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Improving the effectiveness of cognitive based therapy for depression with digital interventions: findings from a randomized control trial

Submission date
07/02/2023

Recruitment status
No longer recruiting

Registration date
08/02/2023

Overall study status
Completed

Last Edited
12/05/2026

Condition category
Mental and Behavioural Disorders

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
elona therapy is the first digital health application (DiGA) for therapy support in the treatment of depression and is reimbursed by all statutory health insurers in Germany. Psychotherapists can individualize the available content based on the progress of the therapy. This study follows a pilot study (https://www.isrctn.com/ISRCTN16328317) and aims to evaluate the efficacy and safety of the digital health application elona therapy (Depression module) for blended cognitive behavioral therapy (bCBT) compared to standard cognitive behavioral therapy (CBT) for depression.

Who can participate?
Patients aged 18 - 65 years with a unipolar depressive disorder

What does the study involve?
Participants will either receive bCBT with elona therapy or standard CBT over 12 weeks. All patients will fill out online questionnaires at the beginning (week 0) and at the end (week 12) of the study period.

What are the possible benefits and risks of participating?
During the use of the application, all participants will receive the usual behavioral therapy (TAU). All participants will benefit from cognitive-based therapy. One group will also additionally benefit from the prior pilot-study tested mental health application. The participants could face a worsening of their general depression symptoms in this setting. In addition, similar to other forms of psychotherapy, the increase in these symptoms could trigger other symptoms of other mental illnesses. In general, because all participants will receive the usual cognitive-based therapy, risks are very low.

Where is the study run from?
Heinrich-Heine-Universität Düsseldorf Clinical Psychology (Germany)

When is the study starting and how long is it expected to run for?
September 2022 to January 2025

Who is funding the study?
Elona Health GmbH (Germany)

Who is the main contact?
Jan Kalde of the University of Duesseldorf, jan.kalde@hhu.de

Contact information

Type(s)
Principal investigator

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Mr Jan Kalde

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Additional identifiers

Protocol serial number
Dep_RCT_1

Study information

Scientific Title
Enhancing the efficacy of CBT for patients with unipolar depression by integrating digital interventions into treatment: Results from a randomized controlled trial

Study objectives
Current study hypothesis as of 10/08/2023:
Primary hypothesis (confirmatory)
P1: Patients receiving bCBT with elona therapy experience stronger improvements in depression symptoms (assessed with the PHQ-9) compared to patients receiving TAU over 12 weeks of treatment.

Primary safety hypotheses
PS: Patients receiving bCBT with elona therapy do not experience more adverse events or serious adverse events (assessed through therapist report via eCRF, see 5.4) over the course of 12 weeks of treatment.

Secondary hypotheses (exploratory)
S1: Patients receiving bCBT with elona therapy experience stronger improvements in generalized anxiety symptoms (assessed with the GAD-7) compared to patients receiving TAU over 12 weeks of treatment.
S2: Patients receiving bCBT with elona therapy experience stronger improvements in their psychological health-related quality of life (assessed with the psychological health subscale of the WHOQOL- BREF) compared to patients receiving TAU over 12 weeks of treatment.
S3: Patients receiving bCBT with elona therapy experience stronger improvements in their depression literacy (assessed with the D-Lit) compared to patients receiving TAU over 12 weeks of treatment.
S4: Patients receiving bCBT with elona therapy show higher adherence (assessed through self and psychotherapist report using a self-validated 4-item instrument) compared to patients receiving TAU over 12 weeks of treatment.
S5: The proportion of patients showing clinically significant improvement (i.e., ≥ 50% symptom reduction on the PHQ-9; Israel, 2006; Keller, 2003; McMillan et al., 2010) is larger for patients receiving bCBT with elona therapy compared to patients receiving TAU over 12 weeks of treatment.
S6: Patients receiving bCBT with elona therapy experience stronger improvements in their therapist-rated CGI-S scores compared to patients receiving TAU over 12 weeks of treatment.
S7: Patients receiving bCBT with elona therapy experience stronger improvements in their overall symptoms compared to patients receiving TAU over 12 weeks of treatment (indicated by higher therapist-reported CGI-I scores at T1).

Previous study hypothesis:
Primary hypothesis (confirmatory)
P1: Patients receiving bCBT with elona therapy experience stronger improvements in depression symptoms (assessed with the PHQ-9) compared to patients receiving TAU after 12 weeks of treatment.

Primary safety hypotheses
PS: Patients receiving bCBT with elona therapy do not experience more adverse events or serious adverse events (assessed through therapist report via eCRF, see 5.4) over the course of 12 weeks of treatment.

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S7: Patients receiving bCBT with elona therapy experience stronger improvements in their overall symptoms compared to patients receiving TAU after 12 weeks of treatment (indicated by higher therapist-reported CGI-I scores at T1).

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 05/08/2023, Ethics Committee HHU Duesseldorf (Moorenstrasse 5, Building 14.82, Dusseldorf, 40225, Germany; +49 211 81-19591; Ethikkommission@med.uni-duesseldorf.de), ref: 2022-2183-andere Forschung erstvotierend

Primary study design
Interventional

Study design
Interventional randomized controlled trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Outpatient psychotherapeutic treatment of unipolar depression

Interventions
Current interventions as of 10/08/2023:
elona therapy (Depression module) is a digital health application that supports patients in outpatient psychotherapy for unipolar depression through the delivery of therapeutic content between regular therapy sessions. With elona therapy, psychotherapists can assign interventions, helpful activities, exercises and psychoeducational resources that provide patients with information and treatment techniques related to their mental illness. Overall, over 400 different types of interventions, techniques, exercises, and psychoeducation are available beyond the regular therapy session through the elona therapy smartphone application. The content is based on current and evidence-based therapeutic methods in CBT. elona therapy allows individualizing the content to the needs of the patient. The application is designed to strengthen the active cooperation and participation of patients in outpatient psychotherapy and to integrate therapeutic content in the daily life of the patient.

To test the efficacy and safety of elona therapy (Depression module), a randomized controlled trial (RCT) with patients with a clinical diagnosis of depression (including ICD-10: F32.x, F33.x, F34.1) based on ICD-10 criteria, is planned. Randomization is achieved 1:1 and stratified according to the subgroups of depression (mild/moderate/severe/dysthymia). This study follows a pilot study (https://www.isrctn.com/ISRCTN16328317).
The RCT comprises two arms: Participants assigned to the treatment group will receive access to the elona therapy (Depression module) application in addition to face-to-face cognitive

behavioral therapy (CBT) for 12 weeks (blended CBT; bCBT). The other group (active control group) will receive face-to-face CBT for 12 weeks (treatment as usual; TAU). The active control group will receive access to elona therapy after the study period. For evaluating the primary and secondary objectives of this study (see below) a 2 (group: bCBT, TAU) x 2 (time: pre, post) design will be used.

Previous interventions:
elona therapy (Depression module) is a digital health application that supports patients in outpatient psychotherapy for unipolar depression through the delivery of therapeutic content between regular therapy sessions. With elona therapy, psychotherapists can assign interventions, helpful activities, exercises and psychoeducational resources that provide patients with information and treatment techniques related to their mental illness. Overall, over 400 different types of interventions, techniques, exercises, and psychoeducation are available beyond the regular therapy session through the elona therapy smartphone application. The content is based on current and evidence-based therapeutic methods in CBT. elona therapy allows individualizing the content to the needs of the patient. The application is designed to strengthen the active cooperation and participation of patients in outpatient psychotherapy and to integrate therapeutic contents in the daily life of the patient.

To test the efficacy and safety of elona therapy (Depression module), a randomized controlled trial (RCT) with patients with a clinical diagnosis of depression (including ICD-10: F32.x, F33.x, F34.1) based on ICD-10 criteria is planned. Randomization via online tool ('Climedo')
The RCT comprises two arms: Participants assigned to the treatment group will receive access to the elona therapy (Depression module) application in addition to face-to-face cognitive behavioral therapy (CBT) for 12 weeks (blended CBT; bCBT). The other group (active control group) will receive face-to-face CBT for 12 weeks (treatment as usual; TAU). The active control group will receive access to elona therapy after the study period. For evaluating the primary and secondary objectives of this study (see below) a 2 (group: bCBT, TAU) x 2 (time: pre, post) design will be used.

Intervention Type
Behavioural

Primary outcome(s)
Current primary outcome measure as of 17/08/2023:
Assessments will take place at baseline (T0) and 12 weeks after treatment start (T1):

Primary efficacy objective
Depressive symptoms (PHQ-9)

Primary safety objective
Number or seriousness of adverse events measured using patient records

Previous primary outcome measure as of 10/08/2023 to 17/08/2023:
Assessments will take place at baseline (T0), 6 weeks after treatment start (T1) and 10 weeks after treatment start (T2):

Primary efficacy objective
Depressive symptoms (PHQ-9)

Primary safety objective
Number or seriousness of adverse events measured using patient records

Previous primary outcome measure:
Assessments will take place at baseline (T0) and 12-week after treatment start (T1):

Primary efficacy objective
Depressive symptoms (PHQ-9)

Primary safety objective
Number or seriousness of adverse events measured using patient records

Key secondary outcome(s)
Assessments will take place at baseline (T0) and 12-week after treatment start (T1):
1. Generalized anxiety symptoms (measured with the GAD-7)
2. Psychological health (measured with the psychological health subscale of the WHOQOL-BREF)
3. Depression literacy (measured with the D-Lit)
4. Self efficacy (GSE)
5. Overall therapist-rated symptoms (measured with the Clinical Global Impression (CGI) Scale Item 1, CGI-S (Severity), and Item 2, CGI-I (Improvement)).
6. Adherence (assessed with a 4-item scale from the patient and therapist perspective)
7. Proportion of patients experiencing clinically significant improvements (i.e., ≥ 50% symptom reduction on the PHQ-9; Israel, 2006; Keller, 2003; McMillan et al., 2010)

Completion date
31/01/2025

Eligibility

Key inclusion criteria
1. All participants must have been diagnosed with one of the following ICD-10 diagnoses:
F32: Depressive episode
F32.0: Mild depressive episode
F32.1: Moderate depressive episode
F32.2: Severe depressive episode without psychotic symptoms
F33: Recurrent depressive disorder
F33.0: Recurrent depressive disorder, current episode mild
F33.1: Recurrent depressive disorder, current episode moderate
F33.2: Recurrent depressive disorder, current episode severe without psychotic symptoms
F34.1: Dysthymia
2. Between the age of 18 and 65 years
3. Sufficient German language skills (in writing and reading)
4. Possess a smartphone (iOS or Android operating system) with internet access
5. Provide signed and dated informed consent, and be willing to comply with the protocol

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
100 Years

Sex
All

Total final enrolment
283

Key exclusion criteria
1. All individuals without the included ICD-10 diagnoses as well as individuals with the following comorbid ICD-10 diagnoses are excluded:
F00-F09: Organic, including symptomatic, mental disorders
F10-F19 Mental and behavioural disorders due to psychoactive substance use (except F17.1, F17.2, F17.3)
F20-F29: Schizophrenia, schizotypal and delusional disorders
F30: Manic episode
F31.0, F31.1, F31.2, F31.5, F31.6, F31.8, F31.9: Bipolar disorder current hypomanic or manic episode
F32.3: Severe depressive episode with psychotic symptoms
F33.3: Recurrent depressive disorder, current episode severe with psychotic symptoms
2. Individuals with acute suicidality (assessed via clinical assessment by the responsible therapist),
3. Individuals without any access to a smartphone (iOS or Android operating system) with internet access, and
4. Individuals with insufficient German language proficiency are excluded from this study
5. If an individual is currently enrolled or is planning to participate in a potentially confounding drug or device trial during the study, enrollment into this study is not possible
6. Participants will also be excluded for the respective measurement point if they fail to complete the study questionnaires within 14 days after having received them

Date of first enrolment
17/08/2023

Date of final enrolment
31/05/2024

Locations

Countries of recruitment
Germany

Study participating centre
Psychotherapeutische Institutsambulanz der Heinrich-Heine-Universität
Graf-Adolf-Straße 63

40210 Düsseldorf, Germany
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Study participating centre
AVT GmbH Akademie für Verhaltenstherapie
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50672 Köln, Germany
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Study participating centre
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97070

Study participating centre
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Study participating centre
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Study participating centre
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Sponsor information

Organisation
Heinrich-Heine-Universität Düsseldorf

Funder(s)

Funder type
Industry

Funder Name
Elona Health GmbH

Results and Publications

Individual participant data (IPD) sharing plan

Participant level data (anonymised data) is available upon request from Jan Kalde (jan.kalde@hhu.de).

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		31/01/2026	12/05/2026	Yes	No
Participant information sheet	in German		08/02/2023	No	Yes