Study Protocol

Official Tittle: Effectiveness of Contingency Management in the Treatment of Crack Addiction for Individuals Living in the "Crackland" Region. A Single-Blind Randomized Controlled Trial

Identifier: NCT03345394

Protocol ID: FAPESP 2017/05371-8

Primary Investigator: André de Queiroz Constantino Miguel, PhD.
Rua Baicuri 213, bairro Boaçava, São Paulo-SP. CEP 05469-030- Brasil. E-mail address: aqcmiguel@gmail.com (A.Q.C. Miguel)

Sponsor: Paulista Medical School of the Federal University of São Paulo

Sao Paulo, 5th of January 2018

Tittle:
Effectiveness of Contingency Management in the Treatment of Crack Addiction for Individuals Living in the "Crackland" Region. A Single-Blind Randomized Controlled Trial

Study personal and roles:

André Q.C. Miguel	Principal Investigator	Responsible for all study related issues
Jair J. Mari Clarice S. Madruga Claudio J. da Silva Ronaldo R. Laranjeira Sterling McPherson Crystal L. Smith Michael M. McDonell John M. Roll	Co-Investigators	Study design, data management, analyses and interpretation of the findings
Viviane Simões	Project Manager	Data management, addresses IRB issues, conducts randomization
Rodolfo Yamauchi	Study Coordinator	Data collection, screening, consent

Grant funding:
This study was funded by the Research and Innovation grant for Prevention of Mental Disorders and Abuse of Alcohol and Other Drugs (*Pesquisas e Inovações em Prevenção de Transtornos Mentais e Uso de Álcool e Outras Drogas)* from the Brazilian Ministry of Health (TED #176/2017). Dr. Miguel received two postdoctoral fellowship grants *from Fundação de Amparo à Pesquisa do Estado de Sao Paulo* (FAPESP)- processes nº 2017-05371-8 and nº 2017-22004-9.

Background:
Crack cocaine use disorder (CUD) is a severe health problem in Brazil, with the country being reported as the biggest crack market in the world. Contingency Management (CM) is one of the most effective treatments for CM however its effectiveness has never been evaluated in Brazil.

Purpose:
The objective of this study was to evaluate the effectiveness of incorporating CM into a public treatment program in Brazil.

Study Design:
Single-Blind Randomized Controlled Trail where rearchers will be blinded.

Study duration:
Study duration was from December 2017 to December 2020. Data collection occurred from January 2018 to March 2020.

Study Centers:
This study was conducted by a partnership between the Federal University of Sao Paulo and the Program of excellence in Addiction Research Program from Washington State University. All stages of the screening, intervention and data collection processes were conducted at *Unidade Recomeço Helvétia*, a public ambulatory treatment program for CUD located in downtown Sao Paulo, Brazil.

Objectives: Primary objective was to evaluate the effectiveness of incorporating CM into a public ambulatory treatment program for CUD in São Paulo, Brazil in promoting crack cocaine abstinence for treatment seeking individuals with CUD. The secondary objective of this study was to determine the feasibility and acceptability of incorporating CM into a public ambulatory treatment program for CUD in São Paulo, Brazil.

Power: Sample size calculations were conducted according to the following parameters: significance level ($\alpha = 0.05$), power ($1 - \beta = 0.8$), χ^2 test (contingency table under degrees of freedom = 1), and effect size ($w = 0.3$). These parameters resulted in a necessary sample size of at least 88 subjects.

Randomization:
Randomization was carried out using permuted blocks randomization with the inclusion of gender and baseline urinalysis result covariates for stratification to balance group-samples.

Inclusion Criteria:
The inclusion criteria was as follows: 1) being 18 years old or older; 2) having a current diagnosis of moderate to severe CUD according to *The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-V); and 3) consenting to participate in the study. There were no exclusion criteria.

Recruitment:
Individuals with CUD seeking treatment at URH will be screened for eligibility.

Sample size: A total of 111 subjects were screened and 98 enrolled in the study. Of these 98 subjects, 48 subjects were randomized to the control condition and 50 subjects to the were randomized to the experimental condition.

Intervention:
After randomization participants will receive 12 weeks of treatment in either the control condition or the experimental condition.

Control condition:
Participants allocated to the control condition will receive the standard treatment provided by URH. The URH is an open-doors facility that provides a variety of interventions, ranging from harm reduction to abstinence-based interventions for crack users in different stages of recovery. URH offers access to showers, toilets, a beauty salon, and a gym. It also provides several group

activities, such as self-help group counseling as well as footcare, percussion, clown, and experimental kitchen classes.

Experimental condition:
Participants allocated to the control condition will receive the standard treatment provided by URH in association with CM. The CM intervention will consist in providing vouchers with monetary value contingent to the submission of a negative cocaine urinalysis (UA).
The value of the vouchers will start at ≅ US$2.00 (as of December 2020, one US dollar was approximately five Brazilian reals) for the first negative UA submitted. Vouchers will increase by ≅ US$1.00 for every consecutive negative cocaine UA submitted up to a maximum of ≅ US$5.00. In addition, a ≅ US$5.00 bonus will be given if both weekly UAs test negative for cocaine. Participants who failed to submit a negative UA will not receive any vouchers that day and the value of future vouchers will reset to ≅ US$2.00. If abstinent for the entire 12 weeks of treatment participants can earn up to ≅ US$185.00 in vouchers.
To reduce screening costs and reinforce acknowledgment of recent use, participants will be asked prior to submitting the UA if they have used cocaine in the last four days. Participants will be encouraged to submit the UA if they state that they have been abstinent but will not be required to submit a sample if they disclose recent crack cocaine use. Instead, they will be congratulated for admitting recent use (UA will be coded as positive by research staff) and will receive a token with ≅ US$0.50 value. This token may be added to a future voucher's value, contingent upon the submission of a future negative UA. This procedure, we term CM Banking, intends to reduce costs related to screening and increase attendance among participants struggling to achieve abstinence. Vouchers may be exchanged for any type of goods available in the surrounding community immediately after the submission of a negative UA (with the exception of alcohol and tobacco products). After deciding on a desired commodity, participants will inform their respective providers. The provider will then accompany the participant to make the purchase.

Data collection:
Data were collected at baseline and twice weekly during the 12 weeks of the intervention.

Assessments:
Assessments include a structured sociodemographic questionnaire and questions related to the pattern of substance use and previous treatment history.
The following assessments were also collected:

- Diagnostic and Statistical Manual- 5º edition (DSM-V)
- Alcohol, Smoking and Substance Involvement Screening Test -ASSIST).
- Brief Symptom Inventorry- BSI
- Barrat Impulsivity Scale- BIS)
- Risk Assessment Battery -RAB)
- Abon Biopharm cocaine urine test which is capable of detecting 300ng/ml or more of benzoylecgonine in the urine.

Primary outcome:
Our primary outcome was objective verification of crack cocaine abstinence assessed as negative cocaine UAs tested twice weekly for 12 weeks.

Secondary outcome:
Treatment retention as a secondary outcome. Retention was defined as the number of weeks elapsed between treatment intake and dropout.

Statistical analyses plan.
The primary endpoint of this study will be objectively verified abstinence based on the UA results collected twice weekly during the 12 weeks of intervention. Secondary endpoint will be duration of treatment retention.

Publication and data sharing policy:
The preparation and submittal for publication of manuscripts containing the study results shall be in accordance with a process determined by mutual written agreement among the study Sponsor and participating institutions. The publication or presentation

Conflicts of interest:
No conflicts of interest have been reported.