

Using Financial Incentives and Screening to Increase Engagement with Mental Health Services among College Students in Chennai, India

Pre-analysis plan

1 Introduction

This study will evaluate the effectiveness of interventions to increase engagement with mental health services among a sample of college students in Chennai, India. We have partnered with an arts and science college for women in Chennai, where the study will be conducted. The sample will be recruited in person during college hours.

We will introduce the study to all students present in the classrooms at the time allotted by the college administration and obtain consent from those interested after screening them for age eligibility (between the ages of 18 and 30). Study participants will then complete a survey via a Qualtrics link using their cell phones. The survey will include questions about demographics, perceptions of their own mental health, mental health treatment history, and the PHQ-ADS, a standardized composite screening tool for depression and anxiety.

The experimental design is an RCT with 4 groups, randomized at the individual level. The investigators will measure interest in, and take-up of, psycho-therapy at the individual level. We will also collect data on other activities that capture engagement with mental health care, such as take-up of a cellphone app that provides tools to improve mental health, and seeking information about mental health.

2 Sample and Treatment

2.1 Sample Population

The experimental sample consists of college students at a college in Chennai who (i) are at least 18 years old, (ii) are present in the classrooms when we visit, and (iii) consent to participate in the study. We will attempt to visit all classrooms (i.e., all majors and years) over the course of the study. However, we rely on the college administration to make students available and scheduling constraints on the part of the college may keep us from visiting all classrooms. In addition, attendance rates on a given day are well below 100% (and as low as 50% during our scoping visits). Thus, the final experimental sample will be substantially smaller than the full college student population of approximately 3000.

2.2 Treatments

Treatments are randomized at the individual level, stratified by categories of PHQ-ADS scores. Treatment status will be revealed via the survey administered through students' mobile phones. Participants will be randomized to four conditions:

1. **Control:** The control group will (a) watch a video introducing them to the mental health services available in the college, including introductory videos of the counselors, (b) have

access to therapy at no cost for the duration of the study via their college counselors and additionally at SCARF, a mental health center in Chennai, and (c) be given links to book a therapy session or download a mental health app.

2. **Screening:** In addition to the interventions in the control group, students in the screening group will receive feedback on their PHQ-ADS score and recommendations based on that. In particular, they will be informed whether their responses to the PHQ-ADS questions fit in the standard risk categories of no, mild, moderate, or severe distress and corresponding recommendations for whether to make an appointment with a counselor/therapist.
3. **Rewards:** In addition to the interventions in the control group, students in the rewards group will be provided with a cash payment of Rs. 500 (USD 5.70 at market exchange rates) for attending a (first) therapy session.
4. **Screening and rewards:** Students in this group will receive both interventions, i.e., both the screening information and the reward described above.

For ethical reasons, participants with PHQ-ADS scores of 30 or above (indicating severe risk of depression and anxiety) in the non-screening treatment arms will also be informed of their scores at the end of the survey. For outcome variables measured within the survey, we will treat these participants as though they are part of the group to which they are randomly assigned. One outcome variable (completing the process to make an appointment for therapy) is measured after the conclusion of the participant survey. For this outcome variable, we will separately run regressions both including and excluding these individuals.

2.3 Experiment timeline

We began sample recruitment on 24 January 2025. We expect to collect primary outcomes by the end of April 2025, but this may vary as we rely on the college administration to schedule our visits to classrooms. This pre-analysis plan was posted soon after the beginning of data collection. In the paper, as a robustness check, we will report results for data collected solely after the pre-analysis plan was posted.

3 Outcomes

3.1 Primary Outcomes

We have two primary outcomes:

1. **Expressing interest in therapy.** This consists of students answering “yes” when asked in the survey if they would like to book an appointment with a counselor, or if students answer “yes” when asked in the survey if they would like to be contacted by a study counselor to discuss mental health and therapy.
2. **Making an appointment.** If a student actually makes an appointment with a counselor (measured using the administrative records from the counseling offices)

3.2 Secondary Outcomes

The secondary outcomes of the study include the following:

1. **Take-up of mental health app.** This is measured in two ways: participants expressing interest in accessing a mental-healthcare app in the survey, and participants actually clicking a link to download the app.
2. **Demand for information about mental health.** This is measured in two ways: participants expressing interest in receiving more information about mental health, and participants actually clicking a link to access the information.
3. **Attendance of therapy sessions.** We will collect data from the administrative records of the counselling office on whether participants actually attended a therapy session, as well as the number of sessions attended.
4. **Other variables.** We will also report exploratory analyses and mechanism tests including: (i) whether participants report in the survey if they would consider seeking therapy in future; (ii) what steps they report they would take to take care of their mental health in future; (iii) reported motivating/inhibiting factors for taking up therapy and perceptions of therapy.

4 Empirical analysis

4.1 Main regression specification

Pooled treatment effects. Our main specification will be a linear regression of outcomes on the ‘pooled’ treatment assignment, separately for the screening treatment and rewards treatment. That is, define

$$\begin{aligned}\text{Pooled screen}_i &= \text{Screen}_i + \text{Screen and rewards}_i \\ \text{Pooled rewards}_i &= \text{Rewards}_i + \text{Screen and rewards}_i,\end{aligned}$$

where Screen_i is an indicator variable for i being assigned to the screening group, Rewards_i is an indicator variable for i being assigned to the rewards group, and $\text{Screen and rewards}_i$ is an indicator variable for i being assigned to the combined screening and rewards group.

To identify the effect of the pooled treatments on the outcome variables, we will run the following regression specification, separately for each pooled treatment and outcome variable:

$$Y_i = \alpha + \beta T_i + X_i' \lambda + \epsilon_i$$

where Y_i represents the outcomes for individual i described above, $T_i \in \{\text{Pooled screen}_i, \text{Pooled rewards}_i\}$ represents the pooled treatment indicators described above. X_i is a vector of controls consisting of the limited set of variables collected in the survey prior to treatment. This includes categories of PHQ-ADS scores (no risk, mild risk, or moderate-to-severe risk), whether participants report that their family would be supportive of seeking therapy, their current mood, their perception of their current and previous mental health and well-being, whether they have received mental health care in the past, interest in therapy at baseline, and a measure of their financial status.

Fully saturated model. For each outcome, we will also report a ‘‘saturated’’ regression which breaks up the effects by each of the treatment cells:

$$Y_i = \alpha + \beta_1 \text{Screen}_i + \beta_2 \text{Reward}_i + \beta_3 \text{Screen and Reward}_i + X_i' \lambda + \epsilon_i$$

4.2 Heterogeneity analysis

Heterogeneity by baseline mental health status. For our primary outcome and for selected secondary outcomes such as take-up of the app, we will analyze heterogeneity by baseline mental health status, as measured by the PHQ-ADS. This heterogeneity is policy-relevant, because policy-makers may especially value students at high risk of anxiety and depression receiving therapy. It also conceptually relates to our treatments, in that screening might be expected to cause more positive selection on symptoms of depression and anxiety while rewards have ambiguous selection effects.

The standard cutoffs in scores in the PHQ-ADS scale in the literature are 10-19 for mild symptoms, 20-29 for moderate symptoms, and 30 or higher for severe symptoms. We will combine the moderate and severe categories in our analysis, as only a small share of students are expected to show severe symptoms.

We will estimate the following regression:

$$Y_i = \alpha + \beta T_i + \gamma T_i \times \text{Mild}_i + \theta T_i \times \text{Moderate or Severe}_i + \lambda X_i' + \epsilon_i$$

for each of the pooled treatment indicators and outcome variables. The vector of controls X_i includes the indicator variables Mild_i and $\text{Moderate or Severe}_i$.

We will also run a model which interacts the treatments with a continuous measure of the PHQ-ADS score:

$$Y_i = \alpha + \beta T_i + \gamma T_i \times \text{PHQ-ADS}_i + \lambda X_i' + \epsilon_i$$

where X_i is the vector of controls now including the continuous measure of PHQ-ADS score.

Heterogeneity by other characteristics. As exploratory analyses, we will examine heterogeneity by other baseline characteristics, such as participants' financial status, their perception of their mental health status, and their major sources of stress.

5 Funding and Human Subjects Review

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