

Exploring Treatments for Major Depressive Disorder in Patients with Parkinson's Disease



Madison Bonaventura; Chloe Hazel; Sara Mansoor; Amber Corona;
Smyrna Davalath; Miriam Khair; Isabella Freda; Roy Chen; Tanjina Jalil, MA
Department of Psychology

Introduction

- Parkinson's disease (PD) - neurological disorder with disturbances in movement, sleep, cognition, mental health.¹
 - Estimated 8.5 million patients (pt) globally.¹
- Major depressive disorder (MDD) - constant depressive thoughts of death & lost interest.²
- MDD reduces quality of life and can be associated with medical conditions.²
- Many treatments for MDD: psychotherapy, pharmacotherapy and brain stimulation

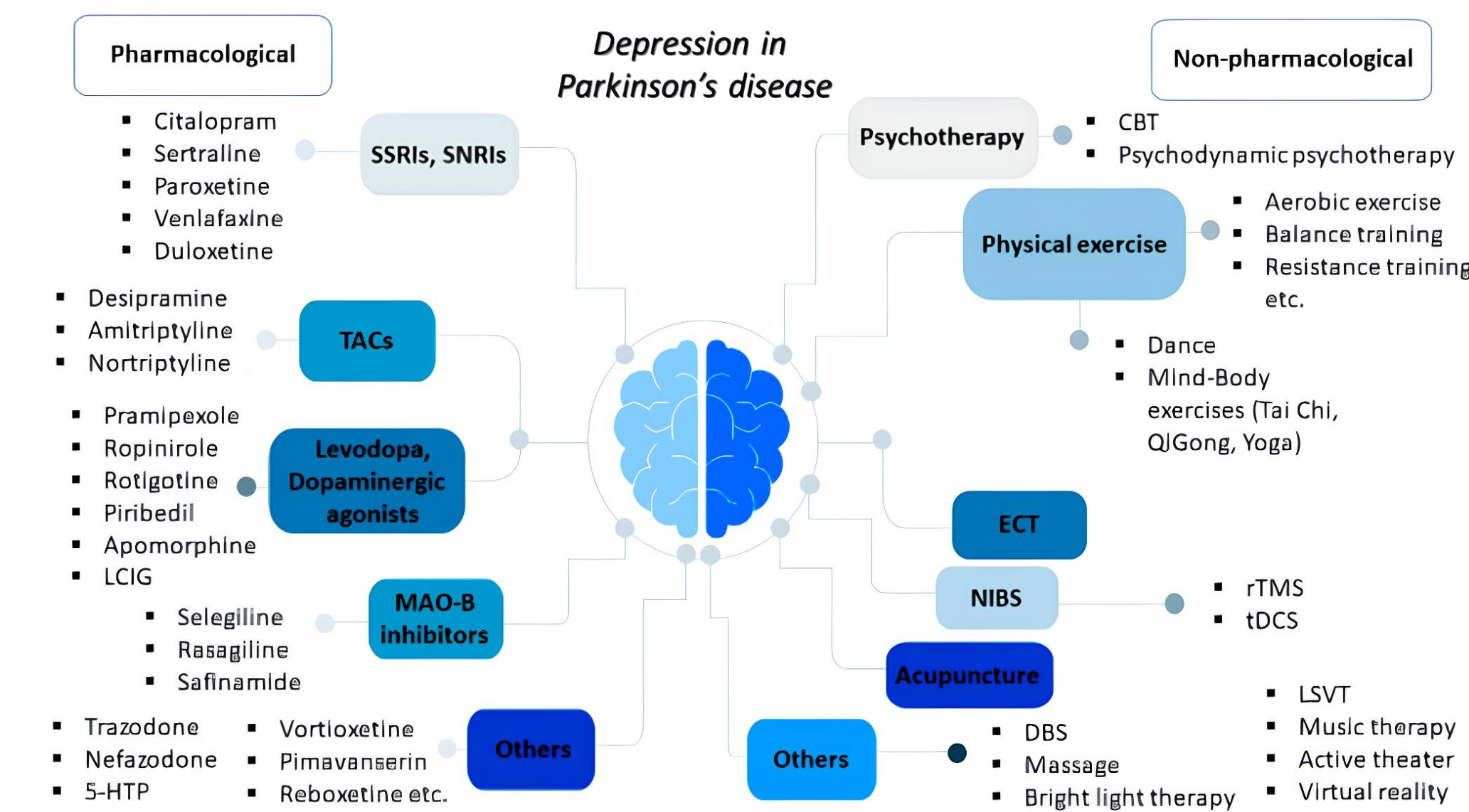


Figure 1. Current Treatments for Depression in PD³

Methods

- Inclusion criteria: peer-reviewed, published 09/10/2014 - 09/10/2024, written in English.
- Exclusion criteria: review articles, do not focus on PD and MDD's medical treatments.

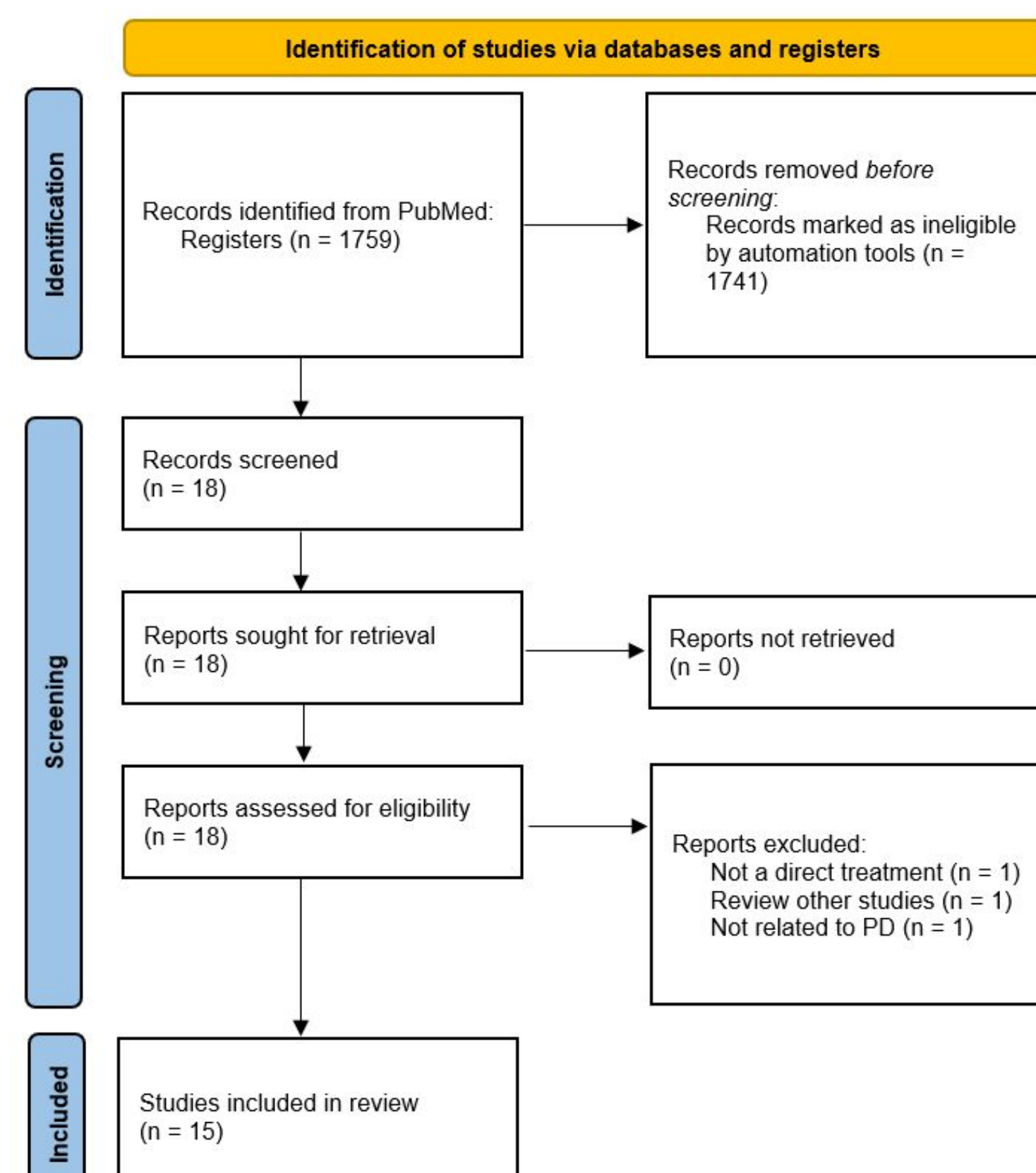


Figure 2. PRISMA Methodology for This Review

Findings

Pharmacology Approach

Antidepressants

- SSRIs & SNRI - improved mood & gait, but effectiveness for apathy is uncertain.⁴
 - SSRIs and SNRIs are well-tolerated, but SSRIs may induce gastrointestinal events.⁴
- Escitalopram (SSRI) - alongside pramipexole & TMS, it had better therapeutic efficacy compared to routine anti-PD treatment.⁵
 - Better antidepressant effects & improved life quality without impaired motor function.⁵
- Venlafaxine (SNRI) - ~41% had remission.⁶

Anti-Psychotics

- Pimavanserin - antipsychotic significantly reduced HAMD score by 7.3 in week 2; 60% improved and 44.4% remitted by week 8.⁷
 - 14.9% pt had GI side effect; 14.9% pt had psychiatric side effects.⁷
- Aripiprazole - ~44% gained remission vs ~29% of placebo group, but caused akathisia for ~25% & worse parkinsonism for 16.5%.⁶
 - Older pt study had 26.7% of aripiprazole-treated pt developed akathisia, primarily linked to greater depression severity.⁸

Other

- Zonisamide - anticonvulsant drug significantly ($p < 0.005$) improved depressive symptoms for pt with tremor compared to non-tremor.⁹
 - Insignificant depressive symptom reduction.⁹

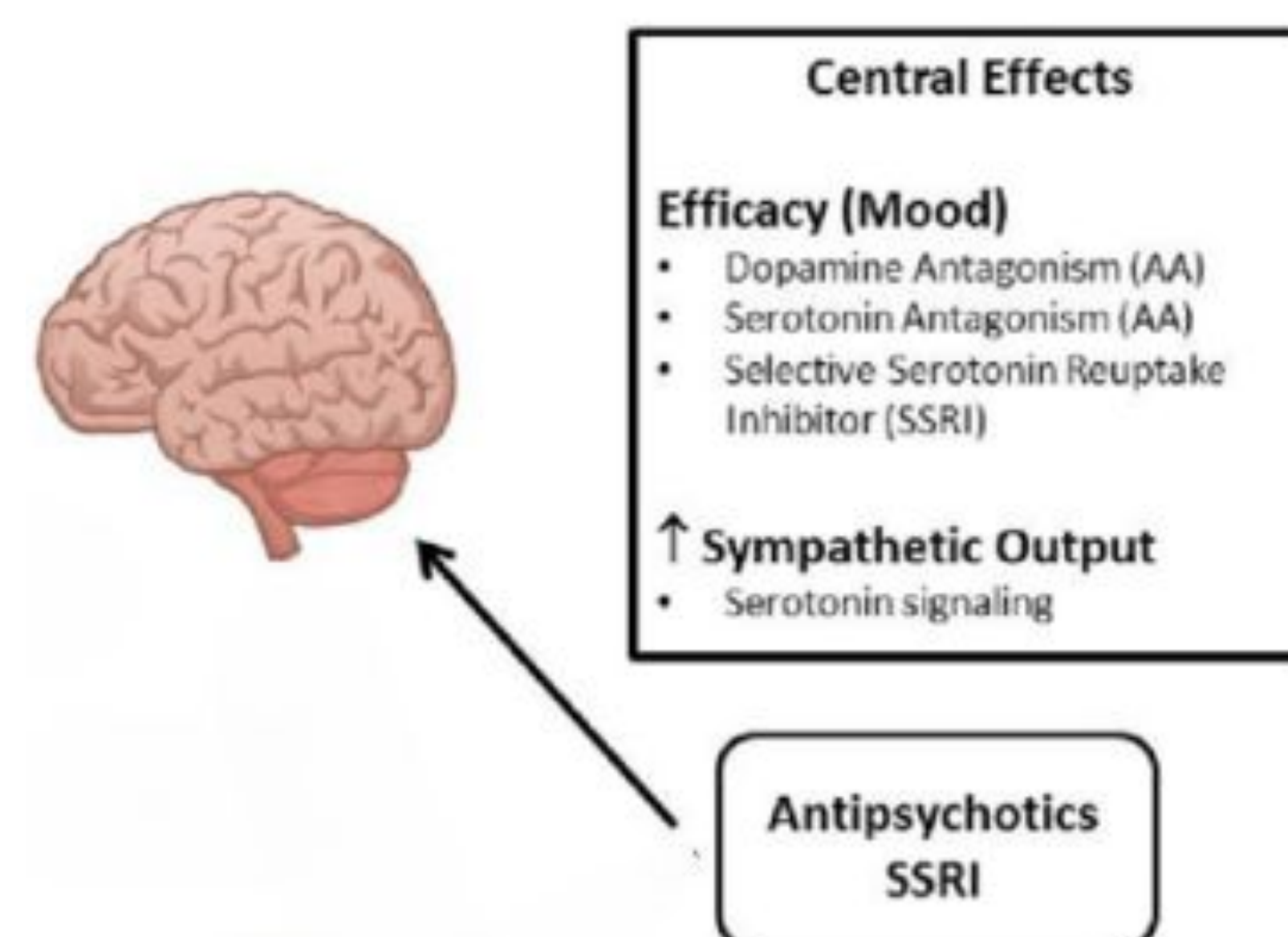


Figure 3. Effects of SSRI and Antipsychotics¹⁰

Therapeutic Approach

Cognitive Behavioral Therapy (CBT)

- Develop personal coping skills to minimize depression symptoms.¹¹
- 12 hour-long sessions of CBT: 7 out of 9 participants significantly respond.¹¹
- A 10-week, hour-long, telephone-based CBT significantly reduced depressive symptom.¹²

Yoga

Weekly 90-minute sessions of guided yoga & mindfulness meditation significantly ($p < 0.001$) reduced depressive symptoms.¹³

Bright Light Therapy (BLT)

In 2 studies, Rutten et al found BLT to improve sleep & insignificantly decrease HDRS.^{14 15}

Brain Stimulation Approach

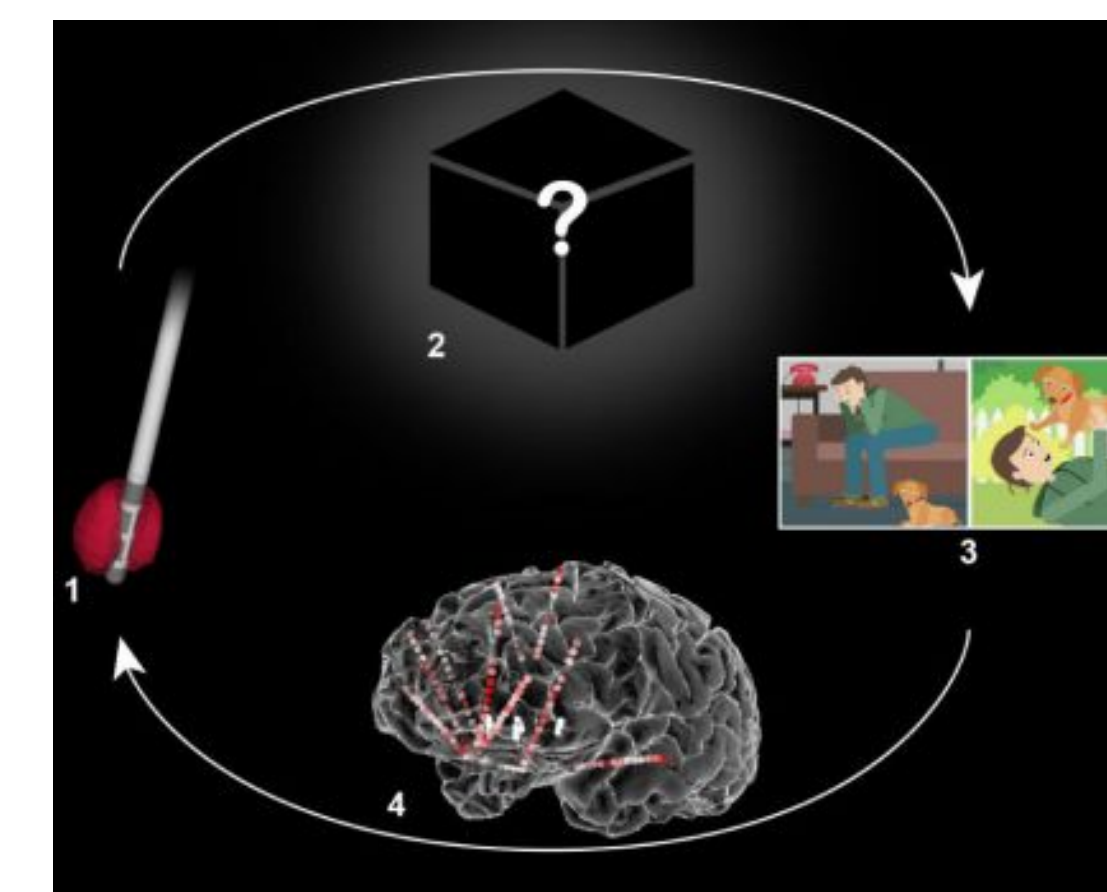


Figure 4. Mechanisms of Deep Brain Stimulation¹⁶

Deep Brain Stimulation (DBS)

- Implanting electrodes regulates abnormal brain activity to reduce symptoms.¹⁶
- 18-week case study reduced depressive severity by 56-67%.¹⁶
- 90-day DBS reduced depressive symptom.¹⁷
 - 25-50% sample had 3-5 yr transient cognitive decline as potential side effect.¹⁷

Transcranial Magnetic Stimulation (TMS)

- TMS alters brain's inhibition & excitation responses via different frequencies.¹⁸
- Real rTMS improved HAMD-17 scores by 6 weeks ($p=0.003$), while sham rTMS showed no significant improvement ($p=0.837$).¹⁸

Discussion

Besides case study, all studies are randomized controlled trials. They share the following characteristics:^{4-9 11-18}

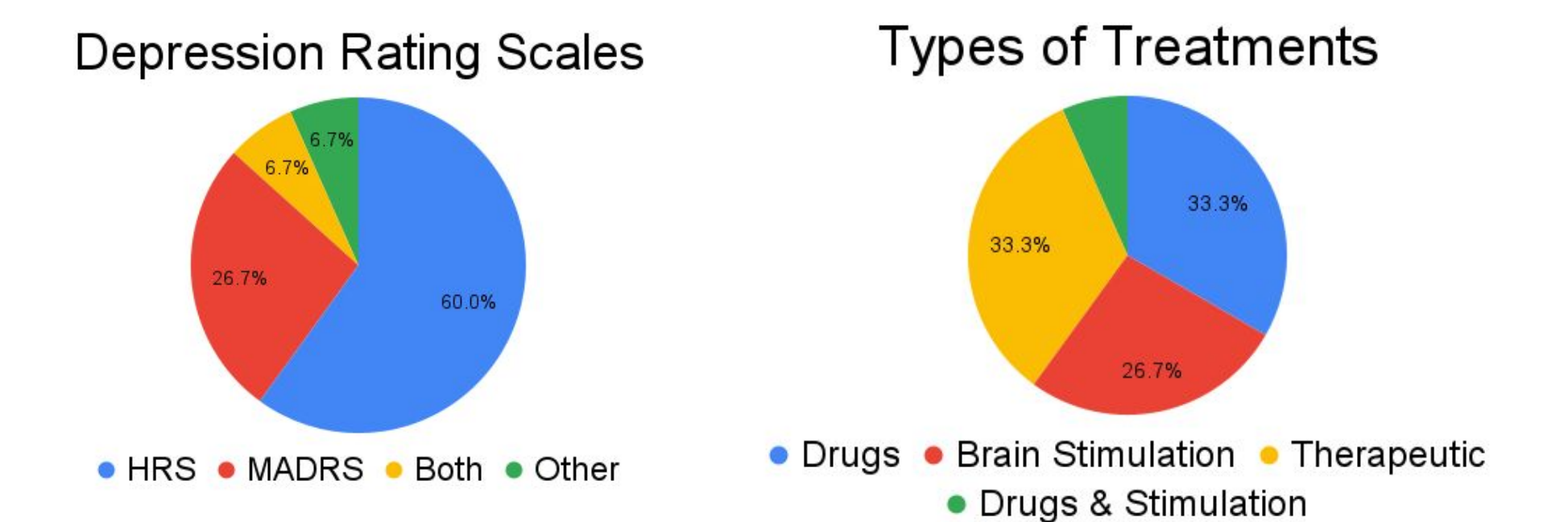


Figure 5. Characteristics of the Studies

- Pt on antidepressants had significant improvement but they may get GI side effects, and apathy may be untreated.
- Antipsychotics led to recovery, especially with dosage reductions, but they had GI, psychiatric, and other side effects (akathisia).
 - 1 study emphasizes monitoring patients with severe depression for akathisia and exploring PD predictors.⁸
- BLT showed no significant improvement, but CBT & yoga reduced depressive symptoms, which can both be practiced.
- Despite inconsistent results, DBS and TMS stimulate the brain to reduce depressive symptoms of patients with PD.

Conclusion

- Despite improvements, pt on antipsychotics experienced many side effects. BLT and Zonisamide were ineffective.
- Antidepressants, CBT, & yoga effectively reduced depressive symptoms. Brain stimulations are promising approaches.
- This study will investigate EMBASE next for exploring the best treatment options for depressive symptoms in PD patients.

References

