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Title
A Double-Blind, Placebo-Controlled Study of Caplyta in the Treatment of Borderline Personality Disorder.

This project will take place at the University of Chicago. Dr. Jon E. Grant, MD, JD is the Principal Investigator and can be phoned at 773-834-1325 or reached by email at jgrant4@bsd.uchicago.edu.

This clinical trial will be conducted in the spirit of Good Clinical Practice and in accordance with this IRB-approved protocol. No deviation from the protocol will be implemented without the prior review and approval of the IRB except where it may be necessary to eliminate an immediate hazard to a research subject. In such a case, the deviation will be reported to the IRB as soon as possible.

Objective
The primary objective of the proposed study is to evaluate the safety and efficacy of Caplyta (lumateperone) in adults with borderline personality disorder (BPD). Sixty subjects with BPD will be randomized in a 1:1 fashion to either Caplyta (42mg/day) or matching placebo for 8 weeks of active treatment. The hypothesis to be tested is that Caplyta will result in greater rates of reduction in symptoms of BPD compared to placebo (improvement in symptoms will be indicated by lower scores on established outcome measures of BPD symptoms that have been used in prior studies).

Background of BPD
Borderline personality disorder (BPD) is a serious, difficult to treat, psychiatric disorder that causes significant emotional distress, as well as resulting in significant economic burden to health care systems (1–3). A variety of psychotherapies, particularly dialectical behavior therapy (DBT) and systems training for emotional predictability and problem solving (STEPPS), have shown benefit in reducing many of the core symptoms of BPD (4–6). Healthcare systems, however, often lack the funding and appropriate expertise to implement these treatments, and finding trained DBT or STEPPS therapists has been difficult for many people with BPD (7-8). While research on the use of medication is ongoing, no drug has yet been approved in the United States or elsewhere for the treatment of BPD. Antidepressants, anti-convulsants, and second generation antipsychotics have all been examined (9-17), but current medication options for BPD often provide only partial relief and may have pronounced side effects.

Choice of Medication

BPD is characterized by a pervasive pattern of severe psychopathological symptoms with instability of affect regulation, impulse control, and aggression. Dysfunctions in the serotoninergic, dopaminergic, and glutamatergic systems have been demonstrated in—and considered as possible causes for—symptoms associated with the disorder (18-22). Caplyta (lumateperone) therefore has distinctive properties that make it a promising option for patients with BPD. Caplyta is a mechanistically novel agent as it simultaneously modulates serotonin, dopamine, and glutamate, the key neurotransmitters implicated in BPD. Specifically, Caplyta acts as a potent serotonin 5-HT_{2A} receptor antagonist, a dopamine D_2 receptor pre-synaptic partial agonist and post-synaptic antagonist, a D_1 receptor-dependent modulator of glutamate, and a serotonin reuptake inhibitor (23-25). In addition, because of low rates of side effects, Caplyta should be a well-tolerated and in fact desired medication approach to BPD.

The aim of the present study is to examine the efficacy and safety of Caplyta vs. placebo in adults with BPD, as indicated by a score of at least 9 on the Zanarini Rating Scale for Borderline Personality Disorder ("Zanarini scale"), a scale of illness severity, at the baseline visit.

Study Design/Methodology

Sixty individuals with a prior diagnosis of borderline personality disorder (BPD) will be recruited for a double-blind, placebo-controlled pilot study in which Caplyta or placebo is administered in a 1:1 fashion. All 60 subjects will have current BPD per DSM-5 criteria. Following baseline measures, subjects will receive Caplyta (42mg/day) or inactive placebo. Participants will be seen every 2 weeks during the 8-week period. At week 8, subjects will be discontinued from medication. Efficacy and safety measures will be performed at each visit.

Study Population/Sample Size

60 male and female outpatients aged 18-65 with a current primary diagnosis of BPD.

Subjects

Inclusion criteria:

1) Men and women age 18-65;
2) Primary diagnosis of BPD
3) Zanarini scale score of at least 9 at baseline
4) Ability to understand and sign the consent form.

Exclusion criteria:

1) Unstable medical illness based on history or clinically significant abnormalities on baseline physical examination
2) Subjects with schizophrenia or bipolar I disorder
3) Subjects with an active substance use disorder
4) Current pregnancy or lactation, or inadequate contraception in women of childbearing potential
5) Subjects considered an immediate suicide risk based on the Columbia Suicide Severity rating Scale (C-SSRS) (www.cssrs.columbia.edu/docs)
6) Illegal substance use based on urine toxicology screening (excluding marijuana given the high rates of marijuana use in BPD and the lack of interaction with Caplyta).
7) Use of any new psychotropic medication started within the last 3 months prior to study initiation
8) Previous treatment with Caplyta
9) Cognitive impairment that interferes with the capacity to understand and self-administer medication or provide written informed consent

Advertisements will target this study population. Interested individuals will be asked to contact a study coordinator or complete an online survey expressing interest. Individuals will then undergo a phone screen before being scheduled for a first appointment. After being screened, potential subjects will be scheduled for a first appointment in which we will confirm medical and psychiatric history, laboratory tests, and inclusion/exclusion criteria.

Drugs, Dosages, and Regimens

All subjects who are randomized to Caplyta will receive 42mg/day starting the first week of the study. Subjects will be seen every two weeks for 8 weeks. Dosage changes and reductions will not be permitted. After study conclusion (week 8), the dose will be discontinued.

Randomization

Participants are randomized (1:1) to receive placebo or Caplyta by the investigational pharmacy at the University of Chicago. The study blind will be maintained by making placebo and active treatments appear identical in size, weight, shape, and color. Dosage changes and reductions will not be permitted during the study and participants will be discontinued if they experienced intolerance.

Blinding

Blinding is critical to the integrity of this clinical study. However, in the event of a medical emergency or pregnancy in an individual subject, in which knowledge of the investigational product is critical to the subject's management, the blind for that participant may be broken by the treating physician.

Treatment Duration, Visit Frequency, and Procedures

This is an 8-week study (8 weeks of acute treatment). Subjects will be seen at baseline and then every two weeks after that for a total of 5 visits.

Diagnostic Evaluation

Psychiatric evaluation will use the MINI International Neuropsychiatric Interview with a module for BPD.

Assessments at Each Visit

Those subjects who appear appropriate for the study, based on telephone screening, will be invited for a baseline assessment. The duration of the baseline assessment will be approximately 90-120 minutes and will include the following: Informed consent, Demographic data, Concomitant medications, Family history data, Medical evaluation including physical examination, labs, EKG, weight, and vital signs, Urine pregnancy test (for women of childbearing years) and urine drug screen, and a psychiatric evaluation (using the following measures: MINI International Neuropsychiatric Interview (26); Depressive symptoms will be rated with the 24-item Hamilton Depression Rating Scale (HAM-D) (27); Anxiety symptoms will be assessed using the Hamilton Anxiety Rating Scale (HAM-A) (28); Psychosocial functioning will be evaluated using the patient-rated version of the Sheehan Disability Scale (SDS) (29); Quality of Life Inventory (QOLI) (30); The Cambridge-Chicago Compulsivity Trait Scale (CHI-T); and the Columbia Suicide Severity Rating Scale (C-SSRS), Minnesota Impulse Disorders Interview (MIDI), Dietary Fat and Free Sugar Questionnaire, Sensory Gating

Inventory). During the consent process, individuals will be given time to review the consent form and given the opportunity to ask any questions that may arise before signing the informed consent form. Throughout the study, subjects will be asked questions about the study to ensure that they continue understanding study procedures. Blood samples will be collected at both baseline and last visits to measure fasting total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, glucose, insulin, triglycerides, prolactin levels, liver function, and kidney function. All follow-up visits will include safety measures (adverse events, vital signs, C-SSRS), weight, BPD measures, and other psychiatric measures.

Efficacy evaluation
The primary outcome measure will be the change from baseline using the Zanarini Rating Scale for Borderline Personality Disorder ("Zanarini scale") (31). This semistructured interview has anchored ratings (0=no symptoms, 4=severe symptoms) on nine items that correspond to the DSM-5 BPD criteria. Its subscales will be considered secondary efficacy measures.

Secondary efficacy measures include Modified Overt Aggression Scale (32), the Young Mania Rating Scale (33), and the self-report version of the Zanarini scale (34), the Borderline Evaluation of Severity Over Time (35), the Barratt Impulsiveness Scale (36) the Minnesota Impulsive Disorders Interview (37), the Symptom Checklist–90–Revised (SCL-90-R) (38), and the scales listed above (27-30).

Cognitive Measures
Cognitive assessments consist of three previously validated tests taken from CANTABeclipse software. The choice of cognitive challenges was based on the clinical features of BPD. The order of the tasks will be fixed and participants will complete the tasks at first visit (baseline), and week-8 endpoint. These cognitive tasks will be used for pilot data to examine possible cognitive mechanisms of action of Caplyta in adults with BPD.

Cognitive flexibility, i.e., set-shifting, will be measured using the Intra-dimensional/Extra-dimensional Shift Task (ID/ED task). Participants are presented with two stimuli on-screen for each trial and attempted to learn an underlying 'rule' about which stimulus was correct. Key outcome measures will be number of errors made at the intra-dimensional shift and at the extra-dimensional shift stage.

The Tower of London task will be used to examine executive planning. On each trial of the task, subjects observe two sets of pockets each containing three colored balls on-screen. On 'move' trials, subjects have to attempt to work out 'in mind' the minimum number of moves required to move the balls in one set of pockets to match a goal arrangement also shown in the other set of pockets.

The Probabilistic Beliefs task will allow us to examine the subject's self-other distinction. Participants observe a sequence of neutral images on the screen and are occasionally asked to make responses on a keyboard. Participants will be asked to keep track of the images they see and make predictions about what will happen next. They will also be asked to keep track of another theoretical person's beliefs about what will happen next. The task will allow us to submit self-other distinctions, a potentially important dimension of BPD, to quantitative assessment and computational modelling.

Subject Withdrawal

If a subject withdraws from the study, all instruments administered at the screening visit will be completed at the final visit. These will be conducted when the subject is able to come in for an early termination visit. Withdrawn subjects will be given the phone number of the principal investigator as well as the phone numbers of local resources for BPD treatment.

Subject Termination
If a subject fails to take the medication for a consecutive three-day period, they will be terminated from the study. In this case, the procedures for Subject Withdrawal will be followed (see above). Medication compliance will be assessed via pill count and subject report.

Safety Assessments
Safety and tolerability will be assessed using spontaneously reported adverse events data, C-SSRS, vital signs, and by evaluating premature termination. Safety assessments (sitting blood pressure, heart rate, adverse effects, concomitant medications, and motor tolerability using the Abnormal Involuntary Movement Scale) will be documented at each visit. Subjects who are an immediate suicide risk will be removed from the study and appropriate clinical intervention (e.g. hospitalization) will be arranged. Study team members are mandated reporters and as such, will arrange for the subject to be taken to the emergency room if any intent to harm themselves is expressed. Urine pregnancy tests will be performed at the initial visit. Subjects who have a positive urine pregnancy test will be excluded from the study. Assessment of side effects will be done at each visit.

Adverse Event Reporting
Unanticipated (unexpected) problems/events, those that are *not* already described as potential risks in the consent form, or *not* part of an underlying disease, will be reported to the IRB as soon as possible. The same will be done for serious problems/events and, in the opinion of the investigator, are possibly, probably or definitely related to the research procedures. A follow-up report will also be submitted to the IRB with any documentation related to a previously submitted adverse event.

Risks
While taking the study drug, the subjects condition may remain the same or worsen due to no effect of the study drug.

The most commonly reported side effects (greater than 2%) in previous clinical trials associated with Caplyta include:

24% of subjects experience:
- Somnolence/Sedation (Sleepiness)

14% of subjects experience:
- Headache

6-10% of subjects experience:
- Nausea
- Dry Mouth
- Extrapyramidal symptoms (which may include muscle spasms, stiffness, restlessness, tremor, and drooling, and may be irreversible)

- Increased total cholesterol and triglycerides

3-5% of subjects experience:

- Dizziness
- Creatine Phosphokinase Increased (abnormal liver function tests)
- Fatigue
- Vomiting
- Diarrhea
- Blurred vision
- Hyperglycemia (increased blood sugar levels)

2% of subjects experience:

- Hepatic Transaminases Increased (abnormal liver function tests)
- Decreased appetite
- Abdominal pain
- Upper respiratory tract infection
- Increased blood prolactin

The following side effects have been experienced by some people who have used Caplyta outside of clinical trials. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate how common these side effects are, or if they are related to the study drug. **These reactions may be severe, life-threatening, or fatal, and include:**
These reactions may be severe, life-threatening, or fatal, and include:

- Dystonia (abnormal contractions of muscles, may cause difficulty breathing)
- Leukopenia (low white blood cell count)
- Neutropenia (low amount of neutrophils in the blood)

The following side effects have been experienced by people who have taken antipsychotics, which is the class of medication that Caplyta belongs to. T**hese reactions may be severe, life-threatening, or fatal, and include: These reactions may be severe, life-threatening, or fatal, and include:**

- Suicidal thoughts and behaviors
- Increased risk of death in elderly people with dementia related psychosis
- Stroke in elderly people with dementia-related psychosis that can lead to death
- Weight gain
- Orthostatic hypotension (low blood pressure that occurs upon standing)
- Syncope (fainting)
- Falls
- Seizures
- Body temperature dysregulation
- Dysphagia (difficulty swallowing)

It is possible that some of the questions we will ask you about BPD symptoms or mood might make the subject uncomfortable. They can decline to answer any questions that make them feel uncomfortable.

There may be other risks that could arise which are not reasonably foreseeable. If new information becomes available which could influence your willingness to continue, this new information will be discussed with the subject.

Data Analysis

Data analysis will involve all visits during the 8-week double-blind treatment phase (up until week 8).

Data collected will consist of demographic data, subjective (self-report questionnaires, interview responses, ratings), physiological (heart rate and blood pressure), and cognitive (e.g., neurocognitive tasks). Access to individually identifiable private information about human subjects will be limited to Drs. Grant and Ehsan and their staff and will be collected specifically for the proposed research project. All collected data will be stored utilizing a 4-digit subject identification code, linked to separately stored identifying information via a coded log only available to the PIs.

Prior to inferential analyses, descriptive statistics, including distributions, means, standard deviations, skewness, and kurtosis will be generated. Data will also be examined for the pattern and mechanism of missing data. Continuous data will be tested for normality and homogeneity of variance. The integrity of the randomization will be evaluated using t-tests for continuous variables and chi-square tests for categorical variables. Further, baseline differences between those who enter the study and those who drop out before treatment will be evaluated. Subsequent outcome analyses will be adjusted for baseline differences using covariance procedures.

All enrolled subjects will be included in the analyses of baseline demographics and safety according to an intent-to-treat (ITT) principle. For statistical analysis, the full-analysis set will be defined as all participants who took at least 1 dose of the study drug and had at least 1 post-baseline primary efficacy assessment. The safety-analysis set will be defined as all randomized participants who took at least 1 dose of the study drug and completed at least 1 follow-up safety assessment.

The statistical model will be a linear mixed-effects regression model (LME) that includes terms for treatment group, time, and treatment-by-time interaction. The analyses will run using the nlme package on R for Windows (R Foundation, Vienna, Austria; http://www.r-project.org). Literature suggests LME without imputation may provide more accurate and stable results than LME models using fixed and multiple imputation methods for handling missing data, so no imputation will be undertaken for missing data. All tests of hypotheses will be performed using a two-sided significance level of 0.05.

Sample Size

The sample size was calculated for the primary endpoint of change from baseline. Assuming a similar magnitude of effect seen in other studies of medications for BPD, it was determined that 25 participants would be needed in each treatment group to detect a difference with an overall 5% type-I error risk. Given the particularly low rates of adverse events reported with Caplyta, as well as its more positive side effect profile in terms of weight gain, we expect few drop-outs from the study and therefore a smaller sample is needed (60 total).

Data Handling and Record Keeping

All subject data will be maintained by the study personnel under the supervision of the principal investigator. Subjects will be seen at the University of Chicago. Patient binders will be kept in a locked room only accessible to research staff.

Data and Safety Monitoring Plan

1. Responsibility for Data and Safety Monitoring
   The PI will have overall responsibility for monitoring the integrity of study data and participant safety.
2. Procedures for Monitoring Participant Safety
   The PI will implement the following procedures to ensure data integrity and the safety of participants during the study.
   - A number of elements of the research plan are intended to minimize the risks of study participation. If subjects become actively suicidal with intent and plan to kill themselves, the PI will evaluate them and refer them for immediate non-study treatment. Any participant endorsing suicidal thoughts with intent and plan will be immediately evaluated by the PI and referred to a higher level of care if clinically indicated.
   - The PI will evaluate patient safety and resolve any safety issues if necessary, as such issues arise. The PI will also be responsible for preparing written summary reports of adverse events and will prepare a written report summarizing any decisions that are made pertaining to participant disposition.
   - Data integrity and confidentiality will be safeguarded as stated above in the Data Handling and Record Keeping Section.

3. **Reporting Adverse Events**
   - Any serious adverse event will be reported to the Institutional Review Board (IRB) at the University of Chicago in a full written report within 10 working days of the event. For fatal/life-threatening serious adverse events, the PI will notify the IRB Chair by phone immediately.
   - Any moderate adverse event which appears definitely, probably, or possibly related to study participation will be reported to the University of Chicago IRB in writing within 20 working days.
   - Any mild adverse event will be summarized in the IRB annual progress reports.

Ethical Considerations

This study will be conducted according to US and international standards of Good Clinical Practice (FDA regulations 21 CFR 312 for IND studies and FDA guidance E6) for all studies. Applicable government regulations and University of Chicago research policies and procedures will also be followed.

This protocol and any amendments will be submitted to the University of Chicago Institutional Review Board (IRB) for formal approval to conduct the study. The decision of the IRB concerning the conduct of the study will be made in writing to the investigator.

All subjects for this study will be provided a consent form describing this study and providing sufficient information for subjects to make an informed decision about their participation in this study. This consent form will be submitted with the protocol for review and approval by the IRB. The formal consent of a subject, using the IRB-approved consent form, will be obtained before that subject is submitted to any study procedure. This consent form must be signed by the

subject or legally acceptable surrogate, and the investigator-designated research professional obtaining the consent.

References

1. Gunderson J: Borderline Personality Disorder, 2nd ed. Washington, DC, American Psychiatric Press, 2000
2. Nakao K, Gunderson JG, Phillips KA, Tanaka N: Functional impairment in personality disorders. J Pers Disord 1992; 6:24–31
3. Bode K, Vogel R, Walker J, Kröger C. Health care costs of borderline personality disorder and matched controls with major depressive disorder: a comparative study based on anonymized claims data. Eur J Health Econ. 2017 Dec;18(9):1125-1135. doi: 10.1007/s10198-016-0858-2. Epub 2016 Dec 18. PMID: 27990594.
4. Linehan MM, Comtois KA, Murray AM, Brown MZ, Gallop RJ, Heard HL, Korslund KE, Tutek DA, Reynolds SK, Lindenboim N: Two-year randomized controlled trial and follow-up of dialectical behavior therapy vs therapy by experts for suicidal behaviors and borderline personality disorder. Arch Gen Psychiatry 2006; 63:757–766
5. Blum N, St John D, Pfohl B, Stuart S, McCormick B, Allen J, Arndt S, Black DW: Systems training for emotional predictability and problem solving (STEPPS) for outpatients with borderline personality disorder: a randomized controlled trial and 1-year follow-up. Am J Psychiatry 2008; 165:468–478
6. McMain SF, Guimond T, Streiner DL, Cardish RJ, Links PS: Dialectical behavior therapy compared with general psychiatric management for borderline personality disorder: clinical outcomes and functioning over a 2-year follow-up. Am J Psychiatry 2012; 169:650–661
7. Carmel Adam, Rose Monica Leila, Fruzzetti Alan E. Barriers and solutions to implementing dialectical behavior therapy in a public behavioral health system. Adm Policy Ment Health. 2014 Oct;41(5):608–14. doi: 10.1007/s10488-013-0504-6.
8. Choi-Kain LW, Albert EB, Gunderson JG. Evidence-Based Treatments for Borderline Personality Disorder: Implementation, Integration, and Stepped Care. Harv Rev Psychiatry. 2016 Sep-Oct;24(5):342-56. doi: 10.1097/HRP.0000000000000113. PMID: 27603742.
9. Lieb K, Völlm B, Rücker G, Timmer A, Stoffers JM: Pharmacotherapy for borderline personality disorder: Cochrane systematic review of randomised trials. Br J Psychiatry 2010; 196:4–12
10. Nickel MK, Muehlbacher M, Nickel C, Kettler C, Pedrosa Gil F, Bachler E, Buschmann W, Rother N, Fartacek R, Egger C, Anvar J, Rother WK, Loew TH, Kaplan P: Aripiprazole in the treatment of patients with borderline personality disorder: a double blind, placebo-controlled study. Am J Psychiatry 2006; 163: 833–838
11. Schulz SC, ZanariniMC, Bateman A, Bohus M, Detke HC, Trzaskoma Q, Tanaka Y, Lin D, Deberdt W, Corya S: Olanzapine for the treatment of borderline personality disorder: variable dose 12-week randomised double-blind placebo-controlled study. Br J Psychiatry 2008; 193:485–492
12. Zanarini MC, Schulz SC, Detke HC, Tanaka Y, Zhao F, Lin D, Deberdt W, Kryzhanovskaya L, Corya S: A dose comparison of olanzapine for the treatment of borderline personality disorder: a 12-week randomized, double-blind, placebo-controlled study. J Clin Psychiatry 2011; 72:1353–1362
13. Pascual JC, Soler J, Puigdemont D, Pérez-Egea R, Tiana T, Alvarez E, Pérez V: Ziprasidone in the treatment of borderline personality disorder: a double-blind, placebo-controlled, randomized study. J Clin Psychiatry 2008; 69:603–608
14. Rinne T, de Kloet ER, Wouters L, Goekoop JG, de Rijk RH, van den Brink W: Fluvoxamine reduces responsiveness of HPA axis in adult female BPD patients with a history of sustained childhood abuse. Neuropsychopharmacology 2003; 28:126–132
15. Flewett T, Bradley P, Redvers A: Management of borderline personality disorder. Br J Psychiatry 2003; 183:78–79

16. Nickel M, Nickel C, Mitterlehner F, Tritt K, Lahmann C, Leiberich P, Rother W, Loew T: Topiramate treatment of aggression in female borderline personality disorder patients: a double-blind, placebo-controlled study. J Clin Psychiatry 2004; 65:1515–1519
17. Nickel M, Nickel C, Kaplan P, Lahmann C, Mühlbacher M, Tritt K, Krawczyk J, Leiberich PK, Rother W, Loew T: Treatment of aggression with topiramate in male borderline patients: a double-blind, placebo-controlled study. Biol Psychiatry 2005; 57:495–499
18. Lieb K, Zanarini MC, Schmahl C, Linehan MM, Bohus M: Borderline personality disorder. Lancet 2004; 364:453–461
19. Friedel RO: Dopamine dysfunction in borderline personality disorder: a hypothesis. Neuropsychopharmacology 2004; 29: 1029–1039
20. Hansenne M, Pitchot W, Pinto E, Reggers J, Scantamburlo G, Fuchs S, Pirard S, Ansseau M: 5-HT1A dysfunction in borderline personality disorder. Psychol Med 2002; 32:935–941
21. Oquendo MA, Mann JJ: The biology of impulsivity and suicidality. Psychiatr Clin North Am 2000; 23:11–25
22. Smesny S, Große J, Gussew A, Langbein K, Schönfeld N, Wagner G, Valente M, Reichenbach JR. Prefrontal glutamatergic emotion regulation is disturbed in cluster B and C personality disorders - A combined $^{1}H/^{31}P$-MR spectroscopic study. J Affect Disord. 2018 Feb;227:688-697.
23. R.E. Davis, C.U. Correll. ITI-007 in the treatment of schizophrenia: from novel pharmacology to clinical outcomes Expert. Rev. Neurother. 2016; 16 (6):601-614
24. G.L. Snyder, K.E. Vanover, H. Zhu, D.B. Miller, J.P. O'Callaghan, J. Tomesch, P. Li, Q. Zhang, V. Krishnan, J.P. Hendrick. Functional profile of a novel modulator of serotonin, dopamine, and glutamate neurotransmission Psychopharmacol 2015; 232(3):605-621
25. Correll CU, Davis RE, Weingart M, Saillard J, O'Gorman C, Kane JM, Lieberman JA, Tamminga CA, Mates S, Vanover KE. Efficacy and Safety of Lumateperone for Treatment of Schizophrenia: A Randomized Clinical Trial. JAMA Psychiatry. 2020 Apr 1;77(4):349-358.
26. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, hergueta T, baker R, Dunbar GC (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry. 59 Suppl 20:22-33.
27. Hamilton M (1960). A rating scale for depression. J Neurol Neurosurg Psychiatry. 23:56-62.
28. Hamilton M (1959) The assessment of anxiety states by rating. Br J Med Psychol. 32:50-55
29. Sheehan DV (1983). The Anxiety Disease. New York: Scribner's.
30. Frisch MB, Cornell J, Villaneuva M (1993). Clinical validation of the Quality of Life Inventory: a measure of life satisfaction for use in treatment planning and outcome assessment. Psychol Assess. 4:92-101.
31. Zanarini MC, Vujanovic AA, Parachini EA, Boulanger JL, Frankenburg FR, Hennen J: Zanarini Rating Scale for Borderline Personality Disorder (ZAN-BPD): a continuous measure of DSM-IV borderline psychopathology. J Pers Disord 2003; 17:233–242
32. Kay SR, Wolkenfeld F, Murrill LM: Profiles of aggression among psychiatric patients, I: nature and prevalence. J Nerv Ment Dis 1988; 176:539–546
33. Young RC, Biggs JT, Ziegler VE, Meyer DA: A rating scale for mania: reliability, validity, and sensitivity. Br J Psychiatry 1978; 133:429–435
34. Zanarini MC, Frankenburg FR: Self-Report Version of the Zanarini Rating Scale for Borderline Personality Disorder. Belmont, Mass, Mclean Hospital, 2008
35. Pfohl B, Blum N, McCormick B, St John D, Allen J, Black DW: Reliability and validity of the Borderline Evaluation of Severity Over Time (BEST): a self-rated scale to measure severity and change in persons with borderline personality disorder. J Pers Disord 2009; 23:281–293
50. Barratt E: Anxiety and impulsiveness related to psychomotor efficiency. Percept Mot Skills 1959; 9:191–198

36. Chamberlain SR, Grant JE: Minnesota Impulse Disorders Interview (MIDI): Validation of a structured diagnostic clinical interview for impulse control disorders in an enriched community sample. Psychiatry Res 2018; 265:279-283
37. Derogatis LR: SCL-90-R Administration, Scoring, and Procedures Manual II. Towson, Md, Clinical Psychometric Research, 1983