment to follow-up, and these effect sizes did not significantly differ on CES-D (0.73 vs 0.83) and HADS-A (d=0.84 vs 0.82) between the automated group and the human-guided group respectively.

Thus, there were no significant differences between the groups when comparing the pre-measure with the follow-up measure, hence a quadratic effect.

5.1.4 Level of Expertise of Therapists

Five trials examined the level of expertise of therapists based on qualification and experience, and they compared guided interventions with different level of expertise of their therapists: Andersson, Carlbring, Furmark, and Group (2012); Johnston, Titov, Andrews, Spence, and Dear (2011); Kobak et al. (2015); Robinson et al. (2010); Titov et al. (2010). Included trials are presented in *table 6*. Characteristics of the therapists and their instructions are included in *table 7*.

Table 6
Level of expertise of therapists

Author (year)	Diagn.	Country	N	Intervention	Guidance modality	Primary outcome	Treatment conditions* (Cohens d)
Andersson et al. (2012)	SAD	Sweden	204	iCBT 9 modules 9 weeks	Email	LSAS-SR	1. Guided, therapist (0.98**) 2. Guided, student (1.06**)
Johnston et al. (2011)	PAD, SAD, GAD	Australia	131	iCBT 8 modules 10 weeks Anxiety Program	Phone, email	GAD-7, DASS-21	1. Guided, clinician (0.71, 0.90) 2. Guided, coach (1.06, 1.29)
Kobak et al. (2015)	OCD	USA	87	cCBT 9 modules 12 weeks BT Steps	Phone	YBOCS	1. Guided, therapist (1.13) 2. Guided, non-therapist (1.42)
Robinson et al. (2010)	GAD	Australia	150	iCBT 6 modules 10 weeks Worry Program	Phone, email	PSWQ, GAD-7	1. Guided, clinician (1.16, 1.55) 2. Guided, technician (1.07; 1.73)
Titov et al. (2010)	DEP	Australia	126	iCBT 6 modules 8 weeks Sadness Program	Phone, email, forum (cl. group)	PHQ-9, BDI-II	1. Guided, therapist (1.54, 1.27) 2. Guided, technician (1.60, 1.20)

Note: DEP: Depressive disorder; GAD: Generalised anxiety disorder; OCD: Obsessive compulsive disorder; PAD: Panic disorder; SAD: Social anxiety disorder; BDI-II: Beck Depression Inventory II; PHQ-9: Patient Health Questionnaire-9; GAD-7: Generalised Anxiety Disorder-7; YBOCS: Yale-Brown Obsessive-Compulsive Scale; LSAS: Liebowitz Social Anxiety Scale. *Intervention groups not comparing expertise are not included in the table. **Hedges g.

Table 7

Characteristics of therapists

Study	Non-expert	Expert
Andersson et al. (2012)	Psychology students at master of science level. Completed basic training in CBT including supervised face-to-face-therapies (n=6). Clinical supervision. General instruction: Email correspondence concerned homework assignments. Decide whether the participants have assimilated the information and completed their exercises. Clinical instruction: unclear	Licensed psychologist with experience of iCBT (avg. 3 years' experience) (n=7) Not supervised. General instruction: Same as non-expert. Clinical instruction: unclear
Johnston et al. (2011)	Registered psychologist without specialist post-graduate training, employed as a Research assistant (n=1). Clinical supervision General instruction: Reinforcing progress, encouraging completion of modules and homework tasks, normalising difficulties with practising homework tasks, providing direction to upcoming materials. Clinical instruction: When receiving clinical questions, the coach was instructed to direct the participant to the program content or inform of upcoming materials that would address the question. Not permitted to provide clinical advice or to elaborate, expand upon, or add to the existing information or skills provided in the program.	Clinical psychologist with specialist post-graduate training and clinical experience as therapist with iCBT (n=1). Clinical supervision. General instruction: Same as non-expert. Clinical instruction: Invited to provide therapy and engage the participant in more detailed discussions of the materials including how to apply the treatment, to provide further detail about the skills, assist the participant in practising those skills, and suggest additional skills if applicable.
Kobak et al. (2015)	Lay non-therapist coach (n=1). Clinical supervision (with the CBT therapist?) General instruction: Progress in the program, problems in the program, setting goals for the next call. Clinical instruction: No formal therapy.	Experienced CBT therapist (n=2) Not supervised General instruction: Same as non-expert. Clinical instruction: No formal therapy.
Robinson et al. (2010)	Administrative role as clinical manager at the hospital, but no experience with the research programs or qualification in mental health or experience in counselling (n=1). Clinical supervision General instruction: Provide encouragement and support, answer general questions by referring to the materials in the program. Clinical instruction: No clinical advice.	Clinical psychologist (n=1). Clinical supervision General and clinical instruction: Same guideline script as technician. Also instructed to engage with each participant actively in treatment including goal setting, problem-solving, and discussion of strategies for overcoming hurdles to progress.
Titov et al. (2010)	Administrative role as a clinical manager at the hospital, but no experience with the research programs or qualification in mental health or experience in counselling (n=1). Clinical supervision General instruction: Provide encouragement and support, answer general questions by referring to the materials in the program.	Psychiatrist (n=1). Clinical supervision General and clinical instruction: Same guideline script as technician. Also instructed to engage with each participant actively in treatment including goal setting, problem-solving, and discussion of strategies for overcoming hurdles to progress.

Andersson et al. (2012) (n=204) compared different expertise levels in guided iCBT in the treatment of social anxiety disorder in Sweden. The guidance with weekly emails was conducted by either psychology students at the master of science level (n=6) or by licensed psychologists with experience of iCBT (n=7). Also, both intervention groups and the active control group had access to a moderated online discussion forum where they were asked to post at least one message each week. The program was a previously developed manual for self-help of social phobia, now adjusted for the internet (Furmark, Holmström, Sparthan, Carlbring, & Andersson, 2006). The program contained 186 pages divided into nine modules. LSAS-SR was the primary outcome measure, and the group completed this measure every week.

On the LSAS-SR, there was a within-group pre-post treatment Hedge's effect size of g=0.98 for the group receiving guidance from experienced therapists, and g=1.06 for the group with inexperienced therapists. There was not a significant difference in the outcome. On average, the therapists used 15 minutes each week per participant reading and answering questions. The main difference between the two therapist groups was that inexperienced therapists logged in more frequently than licensed psychologists.

Johnston et al. (2011) (n=131) compared the transdiagnostic iCBT program *Anxiety Program* with guidance either by a clinician or a coach. The Mini-International Neuropsychiatric Interview (MINI) was used as a diagnostic measure and participants met DSM-IV criteria for a principal diagnosis of generalised anxiety disorder, social phobia, or panic disorder. Seventy per cent of the sample had a comorbid disorder. Despite this, all participants received the same treatment program with eight modules. They had weekly contact with a coach or a clinician by either phone or email, as well as automated emails. The clinician (n=1) was an educated clinical psychologist and had clinical experience as a therapist in iCBT. The coach (n=1) was a registered psychologist without specialist post-graduate training, employed as a research assistant. If the coach received clinical questions, he or she was instructed to direct the participant to the program content or inform about extra material. The clinician could provide therapy and engage participants in more detailed descriptions. GAD-7 and the Depression Anxiety Stress Scales (DASS-21) were used as primary measures.

Weekly contact was approximately 10 minutes per participant. The results on the between-group analysis of the two guided groups indicate significantly lower score on the primary

outcome GAD-7 for the coach group (d=1.06 vs 0.71), and a trend towards significantly lower score in the second primary outcome, DASS-21 (d=1.29 vs 0.90). There were no significant differences in secondary outcomes. The coach-guided participants also had significantly lower symptom severity scores on general anxiety, panic disorder, depression and disability, measured with the Penn State Worry Questionnaire (PSQW), PDSS-SR, PHQ-9, and Severity of Dependence (SDS) at three months follow-up, but no difference on the DASS-21, PSQW, or SIAS/SPS.

Kobak et al. (2015) examined the impact of expertise in iCBT in a three-armed RCT with the BT Steps. All participants were diagnosed with clinically significant obsessive-compulsive disorder. The trial included 87 participants, and a diverse patient group, where 72 per cent had comorbid diagnoses, and 39 per cent were currently in treatment of OCD. The participants either completed the program as unguided self-help, with a lay non-therapist coach (n=1) or an experienced CBT therapist (n=2). It is somewhat unclear what treatment experience the lay coach and the therapists had. All groups received a welcome call in addition to scheduled weekly phone calls for the guided groups. Both the therapist and the lay coach had the same instructions about the content of the phone calls and were told to help set goals, focus on progress, and support clients.

The results indicated significant positive outcomes for all the three treatment groups on the primary outcome YBOCS, but no significant differences between treatment arms. Both coaching groups had large effect sizes of d=1.42 for the lay coaching and d=1.13 for the therapist coaching from baseline to post-testing.

Robinson et al. (2010) (=150) conducted a trial comparing iCBT for generalised anxiety disorder (GAD) with guidance by either a clinician or a technician. The program was the *Worry Program*, containing six modules. The technician (n=1) had an administrative role at the hospital but had no qualification in mental health or experience in counselling. She contacted the group weekly to provide support and encouragement and could answer questions by referring back to the program. The clinician (n=1) was a registered clinical psychologist and could also actively engage in each participant's treatment. Also, the participants in the clinician group had access to a moderated online forum where they could provide questions to the therapist. Hence this trial is not solely comparing expertise but also includes a different level of intensity.

The clinician and technician spent 81 minutes and 75 minutes per participant respectively during the 10 weeks. The Penn State Worry Questionnaire (PSWQ) and GAD-7 were primary outcomes. At post-treatment, there were no significant differences in main outcome measures for the clinician group compared to the technician group in PSWQ (1.16 and 1.07) and GAD-7 (1.55 and 1.71) respectively. Both groups were superior to the waiting list control group. However, on the three-month follow-up, the clinician group showed an additional gain, and there was a significant difference on the PSWQ between the clinician group (d=1.42) and the technician group (d=0.97).

Titov et al. (2010) (n=126) compared clinician and technician guidance in iCBT for depression. The guidance was delivered weekly through phone or email, and similar to Robinson et al. (2010), the patients in the clinician group also had an Internet forum available to ask questions to their therapist and see other questions and answers. The technician (n=1) had an administrative role as a clinical manager, but no other qualification in counselling. She was instructed to provide support and encouragement but had no clinical duty and was told to refer back to the program when asked questions. The clinician (n=1) was a psychiatrist and was allowed to engage actively in participants' questions, also answering questions in an Internet forum. All coaches were supervised by a clinician, and the technician could step up support to a clinician and did this with 10 per cent of the participants. Participants also receive automatic emails after each module as well as a reminder if they had not completed a module within seven days.

Both the clinician and technician used approximately 60 minutes per participant during the eight-week program. There were no differences between the clinician-assisted group and the technician-assisted group on the primary post measures BDI-II (d=1.27 vs 1.20) and PHQ-9 (d=1.54 vs 1.60). However, the technician group had made further improvements on the follow up four months later and had significantly lower PHQ-9 (1.89 vs 1.11) and K-10 (1.38 vs 0.95) scores than the clinician group.

5.1.5 Scheduling of Human Guidance

Three studies examined the effect of scheduling of the guidance in iCBT: Berger, Caspar, et al. (2011), Hadjistavropoulos et al. (2017), and Oromendia, Orrego, Bonillo, and Molinuevo (2016). Characteristics of the trials are presented in *table 8*.

Table 8
Scheduling of human guidance

Author (year)	Diagn.	Country	N	Intervention	Guidance modality	Primary outcome	Treatment conditions * (Cohens d)
Berger, Caspar et al. (2011b)	SAD	Switzer-land	81	iCBT 10 modules 10 weeks	Email, phone (step-up)	SPS, SIAS, LSAS	1. Scheduled (1.43, 1.51, 1.38) 2. Unscheduled (1.40, 1.44, 1.41)
Hadjistavr-opoulos (2017)	DEP, ANX	Canada	180	iCBT 5 modules 8 weeks Wellbeeing Course	Email	GAD-7, PHQ-9	1. Scheduled (1.14, 1.00) 2. Unscheduled (1.00, 0.82)
Oromendia (2016)	PAD	Spain	77	iCBT 8 modules 8 weeks Free from Anxiety	Phone, email	PDSS-SR	1. Scheduled (2.40) 2. Unscheduled (1.30)

Note: DEP: Depressive disorder; ANX: Anxiety disorder; PAD: Panic disorder; SAD: Social anxiety disorder; PHQ-9: Patient Health Questionnaire-9; GAD-7: Generalised Anxiety Disorder-7; PDSS-SR: Panic Disorder Severity Scale – Self Report; SPS: Social Phobia Scale; SIAS: Social Interaction Anxiety Scale; LSAS: Liebowitz Social Anxiety Scale.
*Intervention groups not comparing scheduling are not included in the table.

Oromendia et al. (2016) (n=77) examined the effect of mandatory versus optional guidance in the transdiagnostic iCBT program *Free from Anxiety* in the treatment of panic disorder. The scheduled treatment group had one phone call with a psychologist weekly, while the non-scheduled group had the opportunity to send an email if they wanted guidance, and they would be contacted by a psychologist within the next 24 hours. Both groups also received automated emails when completing each module.

Only four of the 24 participants (17 per cent) in the optional guidance group asked for help once. The therapist time for the participants who received guidance in this group was 8 minutes, compared to a mean of 69 minutes per participant in the scheduled group. The authors found clinically significant differences on treatment outcome between the group, and the scheduled group showed larger effect sizes than the optional guidance group on the primary measure PDSS-SR, d=2.40 vs 1.30 respectively.

Berger, Caspar, et al. (2011) (n=81) compared scheduling in a trial of iCBT for social anxiety disorder. The participants were randomly assigned to either pure self-help, minimal weekly guidance by email from a therapist or pure self-help including an opportunity to step up the guidance on demand of the participants. In the latter group, the guidance varied from no guidance to email or telephone contact with the therapist. They started the treatment without any guidance, but at the end of each module, they were asked if they wanted to receive therapist guidance, the first step being email contact and the second step being telephone

contact with the therapist. They also received this information in regular emails. All participants also had an online discussion forum available.

In the non-scheduled group, nine out of 27 participants asked for guidance or email contact with the therapist, on average after 15 days of treatment. They all responded to the link in the program. On the primary outcome measures, Berger and colleagues found no differences between the guided group and the group that could step-up on demand on either the SPS (*d*=1.43 vs 1.40), SIAS (*d*=1.51 vs 1.44) or LSAS (1.53 vs 1.40) respectively.

In a trial by Hadjistavropoulos et al. (2017) (n=180) they compared standard weekly therapist guidance with optional weekly therapist guidance for patients who received transdiagnostic iCBT for anxiety or depression in routine care. In the standard guidance group, participants were encouraged to contact their therapist by email every week. Therapists could also call the participants if this were desired. Therapists were instructed to use approximately 15-20 minutes per participant per week. In the optional guidance group, participants could request contact, and the therapist would send an email or call their participants. The therapists would contact patients in both groups if measures showed a sudden increase in symptoms.

In the standard guidance group, 81 of 91 (89 per cent) sent email to their therapist, compared to 52 of 83 (63 per cent) in the optional group. Both groups showed significant improvement, but no significant difference between the standard guidance or optional guidance on the primary outcome measures GAD-7 (d=1.14 vs 1.00) or PHQ-9 (1.00 vs 0.82).

5.1.6 Modality and Synchronicity of Guidance

Two studies directly compared different modalities: Lindner et al. (2014) and Titov, Andrews, Schwencke, et al. (2009). Study characteristics are presented in *table 9*.

Table 9
Modality and synchronicity of guidance

Author (year)	Diagn.	Country	N	Intervention	Guidance modality	Primary outcome	Treatment conditions (Cohens d)
Lindner (2014)	DEP	Sweden	38	iCBT 7 modules 7 weeks The Depression Help	Email, phone	BDI-II	1. Guided, email (1.29) 2. Guided, phone (1.03)
Titov, Andrews Schwencke et al. (2009)	SAD	Australia	82	iCBT 6 modules 8 weeks Shyness program	Phone, forum	SIAS, SPS	1. Guided, phone (1.47, 1.56) 2. Guided, forum (1.56, 1.51)

Note: DEP: Depressive disorder; SAD: Social Anxiety Disorder; BDI-II: Beck Depression Inventory II SAD: Social anxiety disorder; SPS: Social Phobia Scale; SIAS: Social Interaction Anxiety Scale. *Intervention groups not comparing modality of synchronicity are not included in the table.

In a pilot trial of iCBT for depression Lindner et al. (2014) compared therapist guidance through asynchronous communication with email and synchronous communication with telephone (n=38). The therapists, who were master's students in clinical psychology, were instructed to use approximately 15 minutes per patient per week on preparations and feedback regardless of modality and try to give personalised feedback to distinguish this from automated reminders. There was no significant difference in the primary outcome BDI-II between the email group (d=1.29) and the phone group (d=1.03).

Titov, Andrews, Schwencke, et al. (2009) (n=82) conducted a trial with iCBT for social anxiety disorder with guidance by phone with a layperson (synchronous) and iCBT with online forum guided by clinicians (asynchronous). In the phone call, the coach encouraged the participants to keep working, but no clinical advice was included. In the forum, participants were encouraged to post questions or comments on progressions, and a clinician moderated the forum. The program also included complex automated email reminders for both groups as well as three SMSs. Average time used by the therapist per participant was 38 minutes for the online forum group and 37 minutes for the telephone group. SIAS and SPS were primary outcomes. There were no significant differences between the phone group or the forum group on SIAS (d=1.47 vs 1.15) or the SPS (d=1.15 vs 1.51) respectively.

5.1.7 Intensity of Guidance

Only one study directly compared the intensity of guidance in iCBT, presented in *table 10*.

Table 10
Intensity of guidance

Author (year)	Diagn.	Country	N	Intervention	Guidance modality	Primary outcome	Treatment conditions
Klein (2009)	PAD	Australia	57	iCBT 9 modules, 8 weeks Panic Online	Email	PDSS, ASP,	1. Guided, 3 per week 2. Guided, 1 per week

Note: Effect sizes not available. PAD: Panic Disorder; PDSS: Panic Disorder Severity Scale; ASP: Anxiety Sensitivity Profile.

Klein et al. (2009) examined the duration and intensity of human guidance in a sample of individuals with panic disorder and agoraphobia. Patients were informed they could send emails to their therapists as frequently as they wanted. In the group with a high dose of guidance, the therapist would answer three times per week, while in the group receiving a lower dose of guidance, the therapist would respond with one email per week. A psychologist conducted the guidance. There was no significant difference between the frequent guidance and the infrequent guidance on the severity of the PDSS or any other measures.

5.2 Results Part II: Therapist Behaviours in Guided iCBT

In this part, I will present trials exploring the content of the guidance in iCBT, hence the therapist behaviours. Two RCTs were found covering all inclusion criteria: Paxling et al. (2013) and Holländare et al. (2016). Several studies exploring similar questions were excluded due to lack of controlled trial (Schneider, Hadjistavropoulos, & Faller, 2016), treatment group out of the scope of this paper (de Bruin & Meijer, 2017; Sanchez-Ortiz, Munro, Startup, Treasure, & Schmidt, 2011) or analysing client emails (Soucy et al., 2018; Svartvatten, Segerlund, Dennhag, Andersson, & Carlbring, 2015)

In Paxling et al. (2013) the authors completed a content analysis of the responses from three therapists in 490 emails sent to clients in the treatment of generalised anxiety disorder. The data material included correspondences between three therapists and 44 patients in the trial. The therapists were students in the last term of the clinical psychology programme, and their instruction was to reply to clients by email with feedback on their homework and answer questions and topics the patients raised. The authors categorised the content, and these categories were correlated with the primary outcome PSWQ.

The eight categories derived were deadline flexibility, task reinforcement, alliance bolstering, task prompting, psychoeducation, self-disclosure, self-efficacy shaping, and empathetic utterance. The most frequently used categories in the therapist emails were task reinforcement (40 per cent) and self-efficacy shaping (34 per cent). Related to outcome measures on the PSWQ, deadline flexibility, hence giving extra time on a module, was significantly negatively associated with outcome (r=-.37). Task reinforcement was significantly positively associated with treatment outcome (r=.41). This implies that when the therapists encouraged completed tasks, the patients showed greater symptom reduction.

Holländare et al. (2016) investigated what behaviours therapist used the most in guidance in their trial of iCBT in the treatment of depression, and what behaviour categories were related to symptom reduction and adherence. The data material included 664 emails sent between five therapists and 42 patients. The therapists were clinical psychologists (n=3) and students at the master's level (n=2). Montgomery Åsberg Depression Rating Scale (MADRS-S) was the primary measure.

Nine therapist behaviours were categorised in the analysis. These included emphasising patient responsibilities, affirming, clarify the framework, self-disclosure, informing about modules, confronting, urging, encouraging and guidance. Therapists in this trial most frequently encouraged (32 per cent), affirmed (25 per cent), and guided (22 per cent) their patients. Seven behaviour categories correlated with adherence, but only three correlated with improvement. A significant correlation was found both on post-treatment (r=.42) and at follow-up two years later, when therapists affirmed their patients, hence paid attention to, acknowledged, validated, and expressed interest in the patient's thoughts, emotions, and actions. Also, encouraging, by both praising past behaviour and inciting future behaviour was correlated significantly positively with symptom reduction at post-treatment (r=.52), as well as self-disclosure (r=.44). However, self-disclosure was used in only 0.9 per cent of the emails.

6 Discussion

The iCBT programs for anxiety and depression have evolved over the last two decades, and most programs to date are based on cognitive behavioural therapy, an evidence-based method of treatment practised for a long time. Numerous trials are focusing on these treatment programs, with results similar to other psychological treatments. Nevertheless, there has not been the same focus on the development and research of the guidance in these treatment programs.

The objective of this paper was to review the existing literature on the structure and content of guidance in iCBT in the treatment of common mental disorders. The systematic search in PsycINFO, together with searches in reference lists and hand search resulted in 26 included studies in the analysis of guidance factors of the structure, and two studies were included in the analysis of guiding content. The most frequent factors coded were guided versus unguided interventions and level of expertise of the coaches. The review suggests that iCBT is an effective treatment for depression and anxiety, but human guidance seems to be of minor importance for the treatment outcome. There is still a considerable heterogeneity in terms of both programs and guidance characteristics. Therapist guidance in the included trials varies widely from reminders to intensive guidance that resembles the face-to-face therapy. Between these extremes, we find the majority of the studied interventions, with limited contact by telephone or email repeated throughout the treatment.

6.1 Guidance Factors

6.1.1 Guided versus Unguided iCBT

Several previous reviews and meta-analyses have investigated the impact of guidance in iCBT, and their analysis based on trials using guided interventions compared to other trials using unguided interventions show that guided iCBT provides better treatment results than self-help (Richards & Richardson, 2012; Spek et al., 2007). However, this is not as clear in this review when including newer RCTs that directly compare guided and unguided treatment with the same treatment program.

Of the 16 RCTs included in the guidance factor exploring guided versus unguided interventions, two show significant differences between intervention groups, with better effect for the group receiving guidance. Both of these trials included treatment for social

anxiety disorder and were conducted by the same research group in Australia. None of the other trials showed significant between-group differences on the primary measures between the guided and the unguided group. Hence these results propose that iCBT for depression and anxiety can provide good treatment effect independent of human guidance, but with some variation in the treatment of social anxiety disorder. Nevertheless, we need to have a closer look at the differences between the interventions before concluding based on the effect sizes only. One of the weaknesses of reviews is the merging of studies that might be very different, with regard to both the program and guidance.

In the studies in this review, authors seem to use terms such as guidance, support, and reminders interchangeably, likely highlighting the lack of a common definition of the terms. Furthermore, there is considerable variation in the scale of the guidance in the various trials, with time used on guidance down to 2 minutes a week (Adriana Mira et al., 2017). Usually, when the guidance resembles reminders, it is often called 'minimal therapist contact' (Palmqvist, Carlbring, & Andersson, 2007), and it includes information about how to do the program and reminders to increase motivation. On the other hand, some programs include guidance with a clinical therapist taking an active role in the treatment. Regardless of involvement, the therapists used various modalities such as telephone, email, SMS, video call, and discussion forum to contact their patients. There are also studies using weekly postcards to remind clients to complete modules in Internet treatment (Clarke et al., 2005).

In 12 of the 16 trials, there is a tendency for a greater reduction in symptom level in the group that receives guidance compared to the group without guidance, but these are not statistically significant. Statistical significance in the analysis of data is used to represent the probability that we would have the same outcome if the entire population had been tested (Howitt & Cramer, 2007). This depends, among other things, on the size of the correlation effect and how many observations are included in the calculation. It is out of the scope of this paper to conduct a statistical comparison, as in a meta-analysis. However, such analysis could reveal nuances that are not apparent in this review. Statistical power is interrelated with three things: (1) the standardised effect size, (2) the alpha or significance level, and (3) the sample size. The larger any of these values are, the more power there is in the study (Howitt & Cramer, 2007). Cohens *d* can give information about the effect of treatment within the intervention sample, but to generalise these results, the statistical power is too small. In many of the studies, the samples are so small that it will require large differences to achieve statistical significance, due to the low statistical power. However, results from surveys with large

samples are not necessarily more convincing than surveys from smaller sample groups. If the mean bias between the sample is small, the discovery may not have any particular practical interest, although significant (Svartdal, 2015).

It will not be possible to transfer the results from the unguided programs directly to programs open on the Internet without any caution. Even though the intervention group was considered unguided, the majority of these groups regularly experience some contact with the study team or a therapist in a diagnostic interview through phone, both before and after the intervention. Here, the participants also had a chance to ask questions. These factors alone can be enough to help clients stay in the program, which is not possible with iCBT programs that are open online (e.g., MoodGYM). Johansson, Andersson, et al. (2012) conducted an interesting meta-analysis where they correlated the degree of support and outcome. Unlike the studies included in this paper, they coded the contact between the therapist and client before treatment in their analysis and then concluded that guided iCBT was more effective than unguided iCBT. Contact before and after the treatment might work as a moderator for the effect of guidance and can potentially increase the effect of both guided and unguided iCBT.

Even though there might be a tendency towards better outcome with human guidance, there are several advantages with open access unguided programs. With an open-access program, there is no need for a referral to begin a program. This can lower the threshold for seeking help, which we know is an obstacle for many, as well as reducing stigma by including full anonymisation. There is no limit to how many users can start a program and hence receive help. Some of the drawbacks with these programs are the somewhat higher degree of dropout when comparing self-help with guidance (Baumeister et al., 2014). Besides, the users do not have resources available if they experience challenges or relapses, and it can, therefore, be wise to think differently about patient safety. If they do not succeed, there is also a possibility that they conclude ‘therapy doesn’t work for me,’ when they start on the lowest level of treatment and do not seek further help, thus evading identification by the health care system. There are currently no systematic reviews or meta-analyses that explore only open access and self-help programs for mental health.

Are there other confounding factors than the guidance itself that influence the effect of the treatment? Is it possible that we can find more precise answers if we explore other factors? Adherence and dropout might be such factors and have been explored in several of the studies included, where guidance seems to increase adherence and reduce dropout. There

might, however, be other ways to increase adherence than including human guidance. There are many possibilities in developing technology such as multimedia, machine learning, and artificial intelligence. There are considerable differences in the use of various components, multimedia, and interactive tasks in the programs, and there has been a rapid development in automatic reminders. This can also be a cause of the lack of benefit from guidance in several studies. Titov et al. (2013) compared unguided intervention with the same intervention with automated emails. This alone increased program completion from 35 per cent to 58 per cent, as well as outcomes. Also, several studies use discussion forums that can both give a sense of cohesion in the treatment and have a direct influence on adherence.

Another important factor moderating the effect of guidance might be alliance. In a recent meta-analysis on alliance in guided iCBT for depression and anxiety disorders, results proposed that alliance appears to associate directly with clinical outcomes (Pihlaja et al., 2018). There might also be a relationship triangle in guided iCBT between the patient, the therapist, and the program itself, and positive patient-rated alliance is also found with the treatment program (Cavanagh, Belnap, Rothenberger, Abebe, & Rollman, 2018).

6.1.2 Human versus Automated Guidance

Only one study compared human and automated guidance. Kelders et al. (2015) had similar email guidance conducted by either a coach or with automated emails. There were significant differences between the conditions from baseline to post measures on the primary outcomes, where the group receiving human guidance had a greater reduction in symptoms. However, these differences were equalised on the analysis of the primary measures from baseline to follow-up. Hence, human guidance had a better effect than automated support in the short term, but this difference was not significant three months after the treatment ended.

Kelders et al. (2015) included automated guidance that was more advanced than what we have seen in other studies in this research field. Firstly, the emails were tailored to the answers of the clients. Additionally, they included a picture of an avatar, to increase the feeling of personalised guidance. Persuasive technology like this is usually designed to change attitudes and behaviour and may contribute to positive outcomes in the completion of iCBT in the future. The amount of persuasive principles seems to be related to the effectiveness of the treatment (Wildeboer, Kelders, & van Gemert-Pijnen, 2016). However, one should be aware that implementing more principles not always leads to better outcomes, and there is a need for a better understanding of the interactions of these principles.

6.1.3 Level of Expertise of the Therapists

There were five trials comparing guidance in iCBT with different levels of expertise of the therapists. In four of the trials, there were no significant between-group differences when comparing therapist groups. However, in Johnston et al. (2011), receiving guidance from a coach with less expertise correlated more positively with the primary outcome measures GAD-7. Hence there was a tendency towards better outcome in the coach group compared to the clinician group, and an inverse correlation when expecting that expertise results in better treatment outcome. There was no significant between-group difference on the other primary measure DASS-21, capturing symptoms of stress, anxiety, and depression. Based on these five trials, it seems like the expertise of the coaches is of minor importance in the guidance in iCBT.

In these trials, they compare different variants of expertise or experience. The level of competence of the therapists in the trials varies widely. The biggest difference in expertise in the same trial is between the non-expert with an administrative role compared to an expert who is either a clinical psychologist or psychiatrist (Robinson et al., 2010; Titov et al., 2010). These studies were conducted by the same research team based in Australia, they have supervision by a clinician, and the same technician is conducting guidance in both trials. On the other hand, there is a minimal difference between a psychologist at the lowest level of expertise and a psychologist specialist in the expert group in Johnston et al. (2011). Likewise, Andersson et al. (2012) compare clinical master's students as non-experts and psychologists as experts. Both a master's student and a psychologist could be considered an expert compared to the technician used in the previously mentioned studies. Further, a clinical psychologist is considered an expert and a non-expert depending on the trial. Hence it is difficult to compare results from these trials.

Expertise may have less influence in Internet interventions because it is more standardised than regular therapy, both in terms of program standardisation and the highly structured protocols for guidance. Thus, the guidance may focus more on practical and supportive aspects than being therapeutically oriented. One could expect that the addition of common factors such as warmth, empathy, and trust is enough for generating improvement (Wampold, 2001) because the theory and psychoeducation are included in the programs. Lindefors and Andersson (2016), on the other hand, emphasises that there must be more technique and

fewer common factors in iCBT. This may be related to the fact that the therapist needs an in-depth competence in the program content.

When trials contain only two therapists, there may be the individual therapist effects that we are comparing. Often, the samples and research projects are too small to include several therapists. Hence, a personal effect might be considerable and even more pronounced than the expert effect. The therapist effect is considered one of the most essential components in therapy. Orlinsky & Howard (1980) did one of the first studies to show a significant therapeutic effect and estimates of the therapist effect average 5-8 per cent of the variations in outcomes in RCTs and naturalistic studies (Baldwin & Imel, 2013; Wampold & Brown, 2005). Almlöv and colleagues tested whether the therapist effect is present in iCBT by analysing interclass correlations in the treatment of depression (Almlöv, Carlbring, Berger, Cuijpers, & Andersson, 2009) and anxiety (Almlöv et al., 2011). The trials included 10 therapists in the treatment of patients with major depressive disorder and three therapists in the treatment of patients with generalised anxiety disorder. In neither of the trials, they found clustering of data within therapists or a significant level of differences between therapists. They propose that therapist effects are less responsive in iCBT, but there is still too limited research and small samples to conclude.

Before translating these results from research into regular health care or open programs with only technicians available, it is important to note that clinical health professionals supervised all the less experienced therapists and coaches. This included, among other things, that they could seek advice or guidance if they experienced demanding situations. In a research project, there will generally be a structured framework and instructions for both participants and personnel that might affect the treatment outcome. In some of the studies, the experienced and the less experienced therapist also had supervision from the same person. A weakness with this type of structure where several people are employed in the same research project is the possibility that the therapists have interacted and learned from each other, resulting in coach contamination. Being less qualified might also be weighed up by higher motivation and preparation for each patient, as seen in the trial by Andersson et al. (2012), where the master's students logged in more frequently than the psychologists.

6.1.4 Scheduling of Human Guidance

Three trials examined the effect of different variants of scheduling of the guidance in iCBT. Oromendia et al. (2016) compared a group receiving scheduled guidance with one phone call each week with an optional guidance group. Results of the primary outcome measure PDSS-SR showed a significant difference between the two intervention groups, with a greater reduction in symptoms for the scheduled group. The other two trials did not find between-group differences in primary outcomes. Results on guidance scheduling are somewhat inconsistent, and concluding on the basis of these trials is probably too soon. However, scheduling of guidance may be an important factor in effective treatment.

A possible explanation for the scheduled group achieving a higher effect in the treatment is that regular guidance makes the patients committed to the treatment, thus increasing compliance with the program. Also, scheduled guidance encourages clients to ask questions that make them use the program more effectively. However, in these studies, the email or phone on demand were not the only guidance the participants received. Even when not asking for further help, the unscheduled group in Hadjistavropoulos et al. (2017) received automatic reminders via mail, and in Berger, Caspar, et al. (2011), all the intervention groups had access to a discussion forum.

In Hadjistavropoulos et al. (2017), the primary difference between optional and standard weekly guidance was lower completion rates for the optional guidance group (57% vs 82%). Lower therapeutic bond scores were also observed for optional guidance compared to patients in the standard guidance condition. However, this could be expected given there was significantly less therapist contact for patients receiving optional contact. There were still no significant differences between the two groups in the primary outcomes. Based on these results, it is clear that there are treatment components we do not know enough about, and it is interesting to see that an effect is still maintained in both groups.

6.1.5 Modality and Synchronicity of Guidance

Two trials explored the differences in modality and synchronicity of guidance in iCBT. Based on the results of the included studies, it seems to be of minor importance for the effect of treatment if the guidance is conducted through phone or in written text in email or Internet forums, which corresponds to synchronous or asynchronous guidance. Hence, other factors such as the therapist or patients' preferences may be given more weight when considering modality in the treatment.

Synchronous guidance might give more individually tailored feedback that facilitates higher engagement and feeling of social support, in addition to reducing the risk of misunderstandings (Abbott, Klein, & Ciechomski, 2008). However, it needs to be scheduled, and there might be more issues related to privacy. On the other hand, the asynchronous guidance might have benefits because clients can have more time to process their questions in text and they can revisit what they have talked about with their therapist. The included studies in this guidance factor compare only email, online discussion forum, and phone. Other studies also use video conversation (Ciuca et al., 2018; Gershkovich et al., 2017) as well as SMS (Titov, Andrews, Choi, et al., 2009). Also, these studies included only short telephone calls. Guiding with longer phone calls might be more sufficient when comparing with email. Video conversations will also be more relatable to conventional therapy, where therapists can communicate both verbally and non-verbally.

The methods for conducting guidance in iCBT are developing. Panoply uses a new structure of support which focuses on peer-to-peer support (Morris, Schueller, & Picard, 2015). They have developed a crowdsourcing platform where users can help other users with tasks or support when going through a treatment program. They can be trained to review other users' assignments to provide one of three responses: *Support, debug, or reframe*. In this way, they can practise both social and cognitive skills. Chat could also be an alternative to emails. It would be synchronous guidance in written form, hence combining the modalities in the included trials. Chat can now be administered by a therapist as well as the use of newly developed automated conversational agents or chatbots (e.g., Woebot) (Sachan, 2018). These platforms are designed to resemble real-life human interactions and have been tested as a stand-alone product to increase mental health (Fitzpatrick, Darcy, & Vierhile, 2017; Ly, Ly, & Andersson, 2017).

6.1.6 Intensity of Guidance

Only one trial examined the effect of different levels of intensity of the email guidance, in the treatment of panic disorder (Klein et al., 2009). Participants with the option of sending and receiving three emails a week from their therapist instead of once a week did not show significantly greater symptom reduction on the primary outcomes ASP and DASS-21. Hence, more guidance is not always better, and this trial can help determine the best intensity of guidance in iCBT.

In the research on iCBT, there is a big difference when it comes to the time used on guidance. Lindefors & Andersson (2016) emphasises that 10 minutes a week (for 10 weeks) plus a diagnostic interview over the phone (40 min) should be an appropriate time for guidance. This includes responding to queries from clients and reading and providing feedback on homework assignments. However, there might be more advanced dose-response relationships that is not discovered. To date, it is common to provide guidance at the end or the beginning of a module, with varying length. Alternative ways to provide guidance might be to offer more guidance at the beginning of the program, or only each second or third module (Baumeister et al., 2014).

6.2 Therapist Behaviours in iCBT

After two decades of iCBT, there is still little knowledge about the therapeutic role in this treatment. In the research, the therapist input has mostly been described in terms of sentence-long description of therapist instructions, as well as minutes devoted to each client.

Two RCTs examined the content of therapist emails in iCBT. Both trials found different categories in their analysis. Therapists reinforcing participant tasks were significantly positively associated with the primary outcome of treatment (Paxling et al., 2013). On the other hand, deadline flexibility was significantly negatively associated with the outcome. In Holländare et al. (2016), affirmation of the patients, encouraging both past and future behaviour, and self-disclosure were significantly associated with treatment outcome. Based on these studies, strengthening patients' positive behaviour appears to be an important part of guidance in iCBT.

In Paxling et al. (2013), the therapists were experienced with iCBT, while the trial by Höllandare et al. (2016) included therapists with no prior experience with guidance in iCBT. Both trials base their associations only on correlation; hence causality cannot be inferred. They do not take into account the client emails, and we do not know what the therapists were responding to. Perhaps the therapists more often encouraged the clients who completed their homework, because then they had positive behaviour to reinforce? To date, the therapist behaviours in RCTs has been investigated only in treatment for generalised anxiety disorder and depression, and we do not know enough to conclude if it requires different content in the guiding regarding different diagnosis. Guidance in iCBT is carried out on a large scale, but the documentation of what is being done and what is an effective response is still sparse.

6.3 General Discussion iCBT

iCBT has shown a promising effect on treatment outcomes, similar to traditional face-to-face therapy. However, there are important differences between these treatments. First, the communication mode and presentation of the information is one of the main differences. In iCBT, communication is often asynchronous. Also, there is less focus on case formulations, that is often used in a wide range in face-to-face treatment, especially cognitive behavioural therapy. iCBT often contains more information in terms of psychoeducation than what is exchanged in a regular face-to-face session. In iCBT, clients can repeat the content, and the answers from the clinician, if that is in written form.

However, a limitation might be that it is difficult to do in vivo exposure, and the feedback is not as direct as in face-to-face therapy. iCBT leaves more responsibility to the clients, as they have to read or watch all the content, do the homework and changes in their own lives, and cannot begin this process in the therapy room. Also, fixed content gives fewer possibilities to do appropriate customisation and can result in too much or too little of a specific type of treatment. Because the content is standardised and automated, there is minimal if no enquiry into a patient's history and minimal tailoring of the content to individual patient differences.

There are many possibilities in evolving technology. Important new concepts include artificial intelligence (AI), where the device perceives its environment and learns from it. Artificial intelligence is typically defined as the ability of a machine to perform cognitive functions we associate with human minds, such as perceiving, reasoning, learning, interacting with the environment, problem-solving, and even exercising creativity (Norvig, 2012). AI may be especially relevant in the tailoring of program content, and maybe we can learn more about successful treatment with close collaboration with other fields of expertise?

6.3.1 Implications

Implications for Practise

Treatment of anxiety and depression with iCBT has proven a good treatment effect and can be scaled up to a large extent. It can become an easily accessible health service for many people who today do not have access to treatment or do not use this because of different barriers. However, this may require changes in the psychology profession, education, and the prioritisation in the healthcare authorities. It is difficult to speculate on how this is received

by both health professionals and clients, as it can be perceived as a threat. Health professionals have several barriers to using Internet-based treatment, partly because these health services might replace face-to-face treatment, or it may contribute to less funding to the traditional treatments. Health professionals also experience not having the support or training they need to fulfil their duties in these new treatment methods (Purebl et al., 2015).

Implications for Research

There has been a substantial development from the first PDFs sent out by email, via cCBT, and to interactive and multimedia-based programs of iCBT. Along with this development, there has not been a simultaneous update of the definitions or description of what iCBT or Internet-based treatment programs is, or what it should be in the future. Besides, the role and the function of the therapist providing guidance is not clearly defined in the research field. Furthermore, there is a need for trials with larger samples to explore whether the results presented in this review are generalisable. Also, before broadly implementing this form of treatment, research can contribute with more knowledge about the precise mechanisms of change and for whom this is an adequate treatment.

6.4 Limitations

There are several limitations both in this review and in the research field. First, even though all studies focused on the guiding in iCBT, few studies give detailed information about the instructions of the coaches or a published protocol. Second, many trials had small samples, reducing the power of the studies and increasing the margin of error. Third, in the trials, it is not possible to blind the participants or the coaches in the allocation, introducing a risk of bias. Also, different methods in the recruitment of patients may prevent generalisability. Many of the studies use advertising, both in newspapers and through interviews on TV to recruit patients to the research projects (Johnston et al., 2011). This may result in a self-selecting nature of the sample, and we do not know enough about whether these patients are similar enough to those recruited to RCTs of face-to-face therapy. On the other hand, some studies have performed RCTs in regular health care. These trials may, to a greater extent, increase the possibility of support for the treatment regimen in ordinary treatment. Furthermore, unguided intervention groups regularly compromise some contact with the research team. This might be similar to the organisation in the health care system, but it makes it difficult to translate the results to open-access programs.

Lastly, there is still a lack of heterogeneity in this research field. Nick Titov, a professor at Macquarie University, Australia, is an author of 11 of the 28 studies included in this review. In addition, Blake F. Dear is an author in eight of the studies, and Gerhard Andersson is related to six of them. In a small research field, few people can have a great impact on the development, but this can also lead to a biased research field. There is also a lack of research in non-Western countries. Some of the programs in these studies have been researched to a large extent and are well validated. There are experienced research departments both in Australia and Sweden where iCBT is implemented in regular health care. Other programs included in this review are still at an exploratory stage.

This review has certain limitations related to the methodology and analyses. First, there are only a few numbers of trials in each category. This is limited by the number of studies in the research field, and by restrictions in the inclusion criteria. This review was restricted to papers published in English; hence it might miss trials that would otherwise have been included, and it may result in a restriction of the cultural breadth of the research. Also, only programs based on CBT were included, and we might miss the theoretical breadth in the treatment field. However, to date, there are few programs based on other theories, and programs based on CBT currently dominate the field. Second, due to the scope of this paper, only one person has done the literature search and screening for including trials, thus introducing some risk of bias. In addition, the quality of the guidance is not considered in the results of this review.

Third, the review included studies conducted for various mental disorders, and with different methods and measuring instruments. The paper has included both studies with a diagnostic interview and with self-report of symptoms. The instruments may have different sensitivity to change. In a review, we might miss essential distinctions in the mechanisms and effect of the treatment related to specific disorders. Different diagnosis and symptom level may demand a different amount and structure of guidance. On the other hand, there is still minimal research on mental disorders other than depression and anxiety. Fourth, due to the scope of this review, results on other factors such as adherence, where there might be more information about the mechanism of change, have not been extracted. However, there is a weakness of many of the trials that they do not report these results.

7 Conclusion

This review aimed at investigating the existing literature of the guidance in iCBT in the treatment of depression and anxiety. The analysis was divided into two parts, (1) guidance factors in terms of the structure of guiding and (2) therapist behaviours as a part of guiding content. The analysis of the structure included six guidance factors. The largest group compared guided interventions with unguided interventions, and the results propose that iCBT can provide good treatment effect independent of human guidance. Automated guidance also seems to provide similar results as human guidance. Based on the included trials, the level of expertise of therapists, intensity, and modality of the guidance seems to be of minor importance. However, scheduling of the guidance may provide better treatment effect than unscheduled guidance. Therapists reinforcing and strengthening patients' positive behaviour also appears to be an essential part of guidance in iCBT.

There are few studies in each category, and to date, there is still limited knowledge of the distinct components of the guidance in iCBT. The findings from this review highlight the possibility that some guidance factors may be more important than others in predicting efficacy of iCBT. Therefore, these findings may be helpful in the development of the treatment and clarifying which guidance structure and content to use to maximise the effect. Additional studies are needed to determine the optimal quantity and quality of guidance in the context of iCBT.

In general, iCBT provides good treatment effect, similar to face-to-face treatment. The benefit of iCBT is that it can contribute to the treatment of people who may not be able to receive this in traditional ways. It is a promising method of getting past barriers that are common in mental health care. However, it demands new roles for the psychologists providing this treatment and updated research and information about the guidance.

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