Examining the Efficacy of mHealth for Treating Depression in Primary Care

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Primary care has become the first and only point of contact for a majority of individuals experiencing depressive symptoms (Kessler & Stafford, 2008). It has been estimated that 5 to 13% of patients seen in primary care are diagnosed with MDD, while the 12-month prevalence is 12.5% (Mitchell, et al., 2009). The standard of care for treating depression typically involves prescribing antidepressant medication and/or referral for outpatient psychotherapy (Trangle et al., 2016). However, many patients do not adhere to treatment recommendations, discontinue treatment prematurely, or do not respond to antidepressants or psychotherapy (Sansone & Sansone, 2012).

One alternative to standard care is the use of less intensive, more personalized mHealth interventions, including mobile applications. Mobile applications have distinct advantages compared to traditional interventions for mental health, including lower costs and increasing treatment accessibility and retention (Donker et al., 2013). Preliminary evidence about the efficacy of mobile applications in treating depression suggests that they significantly reduce symptoms when compared to control conditions and internet-based interventions (Maresova, et al., 2017; Watts et al., 2013).

While it appears that mobile applications have the potential to be an effective form of treatment for depression, there are a number of gaps within the current literature. First, a majority of mobile applications currently available to the general public have not been adequately evaluated (Donker et al., 2013). Second, studies to date have neglected to examine patient preferences towards specific mobile applications. Numerous studies have indicated that incorporating patient treatment preferences improves clinical outcome (Firth et al., 2015), adherence (Kwan et al., 2010) and reduces rates of attrition (Swift & Greenberg, 2015). Thus,
examine patient preference for the types of mobile applications might help us understand factors that might moderate the outcome of treatment.

Third, it is possible that some level of guidance or training is necessary to optimize the effectiveness of mobile applications. This is consistent with many individual outcome studies and meta-analyses that have indicated guided self-help interventions are more effective than unguided interventions (Anderson et al., 2014). Finally, these applications have yet to be examined within the context of primary care. Due to the barriers of accessing mental health care within primary care, it is necessary to explore alternative treatment modalities that might improve the access, efficiency, and effectiveness of mental health services.

Therefore, the primary aim of this pilot study is to examine the feasibility and acceptability of implementing mobile applications within primary care. Our secondary aim is to examine the preliminary effectiveness of mobile applications that currently exist on the market in reducing depressive symptoms and improving functionality. We hypothesized that patients utilizing mobile applications will show a clinically significant reduction in depressive symptoms, and an improvement in functioning and quality of life. The final aim is to examine whether matching a patient to their preferred mobile application results in greater overall clinical outcomes and adherence when compared to individuals who are randomized to an intervention. Given the limited research on the final aim, no a priori hypothesis was developed.

Method

Participants

Participants must be at least 18 years of age or older and own a smartphone with Wi-Fi or 3G/4G capabilities. Participants must obtain a score between 5 and 14 on the 9-item Patient Health Questionnaire (PHQ-9), which is indicative of mild to moderate depressive symptoms.
Ineligibility criteria includes patients who are: 1) actively suicidal or exhibit suicidal ideation, 2) currently receiving psychotherapy and/or pharmacotherapy, 3) pregnant, or 4) have a history of bipolar disorder, substance use disorder, dementia or schizophrenia spectrum disorders.

**Setting and Procedure**

Participants will be recruited from the Department of Family Medicine at Rowan University School of Osteopathic Medicine. Regular depression screening using the PHQ-9 is already a routine practice at this location. Potential patient participants will be approached in the examination rooms after their visit with their physician. Those who meet inclusion criteria and consent to participate will be asked to complete the baseline assessment.

After completion of the baseline assessment, participants will be randomized to one of two intervention conditions with a 1:1 allocation. Participants randomized to the first intervention condition will then be randomly assigned one of three mobile applications selected based on empirical support for the theory from which they came (e.g., Cognitive-Behavioral Therapy, Mindfulness, Social Problem Solving). Participants randomized to the second intervention condition will be matched to a mobile application based on their preferences.

All participants will receive training on how to use the mobile application effectively. Participants will be contacted via email on a weekly basis to offer help with any difficulties encountered when using the mobile application. Outcomes will be assessed at baseline, end of treatment, and three months post-treatment. Participants will be given a $10 gift card for completing the baseline questionnaire, a $10 gift card for completing the six-week questionnaire, and a $15 visa gift card for completing the three-month questionnaire.

**Measures**
Feasibility will be assessed through rates of study enrollment and usage of the mobile application (e.g., number of days logged in per week). Acceptability will be evaluated using a self-report satisfaction measure that will be designed by the research team members.

Depressive symptoms will be assessed utilizing the PHQ-9. In order to assess quality of life and functioning, participants will complete the Self-Report Quality of Life scale and the Cornell Service Index. Participants will also complete the Kentucky Inventory of Mindfulness Skills, Social Problem-Solving Inventory-Revised: Short Form. the Automatic Thoughts Questionnaire – Positive and Negative in order to understand whether participants learned the skills associated with theoretical orientation of the mobile application.

**Implications**

By implementing the use of mobile applications within primary care, we may decrease the many barriers to accessing psychological care, including treatment costs and stigmas associated with mental health treatment (Boschen, 2009). Additionally, mobile applications provide patients with the opportunity to choose the type of theoretical orientations and therapeutic techniques they receive. By providing patients with their preferred choice, they may be more likely to adhere to treatment recommendations, stay in treatment longer, and may have greater overall clinical outcomes.

*(Final Word Count: 997)*
References


