DEPRESSION IN COMMUNITY RESIDING ELDERS (DIRE)

A Rapid Review of Telemedicine Interventions for Reducing Depressive Symptoms in Community-Dwelling Older Adults

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ABSTRACT

Background. Depression is common in older adults and leads to significant morbidity and mortality. There are many available treatments for depression, but in the setting of a pandemic, physical distancing can lead to challenges with accessing these treatments.

Objective. To describe the efficacy of telemedicine interventions for reducing depressive symptoms in community-dwelling older adults.

Methods. We registered our rapid review with PROSPERO (CRD42020188465) and published our protocol on Open Science Framework (https://osf.io/6tjcy/). We performed a rapid review to identify relevant randomized controlled trials (RCTs). We searched MEDLINE, EMBASE, Cochrane Database of Systematic Reviews, CENTRAL, and PsycINFO for RCTs published in English from inception until May 25, 2020. We included RCTs that compared the efficacy of a telemedicine intervention to usual care or any other telemedicine intervention in community-dwelling older adults ≥ 60 years old with depressive disorders or depressive symptoms. All study screening, data abstraction, and risk of bias assessment was completed by a single reviewer, after an initial calibration with a second author. All data was abstracted by one author.

Results. We screened 1966 titles and abstracts and 486 full text articles, which resulted in 14 included RCTs in our rapid review (n=1910 participants). Many studies were at unclear or high risk of bias due to inadequate allocation concealment (n=8) and blinding of participants and personnel (n=13). Eight studies looked at older adults with depression at baseline, and six looked at depression as an outcome. Studies included predominantly telephone or internet-delivered cognitive behavioural therapy with or without clinician support. Nine studies reported a significant decrease in depression scores during the study for telemedicine interventions compared to controls. Meta-analyses have not been completed yet.

Conclusions. This rapid review identified 14 RCTs that examined telemedicine interventions in community-dwelling older adults for treatment of depression or depressive symptoms. The most common intervention was internet or telemedicine cognitive behavioural therapy.

BACKGROUND AND RATIONALE

Background

Depression is the most common mental illness in older adults1. Fifteen percent1 of older adults experience clinically significant depressive symptoms, which can have devastating consequences. Older adults have the highest suicide rate in Canada1, and depressed older adults have greater physical disability2 and lower quality of life3 than younger Canadians. There are effective treatments for depression in older adults4, such as psychotherapy5. However, older adults are frequently under-treated1 and experience additional barriers to accessing mental health resources6.

Older adults are at higher risk of depression than younger adults because of social isolation and infection prevention measures enacted to contain the COVID-19 pandemic, which have disproportionately impacted older adults7,8. Telemedicine can potentially increase access to care in the setting of a pandemic and improve clinical outcomes for older adults. In a pandemic with associated physical distancing, older adults with depression lack access to or hesitate seeking out (1) non-pharmacologic therapies and (2) health care providers9. This has
resulted in an *urgent* need to understand the efficacy of telemedicine-based interventions for treating depression in older adults.

**KNOWLEDGE GAP**

There is emerging evidence to support the use, acceptability, and cost of telemedicine-based psychotherapy in older adults. However, it is unclear which telemedicine interventions are effective, and what adaptations are needed for older adults with depression to access telemedicine-based interventions.

**OBJECTIVE**

Our objective was to understand efficacy of telemedicine-based interventions for community-residing older adults experiencing depressive symptoms or depressive disorders. This report is a rapid review of all telemedicine or remote treatment options for depressive symptoms and disorders.

**METHODS**

We adhered to methods of the World Health Organization practical guide to rapid reviews. We registered our rapid review with PROSPERO (CRD42020188465) and published our protocol on Open Science Framework (https://osf.io/6tjcy/).

**SEARCH STRATEGY**

We developed our search strategy with an experienced librarian at the University of Calgary. A second librarian completed a Peer Review of Electronic Search Strategies review and all edits were included in the final search. We searched MEDLINE, EMBASE, Cochrane Database of Systematic Reviews (CDSR), Cochrane Central Register of Controlled Trials (CENTRAL), and PsycINFO for studies published in English from inception until May 25th, 2020 (see MEDLINE search strategy in Appendix 1). We searched terms in clusters using key words and controlled vocabulary for older adults, depression, telemedicine and randomized controlled trials. We used validated Cochrane search filters for randomized controlled trials (RCTs).

**STUDY SELECTION**

We included RCTs comparing the efficacy of any non-pharmacologic telemedicine intervention to usual care or any other non-pharmacologic telemedicine intervention for reducing depressive symptoms in community-dwelling older adults (with or without depression at baseline). Telemedicine includes any remote intervention such as telephone, videoconferencing, or internet intervention. Depressive disorders represent a criterion-based diagnosis by a trained health care provider using a known reference standard (e.g. Diagnostic and Statistical Manual or DSM); whereas, persons with depressive symptoms may have clinically significant or relevant symptoms of depression according to a depression rating tool or clinical assessment. Depressive symptoms were captured from relevant scales (e.g. Beck Depression Inventory). Included RCTs reported a (1) mean study participant age of ≥65 years old and all participants were ≥60 years old or (2) subgroup of study participants ≥65 years old from which data could be extracted. Multicomponent interventions, which incorporated both remote and
in-person components, were excluded. We also excluded RCTs where the entire study population had a specific medical comorbidity (e.g. heart failure, chronic obstructive pulmonary disease). After reviewers reached at least 80% agreement in a pilot screening exercise, a single reviewer (ZG or JW) completed two screening levels ([1] title and abstract and [2] full-text).

DATA EXTRACTION AND RISK OF BIAS ASSESSMENT

A single reviewer (ZG) completed all data abstraction from included full text articles and risk of bias (RoB) appraisal. RoB was assessed with the Cochrane tool for RCTs. 'Other sources of bias' in this RoB tool, included whether it was the same clinician was performing interventions and controls, given this could introduce treatment cross-contamination. The following data were abstracted: participant characteristics (e.g. age of study population, proportion of female study participants, proportion of participants with depression at RCT baseline, presence of psychiatric comorbidities), study characteristics (e.g. year of publication, authorship, study setting [i.e. urban vs. rural], sample size, study duration, number of RCT treatment arms, inclusion criteria, exclusion criteria), details of intervention implementation, and outcome data from each intervention group. Outcomes from all follow-up intervals were abstracted. Where RCTs reported ≥2 scales for the same outcome, data from the all reported scales were abstracted. We summarized all abstracted data from included RCTs in tables that incorporated study and participant characteristics, depression outcomes, and risk of bias appraisal. No meta-analyses were done at this time, but are part of future work.

RESULTS

SEARCH RESULTS AND INCLUSION

Our search included 1966 citations after duplicate citations were removed: 898 citations in MEDLINE, 766 in EMBASE, 171 PsycINFO, and 798 in CENTRAL and CDSR (Figure 1). We reviewed 486 full text articles and included 14 articles in our synthesis. Studies were excluded because they were not RCTs, the study population did not meet our age criteria, or interventions were not telemedicine-based. We excluded 26 RCTs focused on specific co-morbidities such as Parkinson disease, cardiac conditions, lung conditions or cancer.
The greatest threat to the validity of the included studies was the high frequency of studies with high or unclear allocation concealment (n=7), and poorly described blinding procedures. Thirteen RCTs were at low risk of bias and one study was at unclear risk of bias from random sequence generation (Table 1). Allocation concealment was unclear due to lack of description in 7 studies, and low risk of bias in 6 studies. Blinding was poorly described. Blinding of participants and personnel was high risk of bias in four studies, and unclear in nine. Outcome assessment was blinded in 5 studies, not blinded in 3, and unclear in 6. Incomplete outcome data was low risk in half of studies (n=7) and unclear in the remaining. All RCTs were at low risk of bias from selective reporting.
SYNTHESIS

Study and Participant Characteristics

Included studies were published from 2012 to 2020 (Table 2). Studies were conducted in Australia (n=4), United States (n= 7), Canada (n=1), Japan (n=1) and Sweden (n=1). All study participants (n=1910) were at their home or in a community setting. Study duration varied from 8 weeks to 48 weeks. Studies occurred across urban (n= 7) and rural settings (n= 3). The mean age of study populations ranged from 64.4 to 79.2 years old. Females represented 60 to 87% of study participants; however, two studies focused on Veterans where females represented only 2 to 6% of study participants. Many studies included a population with primary or co-morbid anxiety symptoms or disorders (n=9). All studies excluded persons with severe depression or suicidality. Ten studies excluded persons with cognitive impairment or substance use disorders.

Study Interventions and Comparators

Included studies focused on two main populations of older adults:

a. Those with depressive symptoms or disorders at baseline or as inclusion criteria in the RCT (n=6)

b. Those where depressive symptoms are measured as an outcome (n=8)

Most studies compared a telemedicine-based intervention to usual care (n=2) or a waitlist control group (n=5). Other RCTs compared telemedicine-based interventions to interventions such as illness management, nondirective therapy, information, brief emails, and knowledge games. Two RCTs compared telemedicine-based interventions to in-person interventions. Studies had varied exclusion criteria.

Interventions for Persons with Depressive Symptoms or Disorders at Baseline

There were several interventions examined for treating depressive symptoms or disorders (Table 3):
DEPRESSION IN COMMUNITY RESIDING ELDERS

a. telephone psychotherapy with illness management
b. telephone illness management

c. telephone behavioural activation therapy

d. telehealth (videoconference) nursing for general chronic illness management and problem-solving therapy for depression

e. internet cognitive behavioural therapy with orientation session and clinician guidance throughout

f. internet cognitive behavioural therapy with orientation session

g. internet cognitive behavioural therapy alone

h. internet cognitive behavioural therapy (tailored to individual) with clinician guidance

i. internet cognitive behavioural therapy with clinician guidance

In brief, interventions were conducted over the telephone or internet. Telephone-based interventions were typically administered by counsellors, social workers, nurses or psychologists. Internet-based interventions were a combination of self-guided cognitive behavioural therapy (CBT) through structured modules with or without clinician guidance. Some internet-based interventions included an initial orientation session for participants. Clinician guidance throughout internet-based interventions was typically a weekly check-in via telephone or email to answer participant questions, review their work on weekly modules, and encourage them to adhere to sessions and to use their new skills.

Both telephone- or internet-based interventions that used CBT typically included aspects of problem-solving therapy, behavioural activation, interpersonal therapy, mindfulness, and psychoeducation. The internet-based interventions included a significant component that was self-administered through an online course or modules.

RCTs reported outcomes using the Patient Health Questionnaire (PHQ-9) (n=4), Montgomery Åsberg Depression Rating Scale (n=1), or Geriatric Depression Scale (GDS) (n=1). Five RCTs reported a post-intervention outcome immediately after intervention (8-12 weeks) and one reported longer term outcomes (48 weeks) (Table 4). Four studies reported a statistically significant decline in depression scores for telemedicine intervention compared to controls, and one study reported the intervention was non-inferior to in-person assessment.

Interventions for Persons without Diagnosed Depressive Disorders at Baseline

Eight RCTs looked at older adults without diagnosed depression at baseline who received a telemedicine intervention for which depressive symptoms were measured as an outcome. There were several interventions examined for treating these participants (Table 3):

a. telephone cognitive behavioural therapy
b. telephone non-directive supportive therapy

c. telephone psychologist with DVD Breathing Exercises

d. internet cognitive behavioural therapy with clinician guidance

e. internet cognitive behavioural therapy with orientation, clinician guidance and peer support

f. internet cognitive behavioural therapy with orientation, clinician guidance

g. processing speed training game
Interventions were delivered over the phone (n=4), internet (n=5), computer game (n=1) or DVD (n=1). Internet-based interventions often incorporated use of clinician guidance throughout or an initial orientation session. Interestingly, one study examined a peer support intervention along with the aspects of internet cognitive behavioural therapy. CBT included exposure therapy, cognitive restructuring, relapse prevention, relaxation, coping statements, cases or vignettes. Five RCTs focused on anxiety and measured depression as a secondary outcome. Internet-based interventions often incorporated use of clinician guidance throughout or an initial orientation session. Interestingly, one study examined a peer support intervention along with the aspects of internet cognitive behaviour therapy. CBT included exposure therapy, cognitive restructuring, relapse prevention, relaxation, coping statements, cases or vignettes. Five RCTs focused on anxiety and measured depression as a secondary outcome. Internet-based interventions often incorporated use of clinician guidance throughout or an initial orientation session. Interestingly, one study examined a peer support intervention along with the aspects of internet cognitive behaviour therapy. CBT included exposure therapy, cognitive restructuring, relapse prevention, relaxation, coping statements, cases or vignettes. Five RCTs focused on anxiety and measured depression as a secondary outcome.

RCTs reported outcomes using the Beck Depression Inventory BDI-I (n=2), PHQ-9 (n=5), and the Profile of Mood State – depression (POMS-D) (n=1) (Table 4). Study follow-up intervals varied from 4 to 24 weeks. Two RCTs looked at outcomes at 24 months. Five studies reported a statistically significant reduction in depressive symptoms associated with telehealth interventions compared to control interventions, however, three studies did not demonstrate a significant benefit associated with telehealth interventions.

**DISCUSSION**

**IMPLICATIONS**

In the setting of physical distancing required during a pandemic, being able to aid older adults with depression or depressive symptoms remotely is key. This rapid review focused on interventions for the general older adult population over the age of 60 years old. We identified 14 RCTs that examined the role of telementicine interventions in reducing depressive symptoms in community-dwelling older adults. The included implemented by telephone or internet using variations of CBT.

CBT is an effective form of psychotherapy in adults for treating depression and anxiety. CBT adapts well to a remote intervention setting as it is a meant to be a structured and collaborative activity. This format works well for the telephone or internet CBT, as the participants are given access to a structured course where they work through chapters or modules weekly. The addition of clinician guidance, as was done in several studies, allows for ongoing feedback and reinforcement with the patient mirroring in-person CBT. None of the RCTs included a specific pharmacologic component, although several RCTs mentioned patients could seek pharmacologic therapy with their doctors.

In some RCTs, a change in mean depression score from baseline to follow-up suggested that these interventions may be efficacious in older adults. However, further analysis is required to estimate comparative efficacy, and treatment features associated with efficacy.

The included RCTs reported few barriers to the uptake of remote interventions, and satisfaction with the intervention was high in RCTs that examined this. CBT is available in most urban centres; however, there is rarely access to specific CBT for older adults. Remote options for community-dwelling older adults who live in rural areas or who have poor mobility is lacking. Despite the known efficacy of CBT in adults and older adults, this service may not be covered in existing health plans.

The COVID-19 pandemic has forced us to consider implementing remote CBT. Impacts and efficacy of this care delivery shift remain to be seen. Given the wide availability of providers...
who are trained to conduct CBT, remote therapy tailored to the needs of older adults could be offered. Further analysis is required before findings of these RCTs can be implemented successfully in local health authorities.

GAPS IN FINDINGS

The included RCTs have several limitations. First, most RCTs did not blind participants and personnel, and allocation was frequently not concealed. It is certainly difficult to blind non-pharmacological interventions from the personnel or participants, however allocation and outcome assessment could be blinded. Lack of allocation concealment and measurement of outcomes could impact our understanding of intervention effects. Both of these features confer a risk of increased bias. Given the nature of each intervention, participant and personnel blinding was not always feasible. Risk of bias due to allocation concealment, however, is addressable in future RCTs.

Persons with severe depression or suicidal ideations were frequently excluded from RCTs. In the setting of an RCT, persons with severe depression or suicidality are often excluded for safety (Table 3). Studies often excluded persons with cognitive impairment or substance use disorders. In the setting of a pandemic, however, these patients continue to require care. Most studies were conducted in the United States or Australia. This lack of diversity in race, ethnicity and culture in the included studies makes it difficult to make inferences concerning a broader context. None of the included RCTs explicitly reported participant sex.

Although this rapid review included 14 RCTs, we identified 26 more RCTs that examined remote interventions in older adults with specific co-morbidities. Although these additional RCTs did not meet our inclusion criteria for this rapid review, these RCTs may influence remote care delivery for sub-populations of older adults. To identify all of these RCTs, we will conduct a broader search of all depression interventions to ensure no remote interventions were missed. Our current search identified that some articles were poorly indexed in databases. Therefore, a broader search strategy is necessary. A deeper understanding of patient perceptions of telephone and internet CBT is required to ensure that these interventions meet the needs of community-dwelling older adults. One commonly identified barrier to remote assessment is access to technology, which was not well described in the included studies.

RECOMMENDATIONS FOR POLICY

- Our final knowledge synthesis (i.e. systematic review and network meta-analysis) will provide a clearer understanding of the comparative efficacy and ranking of interventions.
- Several telephone and internet CBT interventions have been tested in older adults which could potentially be implemented for reducing depressive symptoms in community-dwelling older adults.
- Given that care providers are less able to provide in-person care during the COVID-19 pandemic, remote telemedicine interventions may represent a feasible alternate mode of care delivery.

NEXT STEPS
In order to make more firm recommendations as to the comparative efficacy of telemedicine interventions for reducing depressive symptoms in community-dwelling older adults, we will complete a more comprehensive search to identify any further literature. This search will look at all interventions for reducing depressive symptoms in older adults because our initial search revealed that some telemedicine interventions are poorly indexed. We will also review studies interventions where there are telemedicine is part of a multicomponent intervention, or a single arm of the trial is remote. This expanded search will be completed using systematic review and meta-analysis methods. We will explore in future work any studies that examine cost or economic analyses of these treatments, as some of the non-pharmacologic therapies are not always covered or available.

Our final results will enable dissemination of high-quality evidence to stakeholders who can develop or adapt identified telemedicine interventions for reducing depressive symptoms in community-dwelling older adults. We will present a national webinar through the brainXchange in September 2020. Our collaborators and knowledge users will inform knowledge products and dissemination plans. We will publish our results in an open access journal, and present our findings to local (e.g. Kerby Centre), provincial (e.g. Alberta Addictions and Mental Health Strategic Clinical Network (AMHSCN), Regional Geriatric Program of Toronto), and national organizations (e.g. brainXchange, Evidence Alliance).41, 42
Table 2: Study and Patient Characteristics

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Country</th>
<th>Study Duration (weeks)</th>
<th>Setting</th>
<th>Urban vs. Rural</th>
<th>Overall Sample Size</th>
<th>No. of Groups</th>
<th>Mean Age (years)</th>
<th>SD</th>
<th>Overall % of Female Study Participants</th>
<th>Depressive Symptoms or Disorder At Baseline</th>
<th>Depressive Symptoms Measured As Outcome Only</th>
<th>Depression Tool at Baseline</th>
<th>Co-Morbid Psychiatric Conditions</th>
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<tbody>
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<td>2013</td>
<td>USA</td>
<td>10</td>
<td>Home/Community</td>
<td>Rural</td>
<td>133</td>
<td>3</td>
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<td>No</td>
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</tr>
<tr>
<td>Titov</td>
<td>2016</td>
<td>Australia</td>
<td>12</td>
<td>Home/Community</td>
<td>Urban</td>
<td>459</td>
<td>2</td>
<td>66.00</td>
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<td>No</td>
<td>No</td>
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<tr>
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<td>2017</td>
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<td>16</td>
<td>Home/Community</td>
<td>Rural</td>
<td>141</td>
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<td>66.80</td>
<td>6.2</td>
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<td>Yes</td>
<td>BDI-I</td>
<td>Generalized Anxiety Disorder (GAD) as per DSM</td>
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<td>24</td>
<td>Home/Community</td>
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<td>2</td>
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<td>BDI-I</td>
<td>GAD, Panic or Anxiety Disorder Not Otherwise Specified as per DSM</td>
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<td>12</td>
<td>Home/Community</td>
<td>Urban</td>
<td>72</td>
<td>2</td>
<td>65.45</td>
<td>NR</td>
<td>60%</td>
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<td>Yes</td>
<td>PHQ-9</td>
<td>Anxiety as per Self Report</td>
</tr>
<tr>
<td>Egede</td>
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<td>Home/Community</td>
<td>Urban</td>
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<td>79.19</td>
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<td>Yes</td>
<td>No</td>
<td>PHQ-9</td>
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<td>68.93</td>
<td>7.13</td>
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<td>PHQ-9</td>
<td>Anxiety as per Self Report</td>
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<td>Yes</td>
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<td>Meeting an criteria for anxiety disorder or subclinical disorder</td>
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<td>68.92</td>
<td>3.7</td>
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<td>Yes</td>
<td>POMS2 Depression Subscale</td>
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<tr>
<td>Silfvernagel</td>
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<td>Sweden</td>
<td>8</td>
<td>Home/Community</td>
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<td>79</td>
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<td>66.10</td>
<td>4.15</td>
<td>75.8%</td>
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<td>Home/Community</td>
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<td>No</td>
<td>PHQ-9</td>
<td>GAD, Panic, PTSD, Specific Phobia, Obsessive Compulsive Disorder</td>
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<td>2017</td>
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<td>Yes</td>
<td>GDS-15</td>
<td>NR</td>
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<td>Yes</td>
<td>GDS, PHQ-9</td>
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</table>

Patient Health Questionnaire (PHQ-9), Montgomery Åsberg Depression Rating Scale (MADRS), or Geriatric Depression Scale (GDS), Profile of Mood State – depression (POMS-D), Beck Depression Inventory (BDI-I)
## Table 3: Inclusion + Exclusion Criteria

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
</table>
| Aburizik | 2013 | 1. Veterans from 2 Sites  
2. Diagnosis of uncontrolled hypertension, diabetes, non-cancerous chronic pain  
3. Score ≥5 on PHQ-9 | 1. Not those living in LTC  
2. Life expectancy <3 Months  
3. Active Malignancy  
4. Marked Visual or Hearing Impairment  
5. Major Psychiatric Illness (e.g. Schizophrenia, bipolar disorder, substance abuse, cognitive impairment)  
6. Those with suicidal ideation  
7. Those currently using psychotherapy |
| Titov    | 2016 | 1. Resident of Australia  
2. At least 60 years of age  
3. Principal complaint of symptoms of anxiety or depression | 1. Current participation in CBT  
2. Very severe symptoms of depression (defined as a total score ≥24 or responding >2 to Question 9 on the 9-item Patient Health Questionnaire (PHQ-9)) |
| Brenes   | 2017 | 1. Adults aged 60 years or older  
2. Principal or co-principal diagnosis of GAD based on the DSM-IV6  
3. Living in one of 41 rural North Carolina counties | 1. Current psychotherapy  
2. Active alcohol/substance abuse  
3. Dementia  
4. Global cognitive impairment based on the Telephone Interview for Cognitive Status-modified  
5. Psychotic symptoms  
6. Active suicidal ideation with plan and intent  
7. Change in psychotropic medications within 30 days prior to screening  
8. Bipolar disorder  
9. Hearing loss that would prevent an individual from participating in the telephone sessions |
| Brenes   | 2012 | 1. Adults aged 60 years and older  
2. Principal or co-principal diagnosis of Generalized Anxiety Disorder (GAD; n = 30), Panic Disorder (PD; n = 3), GAD and PD (n = 25), or Anxiety Disorder Not Otherwise Specified (ADNOS; n = 2) according to the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID; 9) | 1. Current psychotherapy  
2. Current alcohol or substance abuse  
3. Dementia or global cognitive impairment (Mini-Mental Status Examination score < 24; 10)  
4. Psychotic symptoms  
5. Active suicidal ideation  
6. Any change in psychotropic medications within the previous 3 months |
| Dear     | 2015 | 1. Resident of Australia  
2. At least 60 years of age  
3. Self-report of a recent assessment by a General Practitioner or specialist to rule out any manageable physical cause for their anxiety (i.e., participants were asked if they had had | 1. Currently participating in CBT  
2. Using illicit drugs or consuming more than three standard drinks/day  
3. Currently diagnosed with schizophrenia or bipolar disorder |
### Depression in Community Residing Elders

<table>
<thead>
<tr>
<th>Study</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egede 2015</td>
<td>1. Veterans ages 58 years and older 2. Meeting diagnostic criteria for major depressive disorder as determined by a clinical assessment using the Structured Clinical Interview for DSM-IV (SCID) were eligible for participation</td>
<td>4. Experiencing severe symptoms of depression (defined as a total score N19 or responding N2 to Question 9 [suicidal ideation] on the Patient Health Questionnaire-9 Item (PHQ-9; Kroenke, Spitzer, &amp; Williams, 2001) 5. If taking medication for anxiety or depression, not having been on a stable dose for at least 1 month</td>
</tr>
<tr>
<td>Gellis 2014</td>
<td>1. Aged 65 and older 2. Above-average users (≥10 days in the hospital in the past 12 months, or required ≥3 home care visits per week) 3. Primary diagnosis of heart failure or COPD 4. Screened positive for depression as indicated by a Patient Health Questionnaire-2 (PHQ)16 score of 3 or greater</td>
<td>1. Cognitive impairment (Mini-Mental State Examination (MMSE) score &lt;24) or a diagnosis of dementia based on chart review 2. Inability to use a telemonitoring device because of physical disability, and behavioral problems (e.g., agitation, delirium, paranoia) that would interfere with use of the device</td>
</tr>
<tr>
<td>Gould 2018</td>
<td>1. Aged 60 years or older 2. Proficient in English 3. Diagnosed with an anxiety disorder (generalized anxiety disorder [GAD], social anxiety disorder, panic disorder, agoraphobia, anxiety disorder unspecified) via a structured interview</td>
<td>1. Psychotic symptoms 2. Diagnosis of dementia or probable cognitive impairment based on a Short Blessed Test error score of six or more 3. Self-reported diagnosis of bipolar disorder or psychotic disorder 4. Daily use of benzodiazepines other than for sleep exclusively 5. Receiving regular (i.e., weekly) psychotherapy 6. Individuals meeting criteria for specific phobia alone with no other anxiety diagnosis would not have been eligible for this study</td>
</tr>
<tr>
<td>Jones 2016</td>
<td>1. Residents of Saskatchewan, Canada 2. Aged 60 years or older 3. Access to a computer and Internet 4. Reported no change in psychotropic medication for at least one month prior to enrollment 5. Met Diagnostic and Statistical Manual of Mental Disorder fourth edition text revision (DSM-IV-TR; APA, 2000) criteria for clinical or subclinical GAD 6. Endorse at least moderate symptoms on the GAD-7 (i.e., a score of ≥10) at prescreening to participate</td>
<td>1. Met DSM-IV-TR criteria for current substance abuse, a psychotic disorder or bipolar disorder 2. Endorsed severe symptoms of depression, including suicidal ideation 3. Reported having a serious medical condition that may account for anxiety symptoms or interfere with treatment (e.g., untreated thyroid disorder) 4. Were cognitively impaired (as assessed by the Six-Item Screener)</td>
</tr>
</tbody>
</table>
| **Nouchi** (2016) | 1. Right-handed  
2. Native Japanese speakers  
3. Unconcerned about their own memory functions  
4. Not using medications known to interfere with cognitive functions (including benzodiazepines, antidepressants or other central nervous agents)  
5. Having no disease known to affect the central nervous system, including thyroid disease, multiple sclerosis, Parkinson disease, stroke, severe hypertension (systolic blood pressure is over 180, diastolic blood pressure is over 110), and diabetes  
6. Age over 60 years old | 1. MMSE score of less than 26  
2. Participation in another cognition-related intervention study |
| **Silvernagel** (2017) | 1. Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revision (American Psychiatric Association, 2000) criteria for any specific anxiety disorder, or an anxiety disorder not otherwise specified  
2. Could also meet the criteria for comorbid major depression, but not as the primary disorder.  
3. Age 60 years or older  
4. Not currently in psychotherapy  
5. If on medication, be on a stable dosage  
6. Not be at risk of alcohol abuse or meeting the description for current alcohol addiction | NR |
| **Titov** (2015) | 1. Resident of Australia  
2. 60 years of age and over  
3. Reported that they have been assessed by a general practitioner or medical specialist to rule out a reversible physical cause for their depression  
4. Verbal confirmation during the telephone interview that they were experiencing difficulties with depression and that they wanted treatment for these symptoms | 1. Current participation in CBT  
2. Use of illicit drugs or consumption of more than three standard drinks/day  
3. Current diagnosis of schizophrenia or bipolar disorder  
4. Severe symptoms of depression (defined as a total score N 19 or responding N 2 to Question 9 (suicidal ideation) on the PHQ-9  
5. If taking medication for anxiety or depression, not having been on a stable dose for at least a month |
| **Tomasino** (2017) | 1. Read and speak English  
2. Be at least 65-years old  
3. Have elevated depressive symptoms at screening (score of ≥8 on the Patient Health Questionnaire-8 or score of >7 on the Geriatric Depression Scale-15)  
4. Have a telephone, email address, basic internet skills and internet access | 1. Receiving or planning to receive psychotherapy during the trial  
2. Met criteria for a diagnosis for which participation could be inappropriate (e.g., psychotic disorder, cognitive impairment) |
| **Read** (2020) | 1. Aged 65 years and over  
2. Two or more chronic physical conditions  
3. Use of a computer or tablet with internet access  
4. Sufficient English to take part in the iCBT program | 1. Met criteria for minor/major depression or dysthymia (assessed via structured interview at baseline)  
2. Consumed illicit drugs or more than five alcoholic drinks per day  
3. History of bipolar disorder or schizophrenia  
4. Had undergone psychological therapy in the 12-month period prior to recruitment |
<table>
<thead>
<tr>
<th>Author</th>
<th>Intervention 1 Description</th>
<th>Intervention 2 Description</th>
<th>Intervention 3 Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aburizik</td>
<td><strong>Telephone Illness Management</strong></td>
<td><strong>Usual Care</strong></td>
<td><strong>Orientation + Clinical Guided Internet Cognitve Behavioural Therapy (CBT)</strong></td>
</tr>
<tr>
<td></td>
<td>1. Telephone Illness Management Program: coaches discuss with persons about medications, diet, wellness, and symptoms.</td>
<td>1. Usual medical care and services</td>
<td>1. Orientation: telephone call by clinician to discuss goals for treatment, describe potential benefit, discuss importance of adherence and practice, and answer questions.</td>
</tr>
<tr>
<td></td>
<td>2. <strong>Telephone Psychotherapy for Depression</strong>: Interpersonal Psychotherapy + Behavioural Activation.</td>
<td></td>
<td>2. Internet CBT: Completed weekly modules with symptom questionnaires. Questionnaires monitored by clinicians but no contact made unless symptoms were severe.</td>
</tr>
<tr>
<td></td>
<td>3. Daily Monitoring of Symptoms: 10 Weeks, 1 hour for first and last call, 30 minutes for all others.</td>
<td></td>
<td>3. Internet CBT: Completed weekly modules with symptom questionnaires. Questionnaires monitored by clinicians but no contact made unless symptoms were severe.</td>
</tr>
<tr>
<td></td>
<td><strong>Usual Care</strong></td>
<td><strong>Internet CBT</strong></td>
<td><strong>Interactive voice-response home monitoring program for specific symptoms.</strong></td>
</tr>
<tr>
<td></td>
<td>1. Orientation: telephone call by clinician to discuss goals for treatment, describe potential benefit, discuss importance of adherence and practice, and answer questions.</td>
<td>1. Orientation: telephone call by clinician to discuss goals for treatment, describe potential benefit, discuss importance of adherence and practice, and answer questions.</td>
<td>1. <strong>Program for specific symptoms:</strong> Care provided by telephonic voice-response system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Internet CBT: Completed weekly modules with symptom questionnaires. Questionnaires monitored by clinicians but no contact made unless symptoms were severe.</td>
<td></td>
</tr>
<tr>
<td><strong>DEPRESSION IN COMMUNITY RESIDING ELDERS</strong></td>
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</tr>
<tr>
<td><strong>Time:</strong> Orientation: 10-20 Minutes once; Weekly Guidance 10-15 Minutes; Weekly online Lessons no time defined.</td>
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</tr>
</tbody>
</table>
| **Brenes**<sup>12, 23</sup> | **Telephone CBT**<sup>1.**</sup> | **Telephone CBT + CBT Workbook:** aimed to focus on anxiety, relaxation, ‘cognitive restructuring’, ‘use of coping statements’, problem solving therapy, behavioural activation therapy, exposure therapy, relapse prevention.  
**Providers:** Social Workers & Psychologists  
**Duration:** 11 Weeks of weekly calls, with follow-up at 2, 4, 8, and 12 weeks.  
**Time:** 50 Minutes | **Telephono Nondirective Supportive Therapy**<sup>1.**</sup> | **Telephone Non-directive Support:** focused on creating a therapeutic relationship of support and acceptance. Focused on “reflective listening” and supportive statements.  
**Providers:** Social Workers & Psychologists  
**Duration:** 11 Weeks of weekly calls, with follow-up at 2, 4, 8, and 12 weeks  
**Time:** 50 Minutes |
| **Brenes**<sup>24</sup> | **Telephone CBT**<sup>1.**</sup> | **Telephone CBT + CBT Workbook:** focused on relaxation, cognitive therapy, problem solving therapy, Behavioural activation therapy, relapse prevention, exposure therapy and “thought stopping”. During calls they reviewed the workbook work, and discussed its application.  
**Providers:** Social Workers & Psychologists  
**Duration:** 11 Weeks of weekly calls, with follow-up at 2, 4, 8, and 12 weeks. Calls were every 1-2 weeks.  
**Time:** 50 Minutes | **Information**<sup>1.**</sup> | **Information:** Received written information about anxiety disorders and a list of potential referral options.  
**Providers:** Clinician  
**Duration:** NA  
**Time:** NA |
| **Dear**<sup>25</sup> | **Internet CBT + Clinician Guided**<sup>1.**</sup> | **Internet CBT:** focused on the “Managing Stress and Anxiety Course” a structured online course. Course focuses on ‘case-enhanced learning examples’, problem solving, psychological skills building.  
**Clinician Guidance:** contact with participants weekly to follow progress. | **Waitlist**<sup>1.**</sup> | **Waitlist:** usual care while on waitlist for intervention.  
**Providers:** NA  
**Duration:** NA  
**Time:** NA |
<table>
<thead>
<tr>
<th>Provider Program</th>
<th>Details</th>
</tr>
</thead>
</table>
| **Egede**<sup>10</sup> Telehealth Behavioural Activation Therapy | 1. Telehealth Behavioural Activation Therapy: Via videoconferencing individualized therapy focused on behavioural activation for depression based on existing manuals.  
Providers: Counsellors + Psychologists  
Duration: 8 Weeks  
Time: 60 minutes weekly |
| **Gellis**<sup>26</sup> Telehealth for Chronic Illness and Depression | 1. Telehealth Care for Chronic Illness: Nurse calling daily to review telemonitoring of symptoms, weight, medications, and communication with family doctor.  
2. Depression Care: Problem Solving Therapy Weekly  
Providers: Nurses  
Duration: Daily Call for Monitoring, Weekly Call for Problem Solving Therapy for 12 weeks  
Time: Weekly Calls 35 Minutes |
| **Gould**<sup>27</sup> DVD Breathing Exercise + Telephone Psychologist | 1. DVD outlining the “BREATH Intervention”: focuses on diaphragmatic breathing, relaxation, clinical vignettes to develop skills for managing anxiety,  
2. Telephone Psychologist Check Ins: focused on technical assistance, issues surrounding treatment, discussion of adherence,  
Providers: Self-Administered + Psychologists |

**Depression in Community Residing Elders**

Providers: Self-Administered + Psychologists  
Duration: 8 weeks, weekly online; brief weekly calls  
Time: Weekly calls 5-10 minutes.

In Person Behavioural Activation Therapy:  
Individualized therapy focused on behavioural activation for depression based on existing manuals.  
Providers: Counsellors + Psychologists  
Duration: 8 Weeks  
Time: 60 minutes weekly

In Home Nursing + Psychoeducation:  
In-home Nursing: home care provided by nurses under direction of family physicians. Care coordination with allied health.  
Psychoeducation: education on diseases processes, reinforcement of importance of daily monitoring, smoking cessation, diet, weight, and medication adherence.  
Providers: Nurses  
Duration: Weekly Visits for 12 weeks  
Time: 60 Minutes

Waitlist: usual care while on waitlist for intervention. Offered BREATH at 8 weeks.  
Providers: NA  
Duration: NA  
Time: NA
## Depression in Community Residing Elders

### Jones

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Details</th>
</tr>
</thead>
</table>
| Internet CBT + Guided Online | 1. Internet CBT: focused on the “Anxiety Online” a structured online course. Course focuses on psychoeducational material, case examples, coping skills, CBT therapies, skills application.  
2. Clinician Guidance: psychologist received weekly homework, provide support, advice and promote adherence, answered questions, and encouraged progress.  
Providers: Self-Administered + Psychologists  
Duration: Weekly Phone Calls for 4 Weeks, DVD for 8 weeks.  
Time: NA |
| Waitlist | 2. Waitlist: usual care while on waitlist for intervention.  
Providers: NA  
Duration: NA  
Time: NA |

### Nouchi

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Details</th>
</tr>
</thead>
</table>
| Processing Speed Training Game Group | 1. Processing Speed Training Game: game focused on developing processing speed with games for localization, detection, with shapes, letters and numbers.  
Providers: Self-Administered  
Duration: At least 5 days per week during 4 weeks  
Time: 15 minutes |
| Knowledge Quiz Training Game | 1. Knowledge Quiz: game focused on meanings of words, idioms, and literature  
Providers: Self-Administered  
Duration: At least 5 days per week during 4 weeks  
Time: 15 minutes |

### Silfvernagel

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Details</th>
</tr>
</thead>
</table>
| Internet CBT + Guided Online | 1. Internet CBT: tailored CBT to individual needs, focused on psychoeducation around anxiety disorders, cognitive restructuring, behavioural activation, relaxation, stress, mindfulness, problem solving, and sleep.  
2. Clinician Guidance: contact with therapist as needed by participant or therapist initiated. Feedback given on online modules.  
Providers: Clinicians  
Duration: 8 Weeks.  
Time: NA |
| Weekly Brief Email Support From Clinician | 1. Email Support: Provision of general support weekly.  
Providers: Clinicians  
Duration: 8 Weeks.  
Time: NA |
<table>
<thead>
<tr>
<th>Provider</th>
<th>Intervention</th>
<th>Description</th>
<th>Duration</th>
<th>Time</th>
</tr>
</thead>
</table>
| **Titov** | Internet CBT + Guided Online | 1. Internet CBT: “Managing your Mood” Course with online lessons, assignments, reminders and notifications, case vignettes, psychoeducational material, communication skills, problem solving therapy, managing worry, sleep and managing beliefs.  
2. Clinician Guidance: contact with therapist as needed by participant or therapist initiated. Feedback given on online modules. | 8 Weeks | NA |
| **Tomasino** | Internet CBT + Online Peer Support + Orientation + Guided Online | 1. Internet CBT: Called “MoodTech” this online course is focused on CBT for depression in older adults. There are 2 weekly lessons focused on skills around cognitive restructuring, mood monitoring, behavioural activation therapy, relaxation and mindfulness,  
2. Online Peer Support: Aimed at promoting social engagement and accountability  
3. Orientation: Single call <45 minutes to establish goals and review contact expectations.  
4. Guided Online: Daily engagement through online moderation of online platform, answering questions, using templated group discussion questions, encourage adherence, | 8 Weeks | Orientation <45 minutes; Weekly Guidance 10-15 minutes |
### Depression in Community Residing Elders

**Duration:** 8 Weeks  
**Time:** Orientation <45 minutes; Weekly Guidance 10-15 minutes; Online guidance 2 minutes per weekday.

<table>
<thead>
<tr>
<th>Read</th>
<th>Internet CBT + Guided Online</th>
<th>Usual Care</th>
</tr>
</thead>
</table>
|      | 1. Internet CBT: Online course focused on preventing depression. Including psychoeducation, cognitive therapy, coping strategies, behavioural activation, exposure therapy, and additional resources.  
2. Clinician Guidance: Brief calls or emails weekly to encourage adherence, providing guidance, answering questions and encourage use of new skills.  
**Providers:** Self-Administered + Psychologists  
**Duration:** 8 Weeks  
**Time:** ~30 Min weekly by psychologist; | 1. Usual Care: usual care with existing physicians, specialists for their chronic conditions.  
**Providers:** NA  
**Duration:** NA  
**Time:** NA |
|      | NA                           | NA         |
### Table 5: Depression Outcomes

<table>
<thead>
<tr>
<th>Article</th>
<th>Depression Outcome Measure</th>
<th>Intervention 1</th>
<th>Timing of Outcome Measure</th>
<th>Sample Size</th>
<th>Mean Depressive Symptom Score</th>
<th>Intervention 2</th>
<th>Sample Size</th>
<th>Mean Depressive Symptom Score</th>
<th>Intervention 3</th>
<th>Sample Size</th>
<th>Mean Depressive Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aburzik 2013</td>
<td>PHQ-9</td>
<td>Telephone Depression Psychotherapy + Illness Management</td>
<td>Baseline</td>
<td>29</td>
<td>12.5 (1.0 SE)</td>
<td>Illness Management</td>
<td>31</td>
<td>13.2 (1.0 SE)</td>
<td>Self-Guided Internet CBT</td>
<td>140</td>
<td>10.43 (4.73 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 Weeks</td>
<td>29</td>
<td>8.2 (1.0 SE)</td>
<td></td>
<td>31</td>
<td>10.4 (1.0 SE)</td>
<td></td>
<td>23</td>
<td>10.4 (1.1 SE)</td>
</tr>
<tr>
<td>Titov 2016</td>
<td>PHQ-9</td>
<td>Orientation + Clinician Guided Internet Cognitive Behavioural Therapy (CBT)</td>
<td>Baseline</td>
<td>153</td>
<td>10.7 (4.88 SD)</td>
<td>Orientation + Self-Guided Internet CBT</td>
<td>140</td>
<td>10.43 (4.61 SD)</td>
<td></td>
<td>133</td>
<td>4.78 (3.90 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 Weeks</td>
<td>150</td>
<td>4.39 (3.81 SD)**</td>
<td></td>
<td>133</td>
<td>4.44 (3.67 SD)**</td>
<td></td>
<td>131</td>
<td>4.75 (3.79 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 Weeks</td>
<td>147</td>
<td>4.30 (3.37 SD)**</td>
<td></td>
<td>126</td>
<td>4.71 (3.79 SD)**</td>
<td></td>
<td>131</td>
<td>4.75 (3.79 SD)</td>
</tr>
<tr>
<td>Brenes 2017</td>
<td>BDI-I</td>
<td>Telephone CBT</td>
<td>Baseline</td>
<td>70</td>
<td>21.6 (8.84 SD)</td>
<td>Telephone Nondirective Supportive Therapy</td>
<td>63</td>
<td>-7.54 (95% CI −9.44 to −5.64)</td>
<td></td>
<td>62</td>
<td>-8.37 (95% CI−10.3 to −6.46)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>16 Weeks</td>
<td>58</td>
<td>-10.77 (95% CI −12.73, −8.81)*</td>
<td></td>
<td>57</td>
<td>24.4 (9.18 SD)</td>
<td></td>
<td>30</td>
<td>17.9 (7.7 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60 Weeks</td>
<td>50</td>
<td>-11.3 (95% CI −13.3 to −9.19)</td>
<td></td>
<td>51</td>
<td>24.4 (9.18 SD)</td>
<td></td>
<td>26</td>
<td>14.1 (1.1 SE)</td>
</tr>
<tr>
<td>Brenes 2012</td>
<td>BDI-I</td>
<td>Telephone CBT</td>
<td>Baseline</td>
<td>70</td>
<td>21.6 (8.84 SD)</td>
<td>Information</td>
<td>30</td>
<td>17.9 (7.7 SD)</td>
<td></td>
<td>24</td>
<td>13.3 (1.6 SE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 Weeks</td>
<td>28</td>
<td>11.4 (1.1 SE)</td>
<td></td>
<td>26</td>
<td>14.1 (1.1 SE)</td>
<td></td>
<td>24</td>
<td>13.3 (1.6 SE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24 Weeks</td>
<td>24</td>
<td>10.7 (1.6 SE)</td>
<td></td>
<td>24</td>
<td>13.3 (1.6 SE)</td>
<td></td>
<td>24</td>
<td>13.3 (1.6 SE)</td>
</tr>
<tr>
<td>Dear 2015</td>
<td>PHQ-9</td>
<td>Internet CBT + Clinician Guided</td>
<td>Baseline</td>
<td>33</td>
<td>10.76 (4.79 SD)</td>
<td>Waitlist</td>
<td>37</td>
<td>10.78 (4.37 SD)</td>
<td></td>
<td>37</td>
<td>10.47 (4.62 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 Weeks</td>
<td>33</td>
<td>3.63 (3.68 SD)**</td>
<td></td>
<td>37</td>
<td>10.78 (4.37 SD)</td>
<td></td>
<td>37</td>
<td>10.78 (4.37 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 Weeks</td>
<td>33</td>
<td>3.93 (3.81 SD)</td>
<td></td>
<td>33</td>
<td>3.93 (3.81 SD)</td>
<td></td>
<td>37</td>
<td>10.78 (4.37 SD)</td>
</tr>
<tr>
<td>Egide 2015</td>
<td>GDS-30</td>
<td>Telehealth Behavioural Activation Therapy</td>
<td>Baseline</td>
<td>120</td>
<td>20.9 (4.8 SD)</td>
<td>In Person Behavioural Activation Therapy</td>
<td>121</td>
<td>20.6 (4.8 SD)</td>
<td></td>
<td>121</td>
<td>20.6 (4.8 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>48 Weeks</td>
<td>120</td>
<td>22.0 (95% CI 15.2, 28.8) ‡</td>
<td></td>
<td>120</td>
<td>22.0 (95% CI 15.2, 28.8) ‡</td>
<td></td>
<td>121</td>
<td>20.2 (95% CI 13.7, 26.7)</td>
</tr>
<tr>
<td>Gellis 2014</td>
<td>PHQ-9</td>
<td>Telehealth for Chronic Illness and Depression</td>
<td>Baseline</td>
<td>57</td>
<td>14.9 (6.4 SD)</td>
<td>In Home Nursing + Psychoeducation</td>
<td>58</td>
<td>15.2 (5.8 SD)</td>
<td></td>
<td>48</td>
<td>13.6 (5.6 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12 Weeks</td>
<td>46</td>
<td>7.4 (5.7 SD)**</td>
<td></td>
<td>48</td>
<td>13.6 (5.6 SD)</td>
<td></td>
<td>48</td>
<td>13.6 (5.6 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24 Weeks</td>
<td>46</td>
<td>7.9 (5.3 SD)*</td>
<td></td>
<td>48</td>
<td>14.1 (5.9 SD)</td>
<td></td>
<td>48</td>
<td>14.1 (5.9 SD)</td>
</tr>
<tr>
<td>Gould 2018</td>
<td>PHQ-9</td>
<td>DVD Breathing Exercise + Telephone Psychologist</td>
<td>Baseline</td>
<td>20</td>
<td>8.4 (5.55 SD)</td>
<td>Waitlist</td>
<td>20</td>
<td>8.8 (5.48 SD)</td>
<td></td>
<td>20</td>
<td>8.6 (1.19 SE)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 Weeks</td>
<td>20</td>
<td>5.71 (1.58 SE)</td>
<td></td>
<td>20</td>
<td>8.8 (1.19 SE)</td>
<td></td>
<td>20</td>
<td>8.6 (1.19 SE)</td>
</tr>
<tr>
<td>Jones 2016</td>
<td>PHQ-9</td>
<td>Internet CBT + Guided Online</td>
<td>Baseline</td>
<td>24</td>
<td>11.0 (6.25 SD)</td>
<td>Waitlist</td>
<td>22</td>
<td>12.18 (5.24 SD)</td>
<td></td>
<td>19</td>
<td>12.08 (6.19 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 Weeks</td>
<td>22</td>
<td>5.59 (5.10 SD)</td>
<td></td>
<td>22</td>
<td>12.18 (5.24 SD)</td>
<td></td>
<td>19</td>
<td>12.08 (6.19 SD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14 Weeks</td>
<td>18</td>
<td>5.37 (5.25 SD)</td>
<td></td>
<td>18</td>
<td>5.37 (5.25 SD)</td>
<td></td>
<td>18</td>
<td>5.37 (5.25 SD)</td>
</tr>
<tr>
<td>Nouchi 2016</td>
<td>POMS-D</td>
<td></td>
<td>Baseline</td>
<td>36</td>
<td>6.69 (2.41 SD)</td>
<td></td>
<td>36</td>
<td>6.08 (2.35 SD)</td>
<td></td>
<td>36</td>
<td>6.08 (2.35 SD)</td>
</tr>
<tr>
<td>Year</td>
<td>Group</td>
<td>Intervention Details</td>
<td>Baseline</td>
<td>4 Weeks</td>
<td>8 Weeks</td>
<td>12 Weeks</td>
<td>24 Weeks</td>
<td>Knowledge Quiz 36</td>
<td>Training Game 36</td>
<td>103.05 (Standardized change score) (6.57)</td>
<td>22</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
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<td>----------</td>
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<td>----------</td>
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<td>-------------------</td>
<td>---------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>2016</td>
<td>Speed</td>
<td>Processing Speed Training Game Group</td>
<td>20.27 (6.75 SD)</td>
<td>11.75 (8.36 SD)**</td>
<td>96.95 (Standardized change score) (11.85)*</td>
<td>Weekly Brief Email Support by Clinician</td>
<td>20.03 (7.73 SD)</td>
<td>16.99 (8.84 SD)</td>
<td>11.85*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>Silfvernagel</td>
<td>MADRS-S</td>
<td>Internet CBT + Guided Online</td>
<td>Baseline</td>
<td>33</td>
<td>8 Weeks</td>
<td>33</td>
<td>Knowledge Quiz 36 Training Game 36</td>
<td>20.03 (7.73 SD)</td>
<td>16.99 (8.84 SD)</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>Titov</td>
<td>PHQ-9</td>
<td>Internet CBT + Guided Online</td>
<td>Baseline</td>
<td>27</td>
<td>8 Weeks</td>
<td>27</td>
<td>4.90 (4.05 SD)</td>
<td>Waitlist</td>
<td>12.0 (5.42 SD)</td>
<td>12.68 (5.48 SD)</td>
</tr>
<tr>
<td>2017</td>
<td>Tomasino</td>
<td>PHQ-9</td>
<td>Internet CBT + Online Peer Support + Orientation + Guided Online</td>
<td>Baseline</td>
<td>23</td>
<td>8 Weeks</td>
<td>19</td>
<td>6.4 (4.2 SD)**</td>
<td>Internet CBT + Orientation + Guided Online</td>
<td>10.6 (3.2 SD)</td>
<td>5.1 (2.8 SD)**</td>
</tr>
<tr>
<td>2020</td>
<td>Read</td>
<td>PHQ-9</td>
<td>Internet CBT + Guided Online</td>
<td>Baseline</td>
<td>150</td>
<td>8 Weeks</td>
<td>150</td>
<td>3.43 (3.81 SD)*</td>
<td>Usual Care</td>
<td>3.32 (3.01)</td>
<td>3.61 (3.65 SD)</td>
</tr>
</tbody>
</table>

Abbreviations: Patient Health Questionnaire (PHQ-9), Montgomery Åsberg Depression Rating Scale (MADRS), or Geriatric Depression Scale (GDS), Profile of Mood State – depression (POMS-D), Beck Depression Inventory (BDI-I), Cognitive Behavioural therapy (CBT)

*Results of RCT reported across two papers\(^{12, 23}\)

\(^{1}\) p-value <0.05, compared to control

\(^{2}\) p-value <0.01, compared to control

\(^{3}\) Non-inferior to comparator
APPENDICES

APPENDIX 1: MEDLINE SEARCH

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily <1946 to May 22, 2020> Search Strategy:

1. exp Depressive Disorder/ (108252)
2. exp Depression/ (117414)
3. exp Depressive Disorder, Major/ (29714)
4. "depress**".kf,tw. (458925)
5. 1 or 2 or 3 or 4 (499804)
6. exp "Aged, 80 and over"/ or exp Aged/ or exp Health Services for the Aged/ (3094645)
7. (geriatric* or senior* or elder* or (older adj1 (adult* or women or men or patient*))).kf,tw. (455009)
8. 6 or 7 (3260643)
9. exp Telecommunications/ (90802)
10. exp Telemedicine/ (27950)
11. exp Telephone/ (22220)
12. telephone.kf,tw. (57087)
13. "video**".kf,tw. (124652)
14. "virtual**".kf,tw. (127465)
15. mobile health.kf,tw. (4315)
16. exp Remote Consultation/ (4762)
17. (e-therap* or e-counsel* or e-psychotherap* or e-appointment* or e-consult*).kf,tw. (916)
18. ((virtual or video or online or internet or electronic or mobile) adj2 (appointment* or consult* or therap* or counsel?ing or psychotherap*)).kf,tw. (3233)
19. (telehealth or telemedicine or telepsychiatry or teleconsult* or teletherap*).kf,tw. (18581)
20. 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 (386334)
21. randomized controlled trial.pt. (506126)
22. controlled clinical trial.pt. (93684)
23. randomized.ab. (480049)
24. placebo.ab. (207871)
25. Randomly.ab. (333535)
26. trials.ti. (74094)
27. Clinical Trials as Topic.sh. (191286)
28. 21 or 22 or 23 or 24 or 25 or 26 or 27 (1261557)
29. exp animals/ not humans.sh. (4700877)
30. 28 not 29 (1159192)
31. 5 and 8 and 20 and 30 (898)
REFERENCES

References:

1. MacCourt P. WK, & Tourigny-Rivard M-F. Guidelines for Comprehensive Mental Health Services for Older Adults in Canada: Mental Health Commission of Canada, 2011.


