Statistical Analysis Plan

Racial disparities in antidepressant initiation, titration, and adherence after receiving a psychiatric consultation (RITA-PC)

Derived 10/2025

Reviewed and finalized on October 27, 2025, prior to starting data analysis

The following statistical analysis plan (SAP) is derived from the SAP submitted to the research ethics board (REB) at the Centre for Addiction and Mental Health (REB # 2023-174) and the PSI Foundation grant application (R23-21).

Hypotheses and Objectives:

Objective 1: To assess whether there are racial/ethnic differences in treatment initiation and depression severity.

- ***Hypothesis 1:*** Compared to White participants, a smaller proportion of participants from BIPOC communities will have changes recommended or initiated for psychotropic medications. As a result, they will experience more depressive symptoms when assessed three months after the consultation.

- Rationale for amendments made: adequacy of antidepressants that the participants were switched to/ initiated on after the consult is not included as a variable due to low observation rate (more than 50% missing) (Heymans & Twisk, 2022).

***Objective 2*:** To assess whether there are racial/ethnic differences in potential barriers to initiating and continuing the recommended antidepressant treatment.

- ***Hypothesis 2:*** Compared to White participants, participants from BIPOC communities will report: lower annual incomes; a perception that depression is less impactful on their life; a poorer understanding of their depression; perception that antidepressants are less effective; and having experienced more discrimination in medical settings.

Objective 3: To explore whether there are moderators of observed racial/ethnic differences in antidepressant treatment.

- ***Hypothesis 3*****:** Being a woman, having experienced discrimination, and having a negative perception of antidepressants will strengthen the racial/ethnic effect, while having a lower income and potential for non-adherence will weaken the effect of race/ethnicity on antidepressant initiation or change.

- Rationale for amendments made: Adherence is an important patient and systemic factor to consider for antidepressant outcomes (Ho, Jacob, & Tangiisuran, 2017).

Variables:

Variables were collected at survey 1 (as close as possible to the consult), survey 2 (3 months after survey 1), and/or through chart review of the consult note.

Participant characteristics (self-reported by patient):

Participant characteristics were collected at survey 1 (close as possible to the consult), survey 2 (3 months after survey 1), and/or chart review.

1. Self-reported race/ ethnicity (survey 1)
2. Self-reported sex at birth (survey 1)
3. Self-reported gender (survey 1)
4. Age (survey 1)
5. Self-identified religious affiliation (survey 1)
6. Marital status (survey 1)
7. Employment status (survey 1)
8. Years of education (survey 1)
9. Annual household income (survey 1)

10. Referring provider (Family physician/ GP vs. other) (chart review)
11. Interest in starting/ changing a medication for depression before the consultation (survey 1)
12. Expected diagnoses before the consultation (survey 1)
13. Received the desired treatment recommendation (survey 1)
14. Visit with the family physician after the consultation (survey 1 and 2)
15. Initiation of psychotropic medication change recommended at the consultation (survey 1 and 2)
16. Dose changes on the recommended medication (survey 1 and 2)
17. Length of time on the recommended medication (survey 1 and 2)
18. Starting an antidepressant different than the one recommended (survey 1 and 2)
19. Physician health questionnaire – 9 items (PHQ-9) (survey 1 and 2)
20. Generalized anxiety disorder – 7 items (GAD-7) (survey 1 and 2)
21. Experience of discrimination in medical settings (Discrimination in Medical Settings scale [DMS]) (survey 1)
22. Self-reported medication adherence and barriers to adherence (Brief Medication Questionnaire [BMQ]) (survey 1 and 2)
23. Perception of depression, personal control over illness and antidepressant treatment (Brief Illness Perception Questionnaire [Brief IPQ]) (survey 1 and 2)

Consult characteristics (self-reported by patient in survey 1):

1. Being told the diagnoses at the consultation
2. Recommendation of initiation/change in a psychotropic medication at the consultation
3. Discussion of the treatment recommendation at the consultation (medication and non medication)
4. Opportunity to ask questions about the diagnosis
5. Opportunity to ask questions about the treatment recommendations

Consult note characteristics (from chart review):

1. Length of the note
2. Presence of identifying information
3. Presence of depressive/ manic/ hypomanic/ sleep/ anxiety/ psychosis/ safety/ trauma/ relational issue screen
4. Presence of substance use history
5. Review of past psychiatric history
6. Review of past medication trials
7. Review of personal history
8. Review of current medications
9. Review of medical history
10. Presence of allergy screen
11. Review of family psychiatric history
12. Diagnoses (depression/ anxiety/ substance/ OCD/ bipolar disorder/ psychosis/ PTSD/ other)
13. Presence of investigation recommendations
14. Number of specific antidepressant recommendation
15. Number of specific other psychotropic recommendation
16. Number and type of specific non-pharmacological treatment recommendation

Outcome definitions:

We have one primary outcome and one secondary outcome, both under Objective #1. Our primary outcome is the proportion of participants who initiated or changed to the recommended antidepressant after receiving a psychiatric consultation. Our secondary outcome is the change in PHQ-9 score from baseline to three months after the consultation (i.e., second survey).

Between-group analyses will be performed by comparing White participants vs. participants from BIPOC communities. If there is a sufficient number of participants from a specific race/ethnicity to perform between-group analyses, secondary analyses will be performed by treating them as a separate group (e.g., White vs. Asian-South vs. Others).

Sample size and power considerations:

For the primary and secondary hypotheses, assuming that there will be a 20 - 40% difference between participants who are from BIPOC communities and participants who are White in treatment outcomes (Kales et al., 2013; Simon et al., 2015), $\alpha = 0.05$, power = 80%, sample size between 46 – 186 participants is sufficient to detect a between-group difference (Rosner, 2011).

Descriptive analysis:

Patient, consult, and consult note characteristics will be presented in a characteristics table comparing white participants vs. participants from BIPOC communities. This descriptive analysis is not hypothesis-testing and serves to characterize potential barriers to antidepressant treatment after a consultation (Objective #2).

Moderation analysis:

Five pre-planned moderators will be assessed for their impact on the relationship between race and antidepressant initiation/change after a consultation (Objective #3): gender (male vs. other), income (under or over $30,000), experience of discrimination (DMS scale answer “rarely” or higher on one or more items), negative expectation of antidepressant effectiveness (Brief IPQ item 4 score < 5 in survey 1), and potential for non-adherence (positive screen on the adherence items of the BMQ).

Sensitivity analysis:

Based on the structure of the data and the results, as series of sensitivity will be conducted For example, the data may be re-analyzed comparing an “advantaged group” vs. a “disadvantaged group” (e.g., defined based on marital status, education, and income using both *a priori* approaches and data-driven approaches like cluster analysis).

Analysis methods:

Chi-square tests will be used for categorical variables. One-way ANOVA will be used for continuous variables. Logistic regression analyses will be used to examine if there is an interaction effect between race/ ethnicity and potential moderators on observed racial disparities in treatment processes using the PROCESS macro extension on SPSS (Hayes, 2022). Both the main effects of the potential moderators and their interaction with race/ ethnicity will be examined.

Missing data:

Missing data are divided into failure to answer to survey question(s) and participant dropout. Missing data were minimized by closely monitoring survey completion and sending reminders for participants who did not answer all the questions. Variables with >50% missing data will not be included in the analysis. All remaining available data will be used. If participants dropped out of the study, the reason has been recorded (if the participant wished to share it); this should allow us to assess whether missing data are missing completely at random (MCAR), at random (MAR), or not at random (MNAR) (Houck et al., 2004). Participants with more than 10% missing data vs. those who do not will be compared to assess for potential biases (Dong & Peng, 2013).

Statistical software:

All statistical analyses will be performed on SPSS.

References:

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