USING MOBILE APP-BASED CONTINGENCY MANAGEMENT TO REINFORCE ABSTINENCE IN A DRUG EPIDEMIC: IS IT FOR EVERYONE?

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BACKGROUND

Contingency management (CM) is a behavior change intervention where behavioral contingencies are manipulated to increase or decrease target behaviors. Previous studies demonstrated the effectiveness of CM for substance use disorders (SUD; Davis et al., 2016). However, CM requires frequent measurement of patient behavior and delivery of reinforcers contingent on behavioral outcomes. As a result, previous mechanisms of CM were not well-suited for patients who were virtual, discharged, or between visits. This is problematic for patients with SUD, who require long-term support due to disease chronicity. Mobile app-based delivery mechanisms for CM may be a solution, as mobile apps are ideal for the long-term provision of CM for patients with SUD across a continuum of care. However, there is a paucity of data on which patients agree to use app-based CM, as well as concerns regarding older adults' willingness to engage with mobile apps for SUD treatment. This is problematic, as drug use treatment rates are increasing in older adults (Huhn et al., 2018).

OBJECTIVE

To determine demographic differences in engagement with app-based CM across patients with SUD.

METHODS

Medical records were used to identify adult patients in treatment for an opioid, cocaine, or methamphetamine use disorder and without cognitive or psychiatric barriers. Eligibility was maintained if the patient's SUD clinician agreed they met eligibility criteria and if the patient expressed an interest in learning more about the study. Patients were then approached by the study team for additional screening and potential enrollment. Enrollees downloaded the DynamiCare contingency management app onto their smartphone and were randomized into treatment or control groups.

Participants randomized into intervention groups received three random saliva drug test prompts per week (Figure 1) for 13 weeks. Saliva test results were submitted via selfie video (Figure 2) and scored for the presence/absence of relevant drugs by a trained observer. Saliva tests negative for opioids, cocaine, and/or methamphetamines resulted in small, immediate, automated financial incentives (Figure 3).
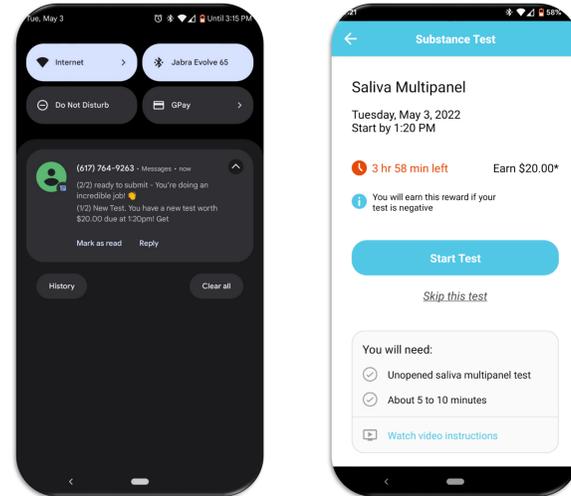

FIGURE 1. Participants receive three randomly-timed prompts per week via the DynamiCare app to submit a video of themselves taking a saliva drug test.
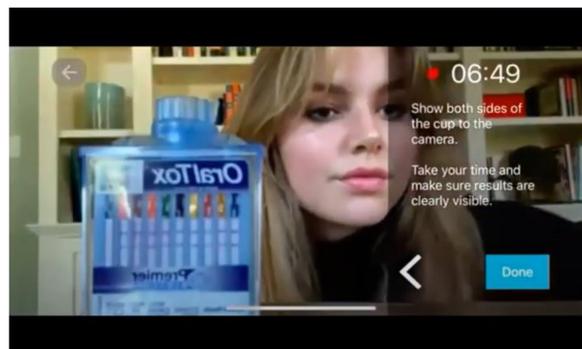

FIGURE 2. Example of a sample participant presenting their saliva test results via selfie video. Blue lines on the test strips indicate the presence or absence of various drugs.
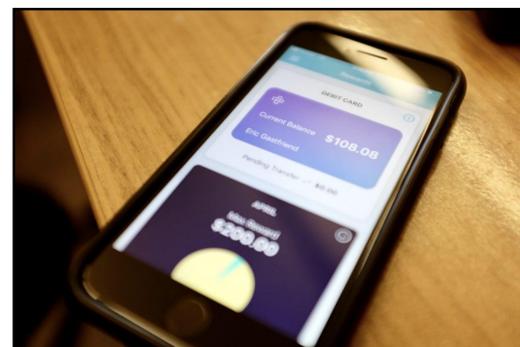

FIGURE 3. Negative drug tests result in automated financial rewards delivered to a study debit card.

Characteristic	Mean	SD
Age (years)	37.3	11.2
Gender	**N**	**%**
Female	39	47.0%
Male	44	53.0%
Race	**N**	**%**
White	75	90.4%
Black/African American	6	7.2%
AI/AN	2	2.4%
Ethnicity	**N**	**%**
Not Hispanic/Latinx	76	91.6%
Hispanic/Latinx	7	8.4%
Substance Use Diagnoses	**N**	**%**
Opioid Use Disorder	59	71%
Cocaine Use Disorder	58	70%
Meth. Use Disorder	5	6%

TABLE 1. Demographics of enrolled participants (N=83). AI/AN = American Indian/Alaska Native; Meth = methamphetamine.

FIGURE 4. Flow diagram of the progress through study phases broken out by age category. <55 includes participants under 55 years old and 55+ includes participants 55 years old and above.

RESULTS

Of 174 screening-eligible patients, 154 (89%) were deemed eligible by clinicians, 137 were open to learning more, and 83 (48%) enrolled (see Figure 4). Compared to younger adults (<55 years), older adults (55+ years) were just as likely to be deemed eligible by their clinician and express an interest in learning more about the study (79%). However, once deemed eligible and interested, older adults had a slightly lower enrollment rate, although this difference was not statistically significant. Women who were eligible and willing to be approached for enrollment were significantly more likely to enroll than men (81.3% vs. 60.3%, p <.05). Similarly, White or American Indian/Alaska Native patients were more likely to enroll than Black patients (71.4% vs. 66.7% vs. 46.2%), although the differences were not significant.

CONCLUSIONS

Early data on small populations of enrollees suggest there may be age-, gender-, and/or race-related barriers to engaging with a substance use treatment mobile phone app. This study is continuing to enroll participants, and final analyses will be performed once enrollment is finished. Nevertheless, these data set the stage for studies assessing and addressing barriers to the uptake of app-based CM for patients with SUD.

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Strain, T., Wijndaele, K., & Brage, S. (2019). Physical Activity Surveillance Through Smartphone Apps and Wearable Trackers: Examining the UK Potential for Nationally Repres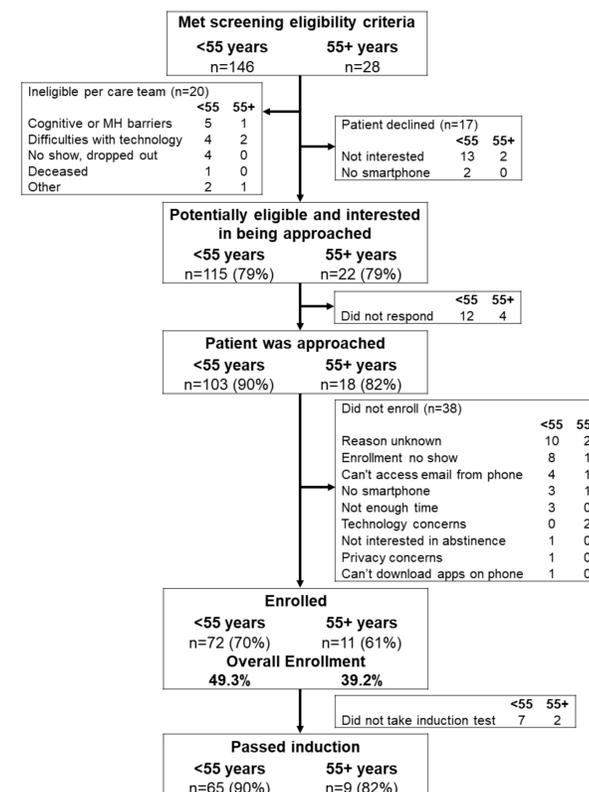entative Sampling. *JMIR mHealth and uHealth*, *7*(1), e11898. https://doi.org/10.2196/11898