Remote Assessment of Disease and Relapse in Major Depressive Disorder (RADAR-MDD): Preliminary data from King's College London

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Background

Major depressive disorder (MDD) affects 7% of the European population and follows a typical trajectory of relapse and remission[1]. Signs and symptoms include disrupted sleep, changes in sociability and physical activity, and disturbances in mood and cognitive function[2,3,4,5]**. Remote Measurement Technologies (RMTs)** including **smartphones, mobile applications and wearable devices**, may be useful in **tracking MDD symptomatology** and aiding symptom management. Clinically useful RMT biomarkers could assist in the **early identification of relapse or symptom escalation**, which can **be translated into clinical practice**.

The Remote Assessment of Disease and Relapse in Major Depressive Disorder (RADAR-MDD) study focuses on using RMT to measure and predict symptoms of MDD. The study is part of the **wider RADAR-CNS project**, a framework exploring RMT use across three central nervous system conditions. In RADAR-MDD, symptoms and behaviours are measured via **active RMT**, e.g. apps delivering surveys, cognitive games and speech tasks, and **passive RMT**, e.g. recording passive data streams from the mobile device and physical activity through a wearable fitness device.

Aims and Methods

The RADAR-MDD study has three main aims. These are to:

1) determine the **usability, feasibility and acceptability** of RMT among people with MDD;
2) improve and **refine clinical outcome measurement using RMT** to identify current clinical state in MDD;
3) determine whether RMT can **provide information predictive of depressive relapse** and other critical outcomes.

Two years into recruitment at the King's College London site, this poster reports on the first of these aims. **Recruitment/retention rates** and **descriptive statistics** give an overview of the 254 participants recruited between November 2017 and November 2019**. Active and passive data monitoring** and **qualitative interviews** have assessed the usability and acceptabiliy of these systems. Together, these data provide insight into long-term engagement with the study protocol, alongside the integration of RMT into clinical practice.

Recruitment rates

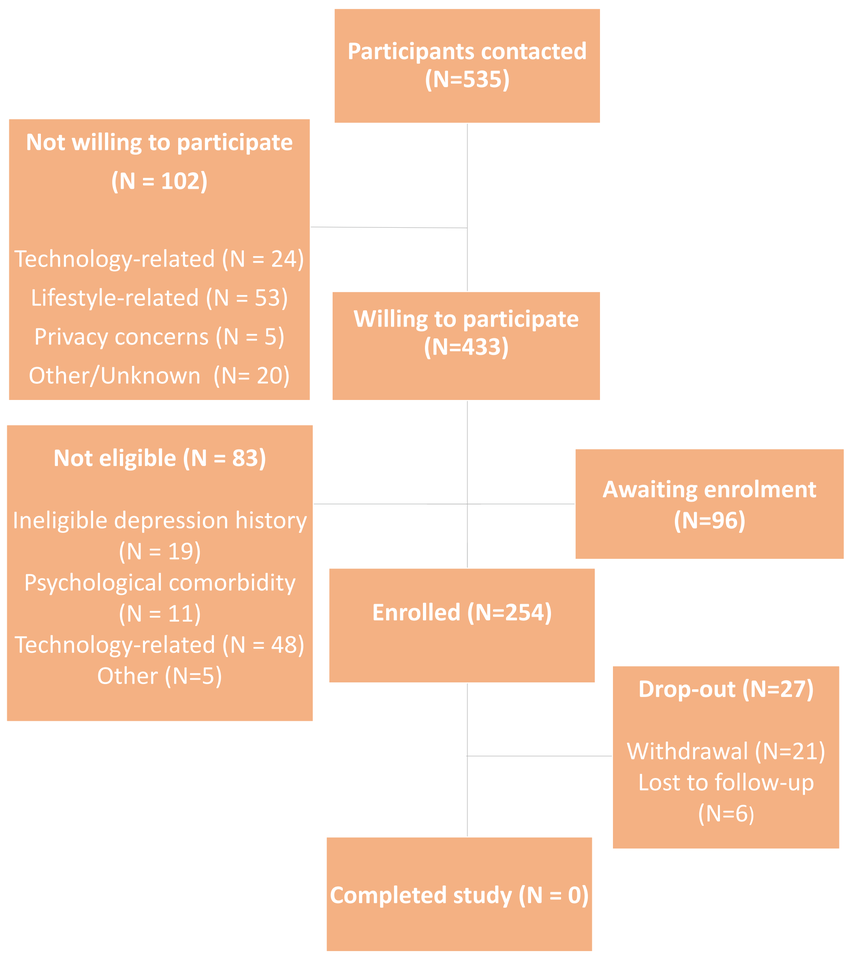

Figure 1 | A recruitment flowchart from first contact to enrolment in the study, for the 254 participants recruited at King's College London between November 2017 and November 2019. 27 participants have withdrawn so far (33% due to technology issues, 22% lost to follow-up, 19% due to mental health, 26% other).

Descriptive statistics

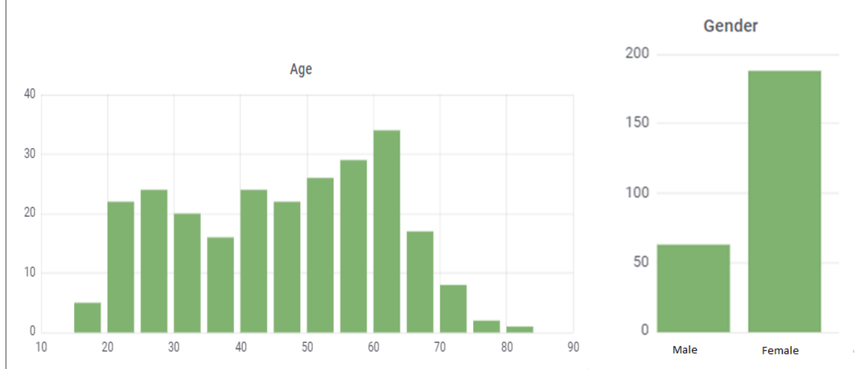

Figure 2 | Age at enrolment and gender distribution of the 254 participants. The mean average age at recruitment was 46.2 years (IQR: 32-59). 63 (25%) were male and 191 (75%) were female.

Active RMT and passive RMT data monitoring

Active RMT data: Questionnaire app on smartphone

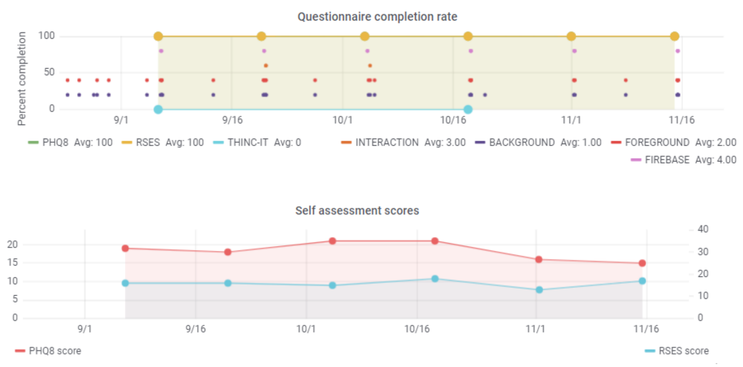

Figure 3 | Active RMT questionnaire completion rate and subsequent Patient Health Questionnaire (PHQ) and Rosenberg Self-Esteem Scale (RSES) scores for the same participant. In the first graph, the *X* axis refers to the date and the *Y* axis refers to data completion, with 100 indicating a completed questionnaire. In the second graph, the *Y* axes refer to the PHQ and RSES total score respectively.

Passive RMT data: Wearable fitness device (Fitbit)

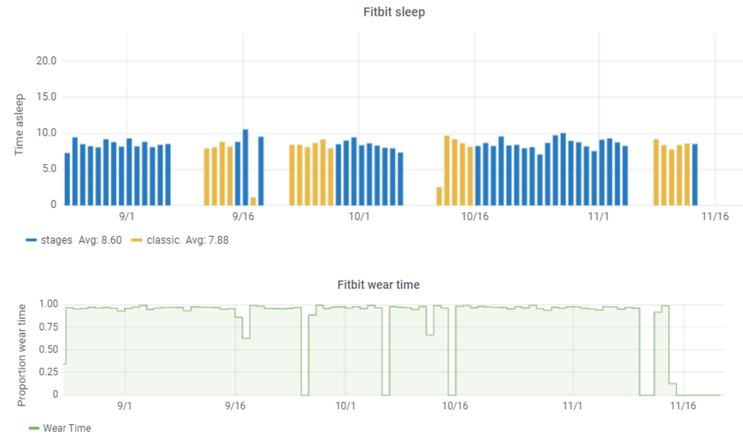

Figure 4 | Passive RMT sleep data and Fitbit wear time data for the same participant. In the first graph, the *X* axis refers to the date and the *Y* axis refers to time slept in hours. In the second graph, the *Y* axis refers to the percentage of time in the day that the Fitbit was worn.

Process Evaluation interviews

Figure 5 | Semi-structured qualitative interviews were carried out at 3-month (N=15) and 1-year (N=15) timepoints. Preliminary analyses are underway, exploring participant views on the barriers/facilitators of RMT engagement, data visualisation and implementation into clinical practice.

References

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