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Mobile Cognitive Therapy: Adherence and acceptability of an online intervention in remitted recurrently depressed patients ☆

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ABSTRACT

Background: There are first indications that an Internet-based cognitive therapy (CT) combined with monitoring by text messages (Mobile CT), and minimal therapist support (e-mail and telephone), is an effective approach of prevention of relapse in depression. However, examining the acceptability and adherence to Mobile CT is necessary to understand and increase the efficiency and effectiveness of this approach.
Method: In this study we used a subset of a randomized controlled trial on the effectiveness of Mobile CT. A total of 129 remitted patients with at least two previous episodes of depression were available for analyses. All available information on demographic characteristics, the number of finished modules, therapist support uptake (telephone and e-mail), and acceptability perceived by the participants was gathered from automatically derived log data, therapists and participants.
Results: Of all 129 participants, 109 (84.5%) participants finished at least one of all eight modules of Mobile CT. Adherence, i.e. the proportion who completed the final module out of those who entered the first module, was 58.7% (64/109). None of the demographic variables studied were related to higher adherence. The total therapist support time per participant that finished at least one module of Mobile CT was 21 min (SD = 17.5). Overall participants rated Mobile CT as an acceptable treatment in terms of difficulty, time spent per module and usefulness. However, one therapist mentioned that some participants experienced difficulties with using multiple CT based challenging techniques.
Conclusion: Overall uptake of the intervention and adherence was high with a low time investment of therapists. This might be partially explained by the fact that the intervention was offered with therapist support by telephone (blended) reducing non-adherence and that this high-risk group for depressive relapse started the intervention during remission. Nevertheless, our results indicate Mobile CT as an acceptable and feasible approach to both participants and therapists.

1. Introduction

Major Depressive Disorder (MDD) is a chronically relapsing disease (Richards, 2011), with a high risk of depressive relapse (Burcusa and Iacono, 2007). Each episode of depression leads to considerable economic costs to the society (Johnson et al., 1992; Keller and Boland, 1998; Richards, 2011; Smit, 2009). Prevention of relapse is therefore of great importance. However, waiting lists due to scarcity of therapists are common (Cameron and Thompson, 2005). Therefore, an Internet-based Cognitive Therapy might be a feasible approach, given that it is easily accessible and therapist involvement may be reduced, as demonstrated in acute phase Internet-based treatment (Wright et al., 2005). Meta-analyses demonstrated small to moderate effect sizes of Internet-based therapies in the acute phase of depression, anxiety, panic disorders and alcohol use disorders (Andersson et al.; Andersson and Cuijpers, 2009; Lewis et al., 2012; Richards and Richardson, 2012; Riper et al., 2011; Spek et al., 2007). In addition, first results of psychological treatment by using a smartphone app are positive as well (Ly, 2012; Ly, 2014).

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In addition, there are first indications that the effects of guided self-help interventions (blended care), such as Internet-based psychotherapy, might be comparable to face-to-face psychotherapy, although this is less clear to patients seeking help in speciality care (Andersson et al., 2013; Cuijpers et al., 2010).

Although it was demonstrated that Internet-based therapies are effective in treating various (mental) health problems, most studies were performed in patients with acute problems. So far, only one study has examined an internet-based cognitive behavior therapy (CBT) compared to a control group as a relapse prevention strategy in depressed patients that responded to treatment but were partially remitted (Holländare et al., 2011; Holländare et al., 2013). Now for the first time, an Internet-based preventive Cognitive Therapy aimed at relapse prevention of a new episode in patients remitted for at least two months, including mood monitoring by making use of text messages and minimal therapist support by telephone and e-mail (Mobile-CT) was developed and evaluated (Bockting and van Valen, 2009; Bockting, 2009). Recently, in a randomized controlled trial ($N = 239$), we demonstrated that Mobile CT significantly reduced depressive symptoms levels measured with the Inventory of Depressive Symptomatology ($IDS\text{-}SR_{30}$), over three months of follow-up compared to Treatment as Usual in fully remitted participants with recurrent depression (Cohen's $d = 0.44$; Kok et al., 2014 *under review*).

Apart from these effects on return of depressive symptomatology, understanding how and to what extent an intervention is used is critical to increase the efficiency and efficacy (Eysenbach, 2005). According to the model of Internet-based interventions by Ritterband et al. (2009), based on multiple theories and models, factors such as user characteristics, adherence, support and website characteristic all influence the usage of the Internet-based intervention. In the current study, after we described the details of the Mobile CT program that was developed, the following facets were examined to evaluate the use of Mobile CT: 1) the user characteristics of participants in relation to adherence, 2) therapist support uptake, and 3) experienced difficulties based on some experiences of participants and therapists and evaluations filled in by participants after each module of Mobile CT.

2. Method

In this study we used a subset of a randomized controlled trial on the effectiveness of Mobile CT aimed at the prevention of depressive relapse (the first 129 participants that entered the study and were currently available for analyses) (Bockting et al., 2011). Participants were recruited via media, general practitioners and mental health services. The present quantitative and qualitative analyses were performed in the participants that were randomized into the Mobile CT added to TAU condition. Participants were a) between 18 and 65 years of age, and b) in remission of recurrent MDD for at least two months, but no longer than two years according to DSM-IV-TR as assessed using the Structured Clinical Interview based on the Diagnostic and Statistical Manual of Mental Disorders (SCID-I, DSM-IV-TR) (First et al., 2001) and had a maximum score of 10 on the 17-item Hamilton Rating Scale for Depression ($HRSD_{17}$) (Hamilton, 1960). Excluded participants had 1) a predominant anxiety disorder, 2) current or past mania or hypomania, 3) current alcohol- or drug abuse, and 4) past or present psychosis based on the SCID-I interview. Additionally those persons with insufficient mastery of the Dutch language, recent electroconvulsive therapy or organic brain damage were not included. The study was approved by the Medical Ethics Committee of the University Medical Center Groningen and all participants provided written informed consent.

2.1. The Mobile Cognitive Therapy

Mobile CT consists of Internet-based Preventive Cognitive Therapy (PCT), telephone delivered psychotherapy (telemental health) and mood monitoring via text messages and e-mail. Mobile CT consists of eight modules with a fixed structure and is an adapted form of PCT. PCT is an effective eight session face to face intervention aimed at the prevention of relapse in remitted but recurrently depressed patients (Bockting et al., 2005, 2009). When participants log into the web-based intervention, they first see the "cockpit" (Fig. 1), which consists of 1) an overview of the eight modules, 2) mood monitor information, and 3) e-mail communication with their therapist (coach). Via the cockpit other parts of the intervention can be assessed as well, such as additional prevention of relapse information and a personal workbook in which participants can save exercises from the modules. The workbook further contains records of negative and positive thoughts and feelings. The workbook can be personalized by adding a photo of oneself and writing a motivational message to oneself. After study participants logged in for the first time, they were obliged to fill in whether they wanted to receive the mood monitor and reminders via text messages by mobile telephone or e-mail. Access to subsequent modules is only granted after finishing the previous module. Each module consists of text and video based information and assignments that can all be finished in approximately 20 min. In the present study, participants were advised to finish around one module each week, but were told to repeat modules as often as they wanted. Every study participant had access to Mobile CT for one year and could log in as often as they wanted, also after finishing all modules. Mobile CT has been developed in a collaboration between the University of Groningen and the Trimbos-Institute (Netherlands Institute of Mental Health and Addiction).

2.1.1. Mobile mood monitoring

Twice a month, participants received a reminder via a text message (or e-mail on request by the participant) to fill in the mood monitor. The mood monitor consists of two questions about last week's mood and interests, in order to check the two key symptoms of depression (American Psychiatric Association, 2010), to be answered on a scale of 1 to 10. In case a decrease in mood or interests occurred twice in a row (score of <3), participants received an automatic request to fill in the 16 item Quick Inventory of Depressive Symptomatology (QIDS) (Rush et al., 1996). In case the outcome of the QIDS was a score above 10, or indicated suicidal ideation, the researchers checked return of a depressive episode with an interview (i.e. the $HRSD_{17}$ and the depression section of the SCID-I). In case the $HRSD_{17}$ score was ten or higher and the SCID-I was indicative of a depressive relapse, participants were advised to contact their general practitioner or therapist.

2.1.2. Automatic feedback and reminders

Each participant received friendly reminders by text message or e-mail to proceed with the intervention after absence to the website for six weeks. Further, in the beginning of each module after the first, participants were asked if they finished the assignment in the previous module. Depending on their answer, participant received automatic feedback. For example, when a participant filled in that the previous exercise was performed, the system answered: *Very good!* By practicing with assignments you do not only learn the theory but also learn how to apply this in daily life. This makes the training more effective. When a participant filled in that the previous exercise was not performed, the system answered: *Too bad!* By doing assignments you not only learn the theory, but also learn how to use this in daily life. This will make the training more effective. What was the reason for not doing the exercise?

2.1.3. Therapist support

The main aim of overall support was to help participants with the exercises and work through the modules. Participants were assigned to a therapist and approached through e-mail by the researchers to schedule two telephone support sessions with this therapist. In case of no response, participants received friendly reminders by e-mail and