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Tablet-based support for older adults with severe mood disorders treated in an ambulatory geriatric psychiatry setting: Protocol of a feasibility study of the eCare@Home platform

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ABSTRACT

Introduction: Although older adults are just as likely to benefit from e-mental health as their younger counterparts, there are virtually no applications specifically designed to accommodate the needs of older adults with recurrent depression or bipolar disorder. Recurrent mood disorders constitute a large and rising proportion of the global disease in older populations, indicating a need for more e-mental health applications targeting this group. This paper describes the theoretical background and methodology of a study examining the feasibility of a tablet-based self-management platform for older adults with recurrent mood disorders. The eCare@Home platform was designed to 1) improve patients' awareness and knowledge of recurrent mood disorders and their treatment, 2) promote self-management through the use of a simple daily monitoring tool, and 3) facilitate online contact with their clinician through videoconferencing.

Methods: The design involves a single-group four-month pilot study, with measurements at baseline (T0), and at weeks 8 and 16 (T1 and T2). The target group consists of older outpatients (aged 60 or above) who are undergoing treatment for recurrent depressive or bipolar disorder (N = 50), and their clinicians (N = 10). Primary feasibility endpoints will be system acceptability, system usability, and client satisfaction with the platform. In addition, qualitative data from semi-structured interviews in N = 10 patients and N = 5 clinicians will be gathered to provide more insight into user experiences and evaluations of the platform's added value.

Discussion: To the best of our knowledge, this is the first study to evaluate the feasibility and acceptability of a tablet-based e-mental health platform for older adults with severe mood disorders. If tablet-based support for this group is shown to be feasible, the intention is to proceed with the design of a large-scale process and outcome evaluation. The strengths and limitations of the methodology used are addressed in this article.

Trial Registration: registration is pending.

1. Introduction

This article describes the design of a pilot study to evaluate the feasibility of a tablet-based e-mental health platform for older adults with severe and recurrent mood disorders (depression and bipolar disorder). E-mental health applications for mood disorders appear to be effective in younger age groups and show promise as a supplement to conventional care (Griffiths et al., 2010). Although older adults are just as likely to benefit from e-mental health as their younger counterparts, there are virtually no applications specifically designed to accommodate the needs of older adults with mood disorders. Recurrent mood disorders constitute a large and rising proportion of global diseases in older populations (Volkert et al., 2013), indicating a need for more e-mental health applications targeting this group. There have been a few studies into online cognitive behavioural therapy for late-life depression, however these targeted older adults in the general population with mild to moderate symptoms (Mcmurchie et al., 2013; Spek et al., 2007; Titov et al., 2015). The present study is one of the first to develop an e-mental health application

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supporting the needs of older adults with severe recurrent mood disorders, in a specialized mental health care context.

1.1. Theoretical background

Long-term mental health care and the intensity of treatment for older adults with severe mood disorders, such as recurrent depressive disorders and bipolar disorder, depends on the stability of the patient between episodes (Blazer, 2003; Dols et al., 2012). Although recurrent depression and bipolar disorder are generally regarded as two distinct disorders, they share certain essential features. Both conditions have a fluctuating course, in which periods of relative stability are intertwined with moderate to severe relapses in mood disorder episodes. Thus, patients with these conditions (and their clinicians) face varied, but similar, challenges in managing their illness (Keitner et al., 2006; Russell and Browne, 2005).

These challenges include: 1) monitoring warning/early signs such as changes in mood, sleep patterns and activity levels, which can precede a new episode (Baglioni et al., 2011; Lam et al., 2003; Mammen and Faulkner, 2013) 2) being aware of the dynamics of the disorder, the importance of treatment adherence, drug-drug interactions and somatic comorbidities (Lam and Wong, 1997; Todd et al., 2012) and 3) identifying the features of different phases of stability i.e. although a hospital admission or intensive ambulatory care may be required during exacerbations of the illness, patients may have far less need of specialized mental health care during phases in which they are relatively stable (Michalak et al., 2006). The care provided by mental health care services therefore needs to allow for timely adjustments in the need for support and autonomy. Self-management skills and flexible access to specialized care therefore seem to be fundamental for patients with recurrent mood episodes.

'Self-management' refers to the individual's ability to cope with the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent to living with a chronic condition (Barlow et al., 2002). Frequently used self-management strategies for mood disorders include self-monitoring of disease-specific symptoms, psychoeducation and maintaining a relapse prevention plan (Murray et al., 2011; van Grieken et al., 2014). Psycho-education is effective in improving clinical course, treatment adherence and psychosocial functioning (Tursi et al., 2013). Self-monitoring is not only effective as an aid to understanding the dynamics of patients' everyday lives, it is also widely believed that this can benefit patients directly (e.g. Janney et al., 2014). All existing evidence-based psychological treatment protocols for depression and bipolar disorder involve various aspects of self-management (Kupka et al., 2015; Spijker et al., 2013).

Self-management activities, however, often require high levels of daily commitment from patients, which may result in low compliance rates (Whybrow et al., 2003). E-mental health applications can help facilitate self-management processes by offering easy access to brief, user-friendly, real-time assessments, whereas traditional pen and paper charting is more time-consuming and is normally retrospective in nature. Thus, e-mental health applications can increase accuracy and minimize retrospective bias (Aan het Rot et al., 2012; Ebner-Priemer and Trull, 2009). In e-mental health applications, multiple self-management activities can also be combined in a single platform, making it easier for patients to stay involved. Various e-mental health applications, offering a range of self-management options, have been designed for both recurrent depression and bipolar disorders. The results of several studies suggest that it is feasible to implement these applications as a supplement to routine practice and that patients regard these applications as a useful addition to regular treatment (e.g. Bardram et al., 2013; Depp et al., 2015; Hunkeler et al., 2012; Lauder et al., 2014).

There has only been one study, targeted specifically at older adults, that involved the use of a mobile device to self-monitor for depressive symptoms (Moore et al., 2016). However, no results concerning the feasibility and usability of the mobile device and app used in this study have yet been published. Nevertheless, based on the fact that older adults are often less familiar with computer technology and the internet (LeRouge et al., 2014), we may assume that their specific needs must be taken into account when designing e-health applications.

1.2. The co-creation of the eCare@Home platform

The eCare@Home (ECH) platform was developed in response to the need for target-group-specific e-health applications. ECH is a tablet-based self-management platform for late-life recurrent depression or bipolar disorder, for use in addition to regular treatment. A co-creational approach was used, to compensate for the lack of sufficient theoretical background data in the literature. In this way, the design team was able to ensure that the product would be usable for our specific target group. The design of eCare@Home was informed by the use of personas (detailed patient profiles) and ongoing user tests of interim design visualisations, as opposed to the traditional rigid waterfall method, that incorporates only a single assessment round. In the initial stages of development, six personas were created to familiarise the design and software development team with the characteristics of the targeted patient group, including its members' social relationships and their interactions with mental health care professionals. The next step consisted of actual patient and clinician interviews. The first author of the present study (Josien Schuurmans) conducted semi-structured interviews on three separate occasions with a total of eight volunteers who were being treated for recurrent depression or bipolar disorder at inGeest's outpatient geriatric psychiatric department. For each of the three rounds, interactive demo material and screenshots provided by the design team were used as stimuli. Several rounds of semi-structured individual and group interviews were held with a total of 20 clinicians who were employed at the same facility.

After each round of interviews, detailed feedback was provided to the design team. Feedback was not restricted to a one-time communication regarding the interviews held after each round. The design team translated feedback into new screenshots and wireframes, then two members of the research group (Josien Schuurmans and Jeroen Ruwaard) reviewed the work and provided additional feedback based on user assessments. In this way, a continuous interactive model was implemented to ensure that the design reflected the end-users' demands.

These tests gave rise to specific requirements regarding usability, involving such aspects as larger fonts, the use of easily discernible colours, and controls that can be easily operated by individuals suffering from tremors or arthritis. However, 'usability' also involved a need for applications and controls that are sufficiently simple, intuitive and straightforward that even those with little or no familiarity with the internet or computers can use them. Furthermore, the tests resulted in a focus on three main objectives regarding those contents of the platform that correspond with the aforementioned challenges (Section 1.1, page 4) in dealing with recurrent mood disorders. These three objectives are: support for daily self-monitoring in an unobtrusive and non-stigmatizing manner; support for communication with clinicians from the comfort of the patients' own homes via videoconferencing; and easy access to personalized information regarding their disorder and relapse prevention plan. The ECH patient portal is designed to be used on mobile tablet computers, as this is expected to make the internet more accessible for older adults who may be unfamiliar with the use of computers (Werner et al., 2011). Also, tablets have fewer usability barriers (e.g. no mouse is required, screen size is larger than a smartphone's etc.) (Foster and Sethares, 2014) (Fig. 3).

1.3. Aim and focus of the proposed study

In the proposed study, we will evaluate the feasibility of the ECH platform (i.e. system usability, system acceptability, and client satisfaction) through a pilot study in an ambulatory geriatric psychiatry setting