A qualitative exploration of the feasibility of incorporating depression apps into integrated primary care clinics

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Integrated Primary Care Clinics

Abstract

Background: The use of mobile applications or "apps" is beginning to be identified as a potential cost-effective tool for treating depression. While the use of mobile apps for health management appears promising, little is known on how to incorporate these tools into integrated primary care settings – especially from the viewpoints of patients and the clinic personnel.

Purpose: The purpose of this study was to explore patient- and clinic-level perceptions of the use of depression self-management apps within an integrated primary care setting.

Methods: Patients (n=17), healthcare providers, and staff (n=15) completed focus groups or semi-structured interviews in-person or via Zoom between January and July 2020. Participants were asked about barriers and facilitators to app use, how to best integrate it into care, and reviewed pre-selected mental health apps. Data were analyzed using a directed content analysis approach.

Results: From a patient perspective, features within the app such as notifications, the provision of information, easy navigation, and a chat/support function as well as an ability to share data with their doctor were desirable. Providers and staff identified integration of app data into electronic health records to be able to share data with patients and the healthcare team as well as clear evidence of effectiveness as factors that could facilitate implementation. All participants who reviewed apps identified at least one of them they would be interested in continuing to use.

Conclusions: Overall, patients, healthcare providers, and staff believed depression apps could be beneficial for both patients and the clinic.

Key Words: Depression, mobile apps, primary care, qualitative, mental health

Introduction

An estimated 17.3 million adults in the U.S. have experienced at least one major depressive episode [1, 2]. In the U.S., the financial burdens of treating depression continue to grow, affecting both patients suffering from depressive symptoms and health care institutions. Currently, primary care settings are the most common location through which individuals receive treatment for mental health difficulties [3]. Providing integrated mental health services in primary care can de-stigmatize treatment for mental health challenges, reduce barriers to accessing care, and offer an opportunity to blend interventions that target both physical and mental health conditions [4]. However, barriers including low patient appointment attendance and limited insurance coverage still exist [5, 6]. For this reason, it can be helpful for primary care clinics with integrated mental health services (integrated primary care, IPC) to develop strategies to supplement the work of providers in treating depression in their patients.

One viable option to help patients manage depressive symptoms may be the use of mobile applications (apps). In 2017, approximately 325,000 health related mobile apps were available in the digital healthcare market [7]. The overwhelming presence of mental health apps has led to exploration by researchers that aim to discover the effectiveness of this technology for managing depressive symptoms [8]. Based on existing data, utilizing mental health apps may provide many benefits for individuals with depression and other mental health problems [9]. Importantly, they may help to monitor and manage symptoms [8]. In addition, research clearly support the efficacy of smartphone-based mental health interventions [10, 11]. These findings provide insight as to how these tools can be leveraged in other settings to enable patient engagement and improve health outcomes.

Our previous work exploring depression app use within IPC found that over 83.5% of patients in two IPC clinics owned a smart phone and 66.5% reported that they used a smartphone for health information or issues. The majority (80.5%) stated that they were willing to use mobile phone data for depression management and 68.9% reported that they believed an app could help in symptom management. [12]. Results indicate the capacity and willingness of patients to use mobile apps for depression management, but additional information is needed on how to encourage engagement with apps.

To encourage app use, current literature suggests facilitators such as ease of use, low effort expectancy, simple designs, gamification strategies, and tailored material [13, 14] to be promising indicators of future app utilization. However, previous research for mental health app use has found concerns from patients surrounding intervention effectiveness, app functioning, privacy, cost, regulatory guidance, and disclosure of app activities with a therapist [13, 14]. Further review must also address the willingness of clinic providers and staff to participate in incorporating mobile applications into the treatment plans of patients with depressive symptoms as previous research has noted a concern by providers and healthcare systems on whether the app adds value to treatment [14].

Gaining a better understanding of patient as well as clinic provider and staff interests in and preferences for including mobile health apps as an additional treatment option for depression is critical. Such information can be used to learn about the facilitators and obstacles to incorporating mobile health apps in IPC settings. There are several models that have been used to explore the use of mobile apps and develop interventions [14-16]. One of which is the Technology Acceptance Model, which extends the Theory of Reasoned Action with the intent of predicting a specific behavior by exploring factors such as perceived usefulness and perceived

ease of use [15]. Another framework used to develop interventions is Bowen's and colleague's guidelines for designing feasibility studies which was developed to help researchers make judgments on the feasibility of potential interventions [16]. Using a variety models focused on both technology acceptance and feasibility studies could help strengthen the resulting findings when exploring patient and clinic-level factors that could improve the successful integration of depression apps into clinic care. Therefore, the purpose of this study was to explore patient and clinic-level perceptions of the use of depression self-management apps within an IPC setting.

Methods

This was a collective case study conducted January through July of 2020 [17]. This study was approved by the XXXX Institutional Review Board.

Target population

Patients, healthcare providers, and clinic staff were recruited from two IPC clinics recognized as patient-centered medical homes in a mid-sized Midwestern city (~50,000 people) with predominately underserved patient populations. Between October 2019 and March 2020, patient participants were recruited during their medical appointments. Adult patients (19 years of age or older) who had a current or prior diagnosis of depression were eligible to participate. All clinic healthcare providers and staff were also eligible to participate.

Procedure

Recruitment

Patients were recruited during their medical visits after completing a mobile app survey [12]. Individuals were recruited from the survey study participant pool that consisted of a majority of females (67.1%), aged 40 or above (71.3%), who were white (53.1%) with some college or a technical/associates degree (50.0%) with insurance from a private company (45.8%),

Medicare (27.1%), or Medicaid (16.2%). A purposeful sampling strategy was used to ensure adequate representation across different age groups (20-40, 40-60, and 60+). Patients who had indicated interest in participating (N=115) were invited by phone and/or email to participate. A total of 6 patient focus groups with 8 patients per group were recruited as previous research has found this to allow for 90% data saturation [18]. In-person participants were offered a prepackaged lunch and all participants received a $25 Visa gift card.

Healthcare providers and staff were recruited for participation through two members of the research team (JC, MN) who worked as behavioral health providers (BHPs). A purposeful sampling strategy was used to ensure adequate representation across providers and staff including clinic medical directors, attending physicians, internal medicine residents, advance practice registered nurses, and BHPs as well as and other clinic staff including medical assistants, nurse care coordinators, and non-clinical social workers. We recruited 4 provider/staff focus groups with 6-8 persons per group [18]. Staff focus groups occurred over the lunch hour and a lunch was provided. Once the study began due to the challenges of COVID-19 pandemic, we also provided the option of individual interviews for providers.

Focus group and interview protocol In January and February 2020, in-person focus groups and interviews were held at the clinics. Prior to starting each focus group or interview, researchers completed the informed consent process with participants. A trained researcher with 10 years of qualitative experience conducted all focus groups and interviews. A semi-structured focus group and interview guide was developed based on the Technology Acceptance Model, previous research in factors related to app use, and frameworks for designing feasibility studies (Supplemental Table 1 and 2) [14-16, 19]. Participants were asked questions related to their general use of health apps and their interest in apps. Provider and staff questions focused on the

process of incorporating apps in the clinic and implications of app use within a clinic setting. Clinic medical directors, attending physicians, and internal medicine residents were only available for 30-minute interviews and only completed this portion of the interview guide.

For all other participants, the focus group or interview continued for an additional 30 minutes. Research assistants distributed either an Android or iPhone, according to the participant's preference. Participants were asked to explore pre-downloaded mental health apps – Carezone, Sanvello, Woebot, Wysa, and Youper. The apps had been previously selected by the research team via a rigorous process of examination for quality and accessibility [20]. An overview of the features of each app is provided in Supplemental Table 3. Patient participants were allowed 10-15 minutes to explore the app and then completed the user version of the Mobile Application Rating Scale (uMARS) [21]. The uMARS survey has high internal consistency (alpha = .90) for the overall scale and alphas for all six subscales covered by the assessment– engagement, functionality, aesthetics, information, subjective quality and perceived impact with individual scores ranging from .71-.80 [21]. After completing the survey, patients provided their thoughts related to each app, with the group. Patient participants reviewed three of five apps each. Provider and staff participants were asked to review each of the five apps (either on their personal smartphone, or on one provided to them) for approximately five-ten minutes and then were asked to orally provide feedback regarding the usability and function of each.

Due to the start of the COVID-19 pandemic, focus groups and interviews held in May and July 2020 took place via Zoom. Patient participants were asked to download specific apps onto their smartphones for use during the focus group while provider/staff participants were provided a phone with the pre-downloaded apps. A research assistant conducted a "practice" Zoom call with each participant who was unfamiliar with Zoom to ensure they were ready for the

virtual focus group or interview. At the beginning of each virtual focus group or interview, participants completed informed consent via RedCap, a web-based app used for managing surveys. Virtual focus groups and interviews followed the same protocol as in-person focus groups except the uMARS survey was administered orally rather than in written form.

Coding and Data Analysis

Focus groups and interviews were audio recorded, transcribed verbatim by a third party, and reviewed by one of the authors for accuracy and to ensure data saturation prior to concluding data collection [22]. Once transcriptions were completed, interviews were uploaded into QSR NVivo 12. Data were analyzed using a directed content analysis approach [23]. First, the lead author (DD) deductively developed broad themes within NVivo based off the framework of the interview guide. Next underneath each broad theme, the same author (DD) inductively developed codes by identifying sub-themes within the transcripts. The coded data within NVivo was then reviewed by another author (JC) who met with the lead author to discuss coding and to develop definitions for the codebook. Once the codebook was developed, the first researcher (DD) revised coding of all data within NVivo. Next, the second researcher (JC) reviewed all coded data one more time. Finally, a third researcher (DJ) was utilized for peer debriefing. He reviewed the coded data and codebook noting all discrepancies. All three authors then met to review and come to a consensus on the codes and definitions within the codebook as well as the coding for each theme. For quantitative data from the MAUQ, average scores were calculated. To ensure trustworthiness and validity of the data, the authors used the strategies of peer debriefing, thick description, and triangulation [24].

Results

A total of 17 patients (71% female, mean age = 47) participated in four focus groups and one interview (Table 2). While specific age groups were initially recruited for each focus group, due to challenges with recruiting participants, age ranges were widened and/or eliminated. A majority of patients were either white (47%) or black (41%), had never married (41%), classified their employment status as "disabled" indicating receiving disability benefits (65%), and had at least some postsecondary education (59%). A total of 15 providers and staff (87% female, mean age = 39) participated in two focus groups and six interviews. Most providers and staff were white (73%) and had been practicing their occupation for ten years or more (53%).

<Insert Table 1 Here>

Patient focus groups/interviews

Use of health-related apps. Most patients reported they had previously used a health-related app. Patients cited a variety of apps including trackers for pregnancy and blood sugar as well as the app used by the health system that enabled them to look at lab results and appointments. Few patients specifically mentioned they had used apps related to mental health such as mindfulness or meditation apps.

Patient factors impacting use.

Barriers to use. Patients noted a variety of barriers to using health apps. One frequently cited barrier was technology literacy. Patients discussed challenges with accessing apps, such as remembering passwords, app navigation, and general technology challenges. For example, one patient mentioned, "Some of them are just too hard for me to track or pull up all the time. They're difficult to maneuver through." Other barriers to using apps were concerns about privacy and cost. Additional barriers mentioned included too many notifications, lack of interest, and one participant noted, "I don't want to depend on any app…"

Facilitators of use. Patients discussed a variety of app use facilitators. One of the top features discussed was notifications. One patient stated, "Yep, I like the reminder alerts...not necessarily every single day but maybe 2 or 3 times out of the week just an app reminder to say hey you haven't checked in with me yet." Another commonly mentioned facilitator was the ability of the app to teach a skill. For example, one patient mentioned it would, "…help me find ways to better my situation." Similarly, patients also noted a desire for apps to provide information, like "maybe daily tips on how to deal with it (depression)." Ease of use and visual appeal were additional important features. One participant stated "I don't want to have to go through 50 functions to get to the main purpose…"

Other participants expressed a desire for the app to have a chat or support function. Some patients noted that the app data should be easy to share with their doctor. Most patients reported that if their doctor prescribed an app, they would be open to trying it. As one participant stated, "My doctor tells me to use an app, I'm probably going to use it." There were several other items outside of the app that patients thought could facilitate their use such as "…if other people had success using it…" and understanding how it could assist in the psychotherapy process.

Personal preferences. There were several themes that arose that varied based on personal preferences including notifications, data storage, and privacy. As mentioned above, patients described notifications as both a facilitator and barrier based on the patients' preference. Further, patients had mixed reviews regarding data storage, and privacy. One patient who was not concerned mentioned, "Because yeah any apps that terms and conditions you're forfeiting your information as soon as you click to that to anything so and I'm not worried about getting identity theft. They are going to have bad credit too so it don't bother me." While another patient mentioned, "I'm very private, so I really don't like that at all."

Review of apps. Among patients, average overall scores for the apps ranged from 3.64 to 4.52 (Table 2). Wysa was the favorite of the five apps tested with no one expressing disapproval in the written comments. Sanvello received the lowest score on the uMARS. Generally, patients found Woebot and Youper "impersonal" and "unconvincing," and for Carezone they were concerned about its lack of focus on managing depression and the large volumes of personal information requested. Additionally, every patient identified one app they would be interested in with some patients even writing down the app names so they could try it later.

<Insert Table 2 Here>

Provider/Staff focus groups/interviews

Use of health-related apps. Like patients, most providers and staff had used health-related apps previously. Providers and staff discussed apps related to tracking food, physical activity, or mindfulness. Few staff members said they had never used health-related apps. Most providers and staff mentioned they had used mental health related apps.

Perceptions of patients' use of apps. Providers and staff perceived several different barriers for patient app use. The most often referenced concerns were patient data usage, type of phone, and patient tech savviness. For example, a provider mentioned "people who have a smart phone, but don't always have data or access to WiFi; people who often have their phone turned off because they can't consistently pay their phone bill….and also folks who…are just not going to have an easy time using an app." Participants mentioned both the cost of the apps and the cost of data to use the app. Patient buy-in concerning desire to make change and willingness to participate was another perceived barrier described by providers and staff. Some providers and staff mentioned app specific barriers, such as the app needing to be "easy to use" and a need for it to be designed for "a health literacy level that's going to be beneficial."

11

Providers and staff also mentioned several factors they felt could facilitate patients' use of apps. These factors aligned with operational, clinical, and other use facilitators. Regarding operational factors, providers and staff mentioned that simply asking about patient app use and checking on use periodically would facilitate patients' use of the app. Similarly, ensuring provider and staff are bought in and promoted app use to patients was a perceived facilitator as was providers engaging patients in some type of accountability process. For example, one provider mentioned, "…I think maybe us recommending it and asking how it is going with using that and telling them why we want it would be useful; and then if you review them together at your monthly visit or you just leave a quick note [in their electronic health record (EHR)]…".

Most operational facilitators mentioned were app specific. Providers and staff mentioned such items as providing push notifications, allowing patients to track and identify triggers, providing daily check-ins and strategies for improving symptoms, and ensuring app use was not too time consuming. Other facilitators included providing informational "fliers" to promote the app and "incentives" such as seeing progress itself or providing more tangible incentives such as gift certificates. One provider noted, "Our patients are always about incentives."

Clinic barriers to integration. Participants also mentioned clinic barriers to promoting app use. The most frequently mentioned barrier was a lack of time. Given the short amount of time providers have to address a variety of health concerns, many mentioned challenges of fitting in the addition of mobile apps. However, one provider noted, "If it feels like it's a thing that maybe helps to do something we are already doing better, more efficiently, and then that is going to feel like, 'oh great, let's do this.' But if it feels like an additional thing to do on top of everything we are already doing, that's hard." Other potential barriers were lack of provider and staff buy-in, lack of provider and staff app knowledge, and challenges training new providers.

Needed facilitators into integrating app use into clinic workflow.

Initial contact with patients. When asked who should make first contact with patients regarding using the app, there were varied responses. BHPs and the primary care providers were the most often mentioned first points of contact. As one provider mentioned, "I might be the one to say…I want you to meet our behavioral health folks who are going to talk to you and sometimes that may just be to have this great app that you think that they would benefit from." Another provider felt it should depend on relationships as, "It varies by patient, whoever has the best rapport with the patient should approach them." Others felt that rooming staff might be best to approach patients while completing other intake forms.

Provision of app information. After the introduction of the app, participants primarily thought either staff or BHPs should give information and education on how to use the app. As one staff member noted "I mean if people have questions, it's going to come to us first…so at least a general knowledge of it for those who will be on the phone." However, due to the topic and existing relationships, others thought that BHPs should be providing initial and ongoing education. One staff member mentioned "…because of the trusting relationships, they have that connection already." Regardless of who approached the patient, providers and staff mentioned that the timing and amount of time it took to explain the app would need to be minimal, including the explanation and downloading of the app in clinic.

Monitoring use. When asked about the best ways to monitor patients' app use, participants described a variety of factors to increase utilization. The most often referenced aspect was integration of app data into the EHR. One staff member mentioned, "If it doesn't end up in One Chart (EHR), it's just not going to get documented." Participants mentioned data could be integrated into the EHR through workflow modifications or directly from the app into

the EHR. If not available through the EHR, providers expressed a desire to at least be able to easily see app data to show patients a graph of their progress.

Relatedly, participants thought that the ability to share data not only between patients and providers, but also between all members of the care team including providers, pharmacists, and the nurse care coordinator would be important. Some participants thought that the patient should report data from the app to ensure "accountability of the individual." Like comments above, the person responsible for monitoring use varied between BHPs, primary care providers, nurse or rooming staff, or the individual themselves. Many thought this depended on "whomever has the connection is gonna be best" or that "it depends on who recommends it."

Resources needed. Participants also provided ideas for resources needed to implement app use. These primarily focused on training or operational resources. Having knowledge of the apps was mentioned as important to integrate app use into clinic workflow as one provider mentioned. Also, trainings were the most often requested resources. Participants mentioned a need for hands-on training to be able to try the apps. Other training resources mentioned included short overviews at an existing meeting such as a morning huddle or noon conference, a brief training video, and handouts that providers and staff could use with patients in person or online. As one staff member noted, "if we have that information, we can send something via OneChart or if they're in for an appointment we can hand them something." Additionally, one provider specifically mentioned the need to have one "super user" who anyone at the clinic could go to for help troubleshooting patient app issues.

Positive implications. Providers and staff were asked about their perceptions of the positive implications of mental health app use for both the patients and the clinic. Many participants felt there would be positive implications for the patients, specifically regarding the

therapeutic value. One staff member mentioned that using the app "…would be like having their therapist with them more often or like I know some of the therapists are giving like homework and that would fit nicely into like that they are doing." A provider mentioned, "I think it would be a lot easier to track progress and for them to physically see like this is how far I've come I think for us too it is awesome to track progress."

From the clinic perspective, participants described operational benefits including the opportunity to provide multi-modal care and track progress. One provider mentioned, "If this could help with symptoms it would help improve the burden on behavioral health." Another provider mentioned, "I think no matter…how much support I try to give them…inevitably there are times when patients need to be able to self-manage and that [app] would I think be helpful."

Negative implications. Staff and providers also discussed potential negative implications of trying to integrate mental health app use into the clinical care setting. While many did not mention negative implications for the patients, some felt that this could be a burden on the patients due to being overwhelmed or app/data cost. Other negative implications included operational challenges such as increasing provider burden with an emphasis on time. For example, one provider mentioned, "Mainly just the time to get it up and running off the ground and technical glitches and stuff."

Reviews of Apps. Among staff and providers who were able to explore the apps, reviews of each app were mixed. The app that was most often referenced as a favorite was Sanvello. However, like patient focus groups there was at least one provider or staff member stated they liked each of the five apps. Further, everyone was able to identify at least one app they liked.

Discussion

The purpose of this study was to explore patient and clinic-level perceptions of the use of depression self-management apps within an IPC setting. Given the plethora of mental health apps available but lack of clear evidence-based best practices for use, understanding perceptions of depression self-management apps within an IPC setting may assist in discovering best practices for promoting the advantages of mobile apps while minimizing the challenges inherent in app use [25]. Importantly, most participants were familiar with and had used some type of health-related app. Providers and staff more frequently reported the use of mental health-related apps than did patients. This could be due to the cost of mental health apps such as Head Space and Calm. While both apps have free versions, for full access a paid subscription is required. Additionally, previous research has found that individuals with more education are more likely to use health-related apps [26]. There were several key findings that should be considered when implementing app use within an integrated clinic setting.

Patient level barriers and facilitators to use

There were several facilitators and barriers to app use for patients. Both patients and providers mentioned that costs associated with apps could be a barrier for patients, which is similar to previous research [14]. Because apps have the potential to help overcome economic or geographic barriers to receiving mental health treatment, ensuring that apps offered are free for patients is critical to long-term use, primarily in under resourced communities [13]. Patients also desired apps that would help them to develop skills, learn information about depression, and were easy to navigate. Because tech savviness was also identified as a barrier, ensuring the app is easy to use and patients have a positive experience with the app is key to buy in, as well as short-term uptake and long-term use [27]. This is increasingly important as mental health apps must also compete with patients' time and data usage with popular apps that are known for ease of use

16

(e.g., Facebook, weather apps) [13]. Interestingly, notifications were viewed as both a barrier and facilitator for patients. While tailored health messages have been found to increase use of health apps [28], our data suggest that the number and timing of notifications desired vary by patient. When identifying apps, the ability to set notifications may be a determinant of long-term use.

Provider level barriers and facilitators to use

There were several barriers and facilitators to app use noted from clinicians' perspectives that should be mentioned. Foremost, was the issue of time. Appointments are short in duration, and usually consist of a wide variety of health issues that need to be addressed [29]. Yet, as noted by a provider, if they are aware of an evidence-base for app use, they believed there would be stronger justification to add discussion of apps into time allocated for clinical assessment and intervention. Thus, it becomes increasingly important to communicate the efficacy of app use in treating depression and other mental health challenges [13]. Another important finding was staff and provider concerns about patient buy-in to app use. Like previous findings, patients in this study reported they would be more likely to try an app if their provider recommended it [30]. This is critical as other research suggests pairing app use with treatment by BHPs may help patients' adherence to treatment and their ability to record and view progress [13].

Finally, it is important to note that the favorite app of choice varied between patients and staff. Overall, Wysa scored highest for patients while Sanvello was the favorite of providers and staff. This is especially important as Sanvello scored the lowest for patients and lack of buy-in was a theme brought out in provider and staff focus groups. Thus, it may be important for providers and staff to understand that even if they personally do not like an app, their patient might find it useful. Additional research is needed to determine provider and staff perceptions of mobile apps and how this may affect integration into clinic use.

Implementation considerations

There were several important factors related to implementation of apps within IPC. First, increasing provider knowledge on mental health apps is likely critical to patient app use [25]. Providers and staff mentioned a variety of different ways that trainings could occur such as morning huddles, noon conferences, or short training videos. Therefore, several training options should be provided to ensure the mode of choice and time allotment fits the preferences of each individual. Another theme that arose was the need for app data to be integrated into the EHR in order to remind providers or staff to discuss app use with patients. Integrating app-generated data into the EHR has been previously reported as a major benefit of using mental health apps in patient care [13,27]. However, the challenges to integrating new data sources into EHR is often challenging. Thus, when integration into the EHR is not possible or has not yet occurred, patients and clinic staff may want to view app use as a "homework assignment" by which patients and providers review app data during regularly scheduled appointments, ensuring that providers describe how app use will help patients reach their treatment goals [25].

Another critical topic identified for implementation was the importance of the patient-provider relationship. Feedback was divided regarding who should approach patients to introduce app use with findings suggesting that this process may vary by patient and clinic depending on each patient's existing relationships with providers. Previous research suggests that patients highly value continuity in relationships with their healthcare provider which may affect how they receive information and manage and coordinate their healthcare, while providers value ongoing access to information [31]. Thus, having a provider who has an established relationship with the patient may be most beneficial for increasing patients' use of an app.

Strengths and limitations

A strength of this study was that it explored perceptions of both patient and clinic-level factors related to app use in underserved populations. Also, to our knowledge, this is the first study to examine five different mental health apps in IPC. Nonetheless, this study was not without limitations. First, due to the primarily qualitative nature of this study and the challenges with recruitment due to the shift in data collection because of the COVID-19 pandemic (in-person to virtual) which did not allow us to collect a representative sample across age groups and which also led to large difference in the pool of eligible patients (n=115) compared to the final sample (n=17), the findings may not be representative of the actual population and also may not be generalizable to other geographic areas or settings. We did reach data saturation as no new information was being found at the end of the data collection process and we believe the results add to the existing literature in this field. Second, because focus groups took place during business hours, patients whose employment status was "disabled" were overrepresented in this study, which may have skewed the results. Finally, as mental health apps are continually being updated and/or developed, the apps reviewed in this paper may no longer be up to date.

Conclusion

The majority of patients, clinic staff and providers who participated in this study had previously used some type of health app. There is a general perception that mobile apps can offer value in the treatment and management of depression, and there is a desire to integrate depression related apps into EHRs, and for apps to have qualities that patients find attractive. Yet, barriers to access and use exist and need to be addressed before large-scale deployment into IPC.

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Table 1. Demographics		
Patients (n=17)	N	%
Sex		
Female	12	71
Male	5	29
Race		
Black	7	41
White	8	47
Other	2	12
Age		
<40	4	24
≥40	13	76
Mean	44	
Employment status		
Employed	4	23
Unemployed	1	6
Student	1	6
Disabled	11	65
Marital status		
Married, Common-law	5	29
Never married	7	41
Divorced/Separated	4	24
Widowed	1	6
Educational attainment		
High school diploma or less	7	41
Some college/no degree	3	18
Technical diploma	6	35
Undergraduate degree	1	6
Staff & Provider (n=15)		
Sex		
Female	13	87
Male	2	13
Race		
Black	2	13
White	11	74
Other	2	13
Age (mean=39 years)		
<40	7	47
≥40	8	53
Years practicing profession		
<10	7	47
≥10	8	53
Years working at the clinic		
<10	11	73
≥10	4	27

Table 2. Average uMARS Score by Survey Section by Patients

	Apps				
	Woebot	**Wysa**	**Sanvello**	**Carezone**	**Youper**
Engagement	3.18	4.40	3.52	3.70	3.50
Functionality	4.00	4.63	3.65	3.85	4.38
Aesthetics	3.90	4.50	3.83	3.97	3.83
Information	3.76	4.44	3.55	3.61	3.82
Total	3.71	4.52	3.64	3.78	3.88

Scores range from 1 to 5 – the larger the score, the better participants opinion of the app.