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Perceptions of the feasibility and acceptability of a smartphone application for the treatment of binge eating disorders: Qualitative feedback from a user population and clinicians

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ABSTRACT

Background: Binge eating, a major public health problem, is characterized by recurrent episodes of out-of-control eating in which an individual consumes an unusually large amount of food in a discrete time period. Limitations of existing treatments for binge eating (both in-person psychotherapy and guided self-help) indicate that smartphone applications (apps) may be an ideal alternative or enhancement. An app for binge eating could aid treatment dissemination, engagement, and/or compliance. However, no research to date has examined user perceptions of a therapeutic app for binge eating, which is critical for development.

Objectives: The purposes of the current study were to conceptualize a potential app for binge eating and obtain feedback regarding feasibility and acceptability from target users (i.e., individuals with binge eating) and clinicians specializing in the treatment of binge eating.

Methods: Our team conceptualized a smartphone app that contained self-help material, functions to monitor behavior, and provisions of in-the-moment interventions. We presented this app (e.g., feature explanations, mock screen shots) through phone interviews with clinicians who specialize in the treatment of binge eating ($n = 10$), and focus groups with individuals experiencing binge eating ($n = 11$). Participants were asked to discuss customization, user burden, terminology, attrition, data visualization, comprehensiveness, reminders, feasibility, acceptability, and perceived effectiveness of the proposed app. Thematic analyses were conducted from qualitative data (e.g., audio recordings and interview notes) obtained via the focus groups and interviews.

Results: Results indicated that our proposed app would be highly feasible and acceptable to users and clinicians, though concerns about the degree of personalization and customizability were noted.

Conclusions: The current study details highly specific feedback and ideas regarding essential app features from target users and clinicians. This information is critical for the development of future apps to treat binge eating. Ways in which data obtained from the current study may be generalized to the development of therapeutic apps for other psychological disorders is discussed.

1. Introduction

1.1. Binge eating disorder

Binge eating is defined as eating an unusually large amount of food within a short amount of time, accompanied by a subjective sense of loss of control over eating. Diagnostic criteria for binge eating disorder (BED) requires that binge episodes cause emotional distress and occur at least one time per week over a three-month time period [1]. BED is the most common eating disorder in the United States, affecting 3.5% of females and 2% of males [32]. Individuals with BED show high rates of psychiatric comorbidity [22,65], impairments in work and social functioning [31,56], reduced quality of life [42,44,52], and suffer medical complications related to obesity [12,33].

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1.2. Treatment for BED

The National Institute for Health and Clinical Excellence (2011), along with several recent systematic reviews of the literature, recommend Cognitive Behavioral Therapy (CBT) as the gold-standard treatment for patients with BED. CBT for BED is a psychosocial treatment approach that is typically delivered either individually or in small groups and focuses on teaching patients how to identify, evaluate, and change irrational thoughts and feelings about food and eating, and uses behavioral interventions (e.g., normalization of eating, engagement in alternative activities during high risk periods) to modify eating behavior. A systematic review of randomized controlled trials for BED found that the evidence for CBT was strong, with individual or group CBT reducing binge eating for at least 12 months after treatment [5].

A particular challenge of in-person treatment is that skills learned in the calm of a treatment office cannot be effectively utilized in the "storm" of everyday life [27,66]. Treatment approaches that take place outside the traditional therapy office have been shown to be better at promoting the generalizability of treatment skills [35,36]. Thus, it is desirable to develop treatments that can deliver interventions when and where they are most needed (i.e., in the moment). Another challenge faced by individuals with BED is gaining access to high-quality treatment. Few practitioners are trained in evidence-based treatments, such as CBT for BED [6,8], and those who do have this training are often located far from the patient and/or are not part of insurance panels [30]. For some, the reluctance is based on the stigma of seeking treatment and/or the intense shame associated with binge eating [28]. For others, it is logistical [28].

1.3. Self-directed CBT for BED

Self-directed CBT, most typically conducted using a self-help book such as "Overcoming Binge Eating" by Christopher Fairburn [18], may be one method to combat the barriers to in-person treatment described in Section 1.2. Self-directed CBT, in conjunction with a limited amount of clinician guidance (i.e., "guided" self-help), has been shown to be an acceptable, feasible, cost-effective and efficacious treatment for BED and is often recommended as the more practical first line of treatment for BED [23,24,38,45,58,60]. Overall, results for guided self-help have been comparable to in-person CBT, with up to 64% of patients reporting abstinence from binge eating by 12 months [59] and significant improvements in eating disorder psychopathology and psychological distress. Additionally, Internet-delivered, unguided self-directed CBT has been shown to produce significant improvements in binge eating, drive for thinness, perceived hunger, and body dissatisfaction, which were maintained at a six-month follow-up [8,37]. The efficacy, high disseminability, and cost-effectiveness of self-help programs have led to suggestions that self-help should be the current first line of treatment for BED.

Although self-help is recommended as a first-line treatment for BED, there are a number of limitations to its widespread use. First, guided self-help is rarely available as a treatment option beyond research studies. Although self-help books can be purchased from most commercial book retailers, the presence of a health care professional who is trained to consult with patients during self-help treatment is limited. The importance of clinician guidance is underscored by the strong evidence that guided self-help has greater efficacy compared to unguided self-help. Second, CBT for BED, regardless of the format, requires the self-monitoring of emotional and eating-related cues and binge eating behaviors, so that behavior and outcomes can be tracked, connections between triggers and binge eating can be established, and strategies to interrupt this process can be planned and utilized [18,41]. However, patients often show poor compliance and low accuracy using typical self-monitoring tools [16,55], even during in-person treatment approaches. Patients using self-directed CBT likely have even greater difficulty remaining compliant with standard self-monitoring tools, thus precluding accurate and helpful identification of binge-trigger connections without additional guidance.

1.4. Smartphone-delivered psychological treatment

One way to improve the provision of guided self-help would be the creation of an easy-to-use technology, such as a mobile application (app), that can track a number of cognitions, emotions, and behaviors relevant to binge eating and prompt the clinician to check-in about ongoing problems implementing the treatment. The widespread accessibility of smartphones shows promise in addressing the lack of availability of traditional self-help and in-person treatments; apps can be widely disseminated and can serve as an ideal clinical management tool for both patients and clinicians [9,13,43].

As of 2013, over half of all adults (56%) own a smartphone and 93% of smartphone users use their phone to access information online [14]. Smartphone users consist of individuals with varying ethnicities, incomes, education, and locations [14]. Furthermore, current mobile statistics have identified approximately 45 billion app downloads from iPhones and Androids combined [50]. Recent estimates have suggested that there are now more than 20,000 health-related apps available for mobile devices [50]. Consequently, using apps as guided self-help could more easily benefit the general population.

In fact, the use of mobile apps has become an increasingly popular method in the assessment and treatment of various psychological disorders. Though a full review of treatment apps for each psychological disorder is beyond the scope of this report, a search conducted in January of 2015 within the Android and iPhone app marketplaces revealed 62 apps for depression, 21 for bipolar disorder, 76 for anxiety, 54 for substance use disorders, 10 for schizophrenia/psychosis, 12 for eating disorders, and 19 for personality disorders (e.g., primarily borderline, but also including narcissistic, schizoid, and antisocial). The functions range from purely educational (e.g., definition and symptoms of a particular disorder), to assessment (e.g., diagnosis of a disorder, tracking of symptoms), to treatment (e.g., cognitive behavioral treatment, hypnosis, acupuncture). However, these apps have not been assessed for effectiveness and many are not based on empirically supported principles.

Given the burgeoning relevance of mobile apps, research psychologists have begun to formally develop and evaluate treatment apps for depression [7,34,62], bipolar disorder [2,3,11,47], anxiety disorders [20,49], substance use disorders [20,25,39,53,61], schizophrenia [11,21], and borderline personality disorder [53]. However, there have been no BED treatment apps that have been formally evaluated for effectiveness. Given the efficacy of existing internet-based treatments, it appears that smartphone-based provision of CBT for BED (to be utilized either in un-guided or guided self-help format) is a logical next step for treatment delivery as it could combine the benefits of self-help for CBT with in-the-moment tracking and interventions capabilities [15,26,51].

Potential benefits of an app for binge eating could also extend beyond dissemination of CBT; technological advances in smartphones could improve efficacy of both in-person and self-help treatments. For example, Ecological Momentary Assessment (EMA) is one commonly-used approach to self-monitoring that employs repeated sampling to capture real-time data. Studies that have utilized EMA and other forms of technology-based monitoring with individuals with binge eating have reported high levels of com-