

DEPRESSION IN COMMUNITY RESIDING ELDERERS (DIRE)

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



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ABSTRACT

Background. Depressive symptoms or disorders are common in older adults and lead to substantial morbidity and mortality. There are many available treatments for depressive symptoms, 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 or disorders in community-dwelling older adults.

Methods. We registered our systematic review with PROSPERO (CRD42020188465) and disseminated our protocol on Open Science Framework (<https://osf.io/6tjcy/>). We performed a systematic review to identify relevant randomized trials (RCTs). We searched MEDLINE, EMBASE, Cochrane Database of Systematic Reviews, grey literature, 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 symptoms or disorders. All study screening, data abstraction, and risk of bias assessment using the Cochrane Risk of Bias tool was completed by in duplicate reviewer. All data were abstracted in duplicate.

Results. We screened 12,244 titles and abstracts and 671 full text articles, which resulted in 13 included RCTs in our systematic review (n=2,727 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). Five studies looked at older adults with depressive disorders or depressive symptoms at baseline, and eight looked at depressive symptoms as an outcome. Studies included predominantly telephone or internet-delivered cognitive behavioural therapy (CBT), with or without clinician support. Eight studies individually reported a significant decrease in depressive symptom scores during the study for telemedicine interventions compared to controls. All five studies examining persons with depressive symptoms or disorders at baseline reported a significant improvement in depressive symptoms. We were unable to do any meta-analysis due to high heterogeneity in study populations, comparison groups and interventions.

Conclusions. This systematic review identified 13 RCTs that examined telemedicine interventions in community-dwelling older adults for treatment of depressive symptoms or disorders. The most common intervention was internet or telemedicine CBT, which may be efficacious in decreasing depressive symptoms among older adults. However, further analysis is required to estimate comparative efficacy and treatment features associated with efficacy.

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 depressive symptoms or disorders 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 depressive symptoms or disorders than younger adults because of social isolation and infection prevention measures enacted to contain the COVID-19 pandemic, which have disproportionately impacted older adults^{7,8}. Telemedicine can potentially increase access to care in the setting of a pandemic and improve clinical outcomes for older adults. In a pandemic with physical distancing, older adults with depressive symptoms or disorders lack access to or hesitate to seek (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 depressive symptoms or disorders in older adults.

KNOWLEDGE GAP

There is emerging evidence to support the use¹⁰⁻¹², acceptability¹³ and cost¹⁴ of telemedicine-based interventions in older adults. However, it is unclear which telemedicine interventions are efficacious, and what adaptations are needed for older adults with depressive symptoms or disorders to access telemedicine-based interventions.

OBJECTIVE

Our objective was to understand the efficacy of telemedicine-based interventions for community-residing older adults experiencing depressive symptoms or depressive disorders. This report is a systematic review of all telemedicine or remote treatment options for depressive symptoms and disorders¹⁵.

METHODS

We registered our systematic review with PROSPERO (CRD42020188465) and disseminated our protocol on Open Science Framework (<https://osf.io/6tjcy/>). We followed the PRISMA criteria for reporting systematic reviews¹⁶.

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 Strategies¹⁷ of the literature 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 used key words and controlled vocabulary for older adults, depressive symptoms or disorders, telemedicine and randomized trials (RCTs). We used validated Cochrane search filters for RCTs¹⁸.

A grey literature search was completed by ZG, we searched all sections in the CADTH Grey Matter's tool, grey literature databases (SIGLE, GreyNet), WHO, Government of Canada, Trip Database, and Thesis Literature. The first 200 citations found in Google Scholar were also reviewed. All grey sources were searched using the term depression and the term 'virtual' first, and then depression and 'older adult' second; this was variable between sites due their different search engines.

STUDY SELECTION

We included RCTs comparing the efficacy of any non-pharmacologic telemedicine (completely remote) interventions to usual care or any other non-pharmacologic telemedicine intervention for reducing depressive symptoms or disorders in community-dwelling adults (with or without depressive symptoms or disorders at baseline) for older adults. Telemedicine includes any completely 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 (DSM)); whereas, persons with depressive symptoms may have clinically significant or relevant symptoms of depressive disorders according to a depression rating tool or clinical assessment. Depressive symptoms were captured from relevant scales (e.g. Beck Depression Inventory).¹⁹ 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.²⁰ 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, two reviewers (ZG and JW) completed the two screening levels: [1] title and abstract and [2] full-text articles.

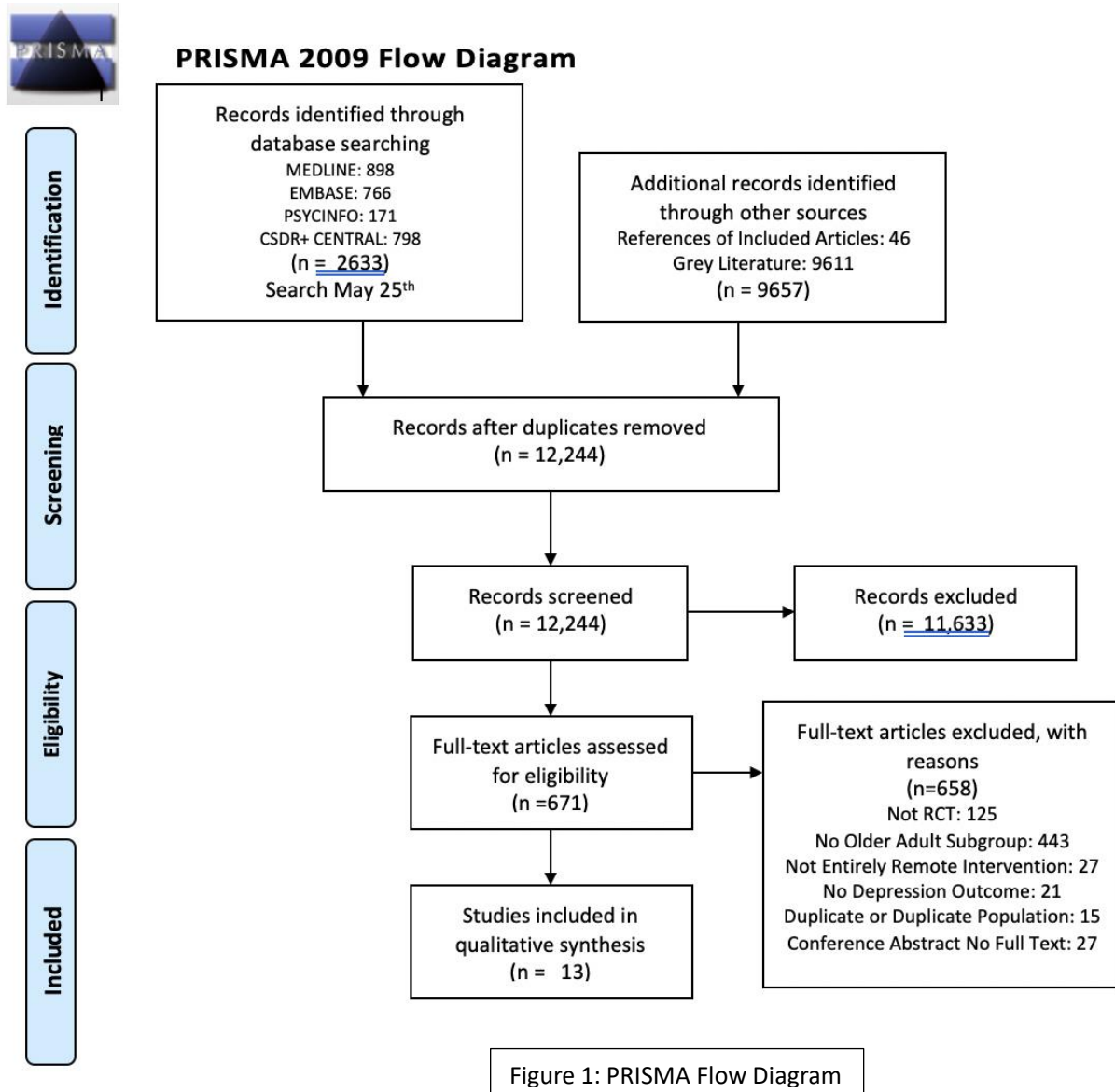
DATA EXTRACTION AND RISK OF BIAS ASSESSMENT

All data was extracted in duplicate (ZG and PW) completed all data abstraction from included full-text articles and risk of bias (RoB) appraisal. RoB was assessed with the Cochrane tool for RCTs.²¹ 'Other sources of bias' in this RoB tool included whether it was the same clinician 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 depressive symptoms or disorders 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 all reported scales were abstracted. We reported outcomes from the Patient Health Questionnaire -9 (PHQ-9)²² if available as this is the most commonly used tool, to facilitate comparison between studies. If there were multiple tools, we reported tools specific to depressive symptoms or disorders over a subscale. We summarized all abstracted data from included RCTs in tables that incorporated study and participant characteristics, depressive symptoms or disorders outcomes, and risk of bias appraisal. No meta-analyses were conducted due to clinical heterogeneity in study populations (e.g. specific population such as caregivers of stroke patients), differences in the comparison groups (e.g. active vs. usual care) and differences in delivery of remote intervention that were not comparable (e.g. one used an email and phone follow up).

RESULTS

SEARCH RESULTS AND INCLUSION

Our search included 2,026 citations from databases after duplicate citations were removed: 898 citations in MEDLINE, 766 in EMBASE, 171 PsycINFO, 798 in CENTRAL and CDSR (Figure 1). We reviewed 9,657 citations from grey literature or references of included sources. We reviewed 671 full text articles and included 13 articles in our synthesis. Studies were excluded because they were not RCTs, the study population were not older than 60 years or had no subgroup within age criteria reported, or interventions were not entirely telemedicine-based.



RISK OF BIAS ASSESSMENT

The greatest threat to the validity of the included studies was the high frequency of studies with high or unclear allocation concealment (n=8), and poorly described blinding

procedures (n=13). Eleven RCTs were at low risk of bias and two studies were at unclear risk of bias from random sequence generation (Table 1). Allocation concealment was unclear due to lack of description in 8 studies, and low risk of bias in 5 studies. Blinding of participants and personnel was a source of high risk of bias in three studies, and unclear in ten. Outcome assessment was blinded in 4 studies, high risk of bias in 2, and unclear in 7. Incomplete outcome data was low risk in half of studies (n= 6) and unclear or high in the remaining. Ten RCTs were at low risk of bias from selective reporting.

Table 1: Risk of Bias Assessment

First Author, Year	Random sequence generation	Allocation concealment	Blinding of participants /personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Other sources of bias
Brenes, 2012²³	Low risk	Unclear risk	Unclear risk	Low risk	Unclear risk	Low risk	Low risk
Brenes, 2017²⁴	Low risk	Unclear risk	Unclear risk	Low risk	Unclear risk	Low risk	Low risk
Dear, 2015²⁵	Low risk	Low risk	High risk	High risk	High risk	Low risk	Low risk
Gellis 2014	Low risk	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk
Gould, 2018²⁶	Low risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	Low risk
Hartke 2003²⁷	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk
Jones, 2016²⁸	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	Low risk	Low risk
Kornblith 2006²⁹	Unclear risk	Unclear risk	Unclear risk	Unclear risk	High risk	Unclear risk	Unclear risk
Mavandadi 2015³⁰	Low risk	Unclear risk	Unclear risk	Unclear risk	High risk	Unclear risk	Unclear risk
Read, 2017³¹	Low risk	Low risk	Unclear risk	Unclear risk	Low risk	Low risk	Low risk
Silfvernagel, 2017³²	Low risk	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk
Titov, 2015³³	Low risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk
Titov, 2016³⁴	Low risk	Low risk	High risk	Unclear risk	Unclear risk	Low risk	Low risk

SYNTHESIS

Study and Participant Characteristics

Included studies were published from 2006 to 2020 (Table 2). Studies were conducted in Australia (n=4), United States (n= 7), Canada (n=1), and Sweden (n=1). All study participants (n=2,727) were in a community setting. Study duration varied from 8 to 60 weeks. The mean age of study populations ranged from 65.3 to 79.2 years. Females represented 47% to 87% 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 depressive symptoms or disorders or suicidality. Two studies looked at persons with multiple chronic conditions, one focused on persons with advanced cancer, and another on caregivers of persons with stroke.

Study Interventions and Comparators

Included studies focused on two main populations of older adults (Table 2); studies had varied exclusion criteria (Table 3):

- Those with depressive symptoms or disorders at baseline or as inclusion criteria in the RCT (n=5)
- Those where depressive symptoms were measured as an outcome (n=8)

Interventions for Persons with Depressive Symptoms or Disorders at Baseline

There were several interventions examined for treating depressive symptoms or disorders across 5 studies (Table 3):

- a. telehealth (videoconference) nursing for general chronic illness management and problem-solving therapy for depression³⁵
- b. telephone remote mental health management based on an algorithm, medication review and phone calls³⁰
- c. internet cognitive behavioural therapy (tailored to individual) with clinician guidance³²
- d. internet cognitive behavioural therapy with orientation session and clinician guidance throughout³⁴
- e. internet cognitive behavioural therapy with orientation session³⁴
- f. internet cognitive behavioural therapy alone³⁴
- g. internet cognitive behavioural therapy with clinician guidance³³

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 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 for 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 skills, behavioural activation, interpersonal skills, 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), or Montgomery Åsberg Depression Rating Scale (MADRS) (n=1). RCTs reported a post-intervention outcome immediately after intervention (8-12 weeks) and four reported longer-term outcomes (24-52 weeks) (Table 4). All five studies reported a statistically significant decline in depression scores^{30, 32-35} for telemedicine intervention compared to controls. The minimally clinical important difference (MCID) for the PHQ-9 in a community older adult population is 5³⁶. Of the 4 studies reporting the PHQ-9, three met the MCID. There is no published MCID for the MADRS in older adults, in the general adult population it is reported as between 1.6 to 1.9³⁷. However depressive symptoms and disorders differ in older adults and thus this MCID may not be generalizable to them. The specific outcomes are listed in Table 4.

Interventions for Persons without Diagnosed Depressive Disorders at Baseline

Eight RCTs looked at older adults without diagnosed depressive symptoms or disorders 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^{12, 23, 24}
- b. telephone non-directive supportive therapy^{12, 24}
- c. telephone psychologist with DVD Breathing Exercises²⁶

- d. internet cognitive behavioural therapy with clinician guidance^{25, 28, 31}
- e. Telephone Support Group²⁷
- f. Telephone support, education, assessment of distress, physical symptoms, quality of life and social support²⁹

Interventions were delivered over the phone (n=4), internet (n=3), or DVD (n=1). Internet-based interventions often incorporated use of clinician guidance throughout or an initial orientation session. CBT included exposure therapy, cognitive restructuring, relapse prevention, relaxation, coping statements, cases or vignettes. Five RCTs focused on anxiety and measured depressive symptoms as a secondary outcome^{12, 23, 24, 26, 28, 38}.

RCTs reported outcomes using the Beck Depression Inventory BDI-I (n=2), PHQ-9 (n=4), Geriatric Depression Scale (n=1) and the Center for CES-D (n=1) (Table 4). Study follow-up intervals varied from 4 to 60 weeks. Three RCTs looked at outcomes at 24 months^{23, 27, 31} and one out to 60 months^{12, 24}. Three studies reported a statistically significant reduction from their analyses in depressive symptoms associated with telehealth interventions compared to control interventions^{24, 25, 31}. Two of these studies outcomes would meet the MCID for the PHQ-9 in older adults. The specific outcomes are listed in Table 4.

DISCUSSION

IMPLICATIONS

In the setting of physical distancing required during a pandemic, being able to aid older adults with depressive symptoms or disorders remotely is key. This systematic review focused on interventions for the general older adult population over the age of 60 years old. We identified 13 RCTs that examined the role of telemedicine interventions in reducing depressive symptoms in community-dwelling older adults. The included interventions were varied; however, most were via telephone or internet using variations of CBT.

CBT is an effective form of psychotherapy in adults³⁹⁻⁴⁴ for treating depressive symptoms or disorders and anxiety. CBT adapts well to a remote intervention setting as it is 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. 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 therapies for depressive symptoms and disorders. Impacts and efficacy of this care delivery shift remain to be seen. *Given the availability of providers who are trained to conduct psychotherapy, remote therapy tailored to the needs of older adults could be offered. However, there will still need to be more providers trained. Further context-specific analysis is required before findings of these RCTs can be implemented successfully by 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 depressive symptoms or disorders or suicidal ideations were frequently excluded from RCTs for safety reasons (Table 3). Studies often also excluded persons with cognitive impairment or substance use disorders. In the setting of a pandemic, these patients continue to require care. Most studies were conducted in the United States or Australia. The 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 outcomes by participant sex.

Although this systematic review included 13 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 systematic 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 depressive symptoms or disorders 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. Commonly identified barriers to remote assessment such as access to technology or language, were not well described in the included studies. Given this it is not clear how remote therapies may widen health disparities in accessing care, and this remains an important area for future work.

RECOMMENDATIONS FOR POLICY

- Several telephone and internet CBT interventions have been tested in older adults, without cognitive impairment who were English speaking, 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 interventions for reducing depressive symptoms in community-dwelling older adults, we will complete a more comprehensive search to identify any additional eligible studies. This search will look at all interventions for reducing depressive symptoms in older adults. We will also review studies with interventions in which telemedicine is part of a multicomponent therapy, or remote is compared to any comparator. 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.

These 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 have presented a national webinar through the brainXchange September 2020. We are presenting at a provincial meeting in December 2020 through the Alberta Addictions and Mental Health Strategic Clinical Network. 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, Regional Geriatric Program of Toronto), and national organizations (e.g. Evidence Alliance).^{45, 46}

Table 2: Study and Patient Characteristics

Author	Year	Country	Study Duration (weeks)	Overall Sample Size at Randomization	Mean Age (years)	Overall % of Female Participants	Depressive Symptoms or Disorder at Baseline	Depressive Symptoms as Outcome Only	Depression Tool	Study Population Characteristics
Brenes ^{12, 23}	2017	USA	60	141	66.8	82%	No	Yes	BDI-I	Generalized Anxiety Disorder (GAD), Panic Disorder, Anxiety Disorder Not Otherwise Specified (NOS)
Brenes ²⁴	2012	USA	24	60	69.2	83%	No	Yes	BDI-I	GAD, Panic or Anxiety Disorder NOS as per DSM
Dear ²⁵	2015	Australia	52	72	65.5	60%	No*	Yes	PHQ-9	Anxiety as per Self Report
Gellis ²⁶	2014	USA	24	115	79.2	66%	Yes	No	PHQ-9	High users of hospital, CHF or COPD
Gould ²⁷	2018	USA	8	40	68.9	60%	No	Yes	PHQ-9	GAD, Social Anxiety, Panic Disorder, Agoraphobia, Anxiety Disorder NOS
Hartke	2003	USA	24	124	69.7	76%	No	Yes	CES-D	Caregivers of Persons with Stroke
Jones ²⁸	2016	Canada	10	46	65.1	87%	No	Yes	GDS-30 or PHQ-9	Meeting a criterion for GAD or subclinical GAD
Kornblith	2006	USA	36	131	73.5	47%	No	Yes	GDS-15, HADS	Advanced Cancer (e.g. prostate, breast, colon)
Mavandadi ³⁰	2015	USA	24	1018	77.6	83%	Yes	No	PHQ-9	Clinically relevant symptoms of depression or anxiety or new Rx of anxiolytic or antidepressant
Read ³³	2020	Australia	24	302	73.0	70%	No	Yes	GDS, PHQ-9	Chronic conditions (>/=2)
Silfvernagel ³⁰	2017	Sweden	8	66	66.1	76%	Yes	No	MADRS	GAD, Social anxiety Agoraphobia, Panic disorder, Anxiety unspecified, Specific phobia
Titov ²²	2016	Australia	12	459	66	64%	Yes	No	PHQ-9	Symptoms of Anxiety or Depression
Titov ³¹	2015	Australia	52	54	65.3	73%	Yes	No	PHQ-9	Symptoms of Anxiety or Depression

*Excluded persons with severe depression based on PHQ-9 >19 or >2 on Suicide item. However Depression nor depressive symptoms were inclusion criteria.

Abbreviations: Patient Health Questionnaire (PHQ-9), Montgomery Åsberg Depression Rating Scale (MADRS), or Geriatric Depression Scale (GDS), Centre for Epidemiology Studies Depression Scale (CES-D), Beck Depression Inventory (BDI-I), Cognitive Behavioural therapy (CBT)

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Table 3: Inclusion + Exclusion Criteria

Author	Year	Inclusion Criteria	Exclusion Criteria
Brenes	2012	<ol style="list-style-type: none"> Adults aged 60 years and older 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) 	<ol style="list-style-type: none"> Current psychotherapy Current alcohol or substance abuse Dementia or global cognitive impairment (Mini-Mental Status Examination score < 24; 10) Psychotic symptoms Active suicidal ideation Any change in psychotropic medications within the previous 3 months
Brenes	2017	<ol style="list-style-type: none"> Adults aged 60 years or older Principal or co-principal diagnosis of GAD based on the DSM-IV Living in one of 41 rural North Carolina counties 	<ol style="list-style-type: none"> Current psychotherapy Active alcohol/substance abuse Dementia Global cognitive impairment based on the Telephone Interview for Cognitive Status-modified Psychotic symptoms Active suicidal ideation with plan and intent Change in psychotropic medications within 30 days prior to screening Bipolar disorder Hearing loss that would prevent an individual from participating in the telephone sessions
Dear	2015	<ol style="list-style-type: none"> Resident of Australia At least 60 years of age 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 a recent physical assessment or any physical health complaints that had not been examined or were not currently being managed by their general practitioner) 	<ol style="list-style-type: none"> Currently participating in CBT Using illicit drugs or consuming more than three standard drinks/day Currently diagnosed with schizophrenia or bipolar disorder 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, & Williams, 2001) If taking medication for anxiety or depression, not having been on a stable dose for at least 1 month
Gellis	2014	<ol style="list-style-type: none"> Aged 65 and older Above-average users (≥10 days in the hospital in the past 12 months, seen in the emergency department (ED) in the last 2 months, or required ≥3 home care visits per week) Primary diagnosis of heart failure or COPD Screened positive for depression as indicated by a Patient Health Questionnaire-2 (PHQ)16 score of 3 or greater 	<ol style="list-style-type: none"> Cognitive impairment (Mini-Mental State Examination (MMSE) score <24) or a diagnosis of dementia based on chart review 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
Gould	2018	<ol style="list-style-type: none"> Aged 60 years or older Proficient in English Diagnosed with an anxiety disorder (generalized anxiety disorder [GAD], social anxiety disorder, panic disorder, agoraphobia, anxiety disorder unspecified) via a structured interview 	<ol style="list-style-type: none"> Psychotic symptoms Diagnosis of dementia or probable cognitive impairment based on a Short Blessed Test error score of six or more Self-reported diagnosis of bipolar disorder or psychotic disorder Daily use of benzodiazepines other than for sleep exclusively Receiving regular (i.e., weekly) psychotherapy

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			6. Individuals meeting criteria for specific phobia alone with no other anxiety diagnosis would not have been eligible for this study
Hartke		<ol style="list-style-type: none"> Age > 60 years old Spouses of stroke survivors Primary Caregiver for >1 Month Not in a Caregiver Support Group Telephone available and adequate hearing 	1. NR
Jones	2016	<ol style="list-style-type: none"> Residents of Saskatchewan, Canada Aged 60 years or older Access to a computer and Internet Reported no change in psychotropic medication for at least one month prior to enrollment Met Diagnostic and Statistical Manual of Mental Disorder fourth edition text revision (DSM-IV-TR; APA, 2000) criteria for clinical or subclinical GAD Endorse at least moderate symptoms on the GAD-7 (i.e., a score of ≥ 10) at pre-screening to participate 	<ol style="list-style-type: none"> Met DSM-IV-TR criteria for current substance abuse, a psychotic disorder or bipolar disorder Endorsed severe symptoms of depression, including suicidal ideation Reported having a serious medical condition that may account for anxiety symptoms or interfere with treatment (e.g., untreated thyroid disorder) Were cognitively impaired (as assessed by the Six-Item Screener)
Kornblith	2006	<ol style="list-style-type: none"> Age >65 Stage III or IV breast cancer, or Duke stage C or D colon cancer or stage C or D prostate cancer. Actively on treatment for at least 2 months Life expectancy ≥ 12 Months Able to Consent 	1. NR
Mavandadi	2015	<ol style="list-style-type: none"> Aged 65 years and over Living in a non-institutionalized setting At least 1 new prescription for antidepressant or anxiolytic Clinically relevant symptoms: PHQ-9 of 5-24 or GAD-7 of ≥ 5 	<ol style="list-style-type: none"> Severe Cognitive Impairment Depressive or anxious symptoms mild or severe warranting specialty care
Read	2020	<ol style="list-style-type: none"> Aged 65 years and over Two or more chronic physical conditions Use of a computer or tablet with internet access Sufficient English to take part in the iCBT program 	<ol style="list-style-type: none"> Met criteria for minor/major depression or dysthymia (assessed via structured interview at baseline) Consumed illicit drugs or more than five alcoholic drinks per day History of bipolar disorder or schizophrenia Had undergone psychological therapy in the 12-month period prior to recruitment
Silvernagel	2017	<ol style="list-style-type: none"> 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 Could also meet the criteria for comorbid major depression, but not as the primary disorder. Age 60 years or older Not currently in psychotherapy If on medication, be on a stable dosage Not be at risk of alcohol abuse or meeting the description for current alcohol addiction 	NR

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Titov	2015	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 ≥ 19 or responding ≥ 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
Titov	2016	<ol style="list-style-type: none"> 1. Resident of Australia 2. At least 60 years of age 3. Principal complaint of symptoms of anxiety or depression 	<ol style="list-style-type: none"> 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))

Table 4: Intervention Descriptions

Author	Intervention 1 Name	Intervention 1 Description	Intervention 2 Name	Intervention 2 Description	Intervention 3 Name	Intervention 3 Description
Brenes ^{12, 24}	Telephone CBT	<p>1. 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.</p> <p><u>Providers:</u> Social Workers & Psychologists <u>Duration:</u> 11 Weeks of weekly calls, with follow-up at 2, 4, 8, and 12 weeks. <u>Time:</u> 50 Minutes</p>	Telephone Nondirective Supportive Therapy	<p>1. Telephone Non-directive Support: Phone calls focused on creating a therapeutic relationship of support and acceptance. Focused on “reflective listening” and supportive statements.</p> <p><u>Providers:</u> Social Workers & Psychologists <u>Duration:</u> 11 Weeks of weekly calls, with follow-up at 2, 4, 8, and 12 weeks <u>Time:</u> 50 Minutes</p>	Not applicable (NA)	
Brenes ²³	Telephone CBT	<p>1. 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.</p> <p><u>Providers:</u> Social Workers & Psychologists <u>Duration:</u> 11 Weeks of weekly calls, with follow-up at 2, 4, 8, and 12 weeks. Calls were every 1-2 weeks. <u>Time:</u> 50 Minutes</p>	Information	<p>1. Information: Received written information about anxiety disorders and a list of potential referral options.</p> <p><u>Providers:</u> Clinician <u>Duration:</u> NA <u>Time:</u> NA</p>	NA	
Dear ²⁵	Internet CBT + Clinician Guided	<p>1. 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.</p> <p>2. Clinician Guidance: contact with participants weekly to follow progress.</p> <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> 8 weeks, weekly online; brief weekly calls</p>	Waitlist	<p>1. Waitlist: usual care while on waitlist for intervention.</p> <p><u>Providers:</u> NA <u>Duration:</u> NA <u>Time:</u> NA</p>	NA	

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Time: Weekly calls 5-10 minutes.

<p>Gellis³⁵</p>	<p>Telehealth for Chronic Illness and Depression</p>	<p>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 <u>Providers:</u> Nurses <u>Duration:</u> Daily Call for Monitoring, Weekly Call for Problem Solving Therapy for 12 weeks <u>Time:</u> Weekly Calls 35 Minutes</p>	<p>In Home Nursing + Psychoeducation</p>	<p>1. In-home Nursing: home care provided by nurses under direction of family physicians. Care coordination with allied health. 2. Psychoeducation: education on diseases processes, reinforcement of importance of daily monitoring, smoking cessation, diet, weight, and medication adherence. <u>Providers:</u> Nurses <u>Duration:</u> Weekly Visits for 12 weeks <u>Time:</u> 60 Minutes</p>	<p>NA</p>
<p>Gould²⁶</p>	<p>DVD Breathing Exercise + Telephone Psychologist</p>	<p>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, <u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> Weekly Phone Calls for 4 Weeks, DVD for 8 weeks. <u>Time:</u> NA</p>	<p>Waitlist</p>	<p>1. Waitlist: usual care while on waitlist for intervention. Offered BREATH at 8 weeks. <u>Providers:</u> NA <u>Duration:</u> NA <u>Time:</u> NA</p>	<p>NA</p>
<p>Hartke</p>	<p>Telephone Group Support Therapy</p>	<p>1. Telephone support group following a structured ‘psychoeducational format’. 2. Group manual with 8 topics mailed to participants. 3. Audiotape on relaxation 4. Publication on Stress Management 5. Self-identified stressful situation list</p>	<p>Usual Care</p>	<p>1. Usual care <u>Providers:</u> NA <u>Duration:</u> NA <u>Time:</u> NA</p>	<p></p>

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		<p><u>Providers:</u> Psychologists, Social Work, Nursing <u>Duration:</u> 8 weeks <u>Time:</u> 1 hour</p>			
Jones ²⁸	Internet CBT + Guided Online	<ol style="list-style-type: none"> Internet CBT: focused on the “Anxiety Online” a structured online course. Course focuses on psychoeducational material, case examples, coping skills, CBT therapies, skills application. Clinician Guidance: psychologist received weekly homework, provide support, advice and promote adherence, answered questions, and encouraged progress. <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> Weekly Emails for 10 Weeks. <u>Time:</u> 15-30 minutes</p>	Waitlist	<ol style="list-style-type: none"> Waitlist: usual care while on waitlist for intervention. <p><u>Providers:</u> NA <u>Duration:</u> NA <u>Time:</u> NA</p>	NA
Kornblith	Telephone Monitoring + Education	<ol style="list-style-type: none"> Telephone call x 1 Monthly for 6 Months Education on support, diet and helping Disease specific education Assessment of Distress, Physical Problems, Quality of Life, Social Support – if participant above a cut off follow up arranged. <p><u>Providers:</u> Nursing <u>Duration:</u> 6 Months <u>Time:</u> NA</p>	Education	<ol style="list-style-type: none"> Education on support, diet and helping Disease specific education <p><u>Providers:</u> Nursing <u>Duration:</u> NA <u>Time:</u> NA</p>	
Mavandadi ³⁰	Mental Health Care Management	<ol style="list-style-type: none"> Baseline and four brief follow-up assessments to review medication adherence, adverse events, and symptoms Algorithm based management for depression and anxiety ~5 phone Calls in first 12 weeks, then monthly calls at 4, 5 and 6 months. <p><u>Providers:</u> Behavioural Health Providers</p>	Monitoring Alone	<ol style="list-style-type: none"> Baseline and four brief follow-up assessments to review medication adherence, adverse events, and symptoms <p><u>Providers:</u> Health Technicians or Behavioural Health Providers <u>Duration:</u> During initial 12 weeks of treatment <u>Time:</u> 5-10 Minutes</p>	

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<p><u>Duration:</u> 12 weeks <u>Time:</u> NR</p>						
Read³¹	Internet CBT + Guided Online	<ol style="list-style-type: none"> 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. <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> 8 Weeks. <u>Time:</u> ~30 Min weekly by psychologist;</p>	Usual Care	<ol style="list-style-type: none"> 1. Usual Care: usual care with existing physicians, specialists for their chronic conditions. <p><u>Providers:</u> NA <u>Duration:</u> NA <u>Time:</u> NA</p>	NA	
Silfvernagel³²	Internet CBT + Guided Online	<ol style="list-style-type: none"> 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. <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> 8 Weeks. <u>Time:</u> NA</p>	Weekly Brief Email Support from Clinician	<ol style="list-style-type: none"> 1. Email Support: Provision of general support weekly. <p><u>Providers:</u> Clinicians <u>Duration:</u> 8 Weeks. <u>Time:</u> NA</p>	NA	
Titov³⁴	Orientation + Clinician Guided Internet Cognitive Behavioural Therapy (CBT)	<ol style="list-style-type: none"> 1. Orientation: telephone call by clinician to discuss goals for treatment, describe potential benefit, discuss importance of adherence and practice, and answer questions 2. Internet CBT: Completed weekly modules with symptom questionnaires. 	Orientation + Self-Guided internet CBT	<ol style="list-style-type: none"> 1. Orientation: telephone call by clinician to discuss goals for treatment, describe potential benefit, discuss importance of adherence and practice, and answer questions 2. Internet CBT: Completed weekly modules with symptom questionnaires. Questionnaires monitored 	Self-Guided internet CBT	<ol style="list-style-type: none"> 1. Internet CBT: Completed weekly modules with symptom questionnaires. Questionnaires monitored by

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		<p>Questionnaires monitored by clinicians, but no contact made unless symptoms were severe.</p> <p>3. Clinician Guidance Weekly: via telephone or email clinicians answered questions, reviewed weekly work, helped with any challenges in application of new skills, discuss importance of practice and need for progress</p> <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> 10 Weeks of weekly calls <u>Time:</u> Orientation: 10-20 Minutes once; Weekly Guidance 10-15 Minutes; Weekly online Lessons no time defined.</p>		<p>by clinicians, but no contact made unless symptoms were severe.</p> <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> 10 Weeks, <u>Time:</u> Orientation: 10-20 Minutes once; Weekly online Lessons no time defined.</p>		<p>clinicians, but no contact made unless symptoms were severe.</p> <p><u>Providers:</u> Self-Administered <u>Duration:</u> 10 Weeks <u>Time:</u> Weekly online Lessons no time defined.</p>
Titov ³³	Internet CBT + Guided Online	<p>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.</p> <p>2. Clinician Guidance: contact with therapist as needed by participant or therapist initiated. Feedback given on online modules.</p> <p><u>Providers:</u> Self-Administered + Psychologists <u>Duration:</u> 8 Weeks. <u>Time:</u> NA</p>	Waitlist	<p>a) Waitlist: usual care while on waitlist for intervention.</p> <p><u>Providers:</u> NA <u>Duration:</u> NA <u>Time:</u> NA</p>		NA

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Table 5: Depression Outcomes

Article	Depression Outcome Measure	Intervention 1	Timing of Outcome Measure	Sample Size	Mean or Mean Change Depressive Symptom Score	Intervention 2	Sample Size	Mean or Mean Change Depressive Symptom Score	Intervention 3	Sample Size	Mean or Mean Change Depressive Score
Titov 2016	PHQ-9	Orientation + Clinician Guided Internet Cognitive Behavioural Therapy (CBT)	Baseline	153	10.7 (4.88 SD)	Orientation + Self-Guided Internet CBT	140	10.43 (4.61 SD)	Self-Guided Internet CBT	140	10.43 (4.73 SD)
			8 Weeks	150	4.39 (3.81 SD)**		133	4.44 (3.67 SD)**		133	4.78 (3.90 SD)
			12 Weeks	147	4.30 (3.37 SD)**		126	4.71 (3.79 SD)**		131	4.75 (3.79 SD)
Brenes 2017	BDI-I	Telephone CBT	Baseline	70	21.6 (8.84 SD)	Telephone Nondirective Supportive Therapy	71	24.4 (9.18 SD)			
			16 Weeks	58	-10.77 (95% CI -12.73,-8.81)*		63	-7.54 (95% CI -9.44 to -5.64)			
			60 Weeks	50	-11.3 (95% CI -13.3 to -9.19)		62	-8.37 (95% CI -10.3 to -6.46)			
Brenes 2012	BDI-I	Telephone CBT	Baseline	30	16.9 (8.2 SD)	Information	30	17.9 (7.7 SD)			
			8 Weeks	26	11.4 (1.1 SE)		29	14.1 (1.1 SE)			
			24 Weeks	24	10.7 (1.6 SE)		26	13.3 (1.6 SE)			
Dear 2015	PHQ-9	Internet CBT + Clinician Guided	Baseline	33	10.76 (4.79 SD)	Waitlist	37	10.78 (4.37 SD)			
			8 Weeks	33	3.63 (3.68 SD)**		37	10.47 (4.62 SD)			
			12 Weeks	33	3.93 (3.81 SD)			NR			
			52 Weeks	33	3.93 (3.27 SD)			NR			
Gellis 2014	PHQ-9	Telehealth for Chronic Illness and Depression	Baseline	57	14.9 (6.4 SD)	In Home Nursing + Psychoeducation	58	15.2 (5.8 SD)			
			12 Weeks	46	7.4 (5.7 SD)**		48	13.6 (5.6 SD)			
			24 Weeks	46	7.9 (5.3 SD)*		48	14.1 (5.9 SD)			
Gould 2018	PHQ-9	DVD Breathing Exercise + Telephone Psychologist	Baseline	20	8.4 (5.55 SD)	Waitlist	20	6.8 (5.48 SD)			
			8 Weeks	20	5.71 (1.58 SE)		20	8.6 (1.19 SE)			
Jones 2016	PHQ-9	Internet CBT + Guided Online	Baseline	24	11.0 (6.25 SD)	Waitlist	22	12.18 (5.24 SD)			
			10 Weeks	22	5.59 (5.10 SD)		19	12.08 (6.19 SD)			
			14 Weeks	18	5.37 (5.25 SD)			NR			
Silfvernagel 2017	MÅDRS	Internet CBT + Guided Online	Baseline	33	20.27 (6.75 SD)	Weekly Brief Email Support by Clinician	33	20.03 (7.73 SD)			
			8 Weeks	33	11.75 (8.36 SD)**		33	16.99 (8.84 SD)			
Titov 2015	PHQ-9	Internet CBT + Guided Online	Baseline	27	11.04 (5.62 SD)	Waitlist	25	12.04 (5.42 SD)			
			8 Weeks	27	3.96 (2.48 SD)**		25	12.68 (5.48 SD)			
			12 Weeks	27	4.90 (4.05 SD)			NR			
			52 Weeks	27	4.68 (4.47 SD)			NR			

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Read 2020	PHQ-9	Internet CBT + Guided Online	Baseline	150	3.55 (3.63 SD)	Usual Care	152	3.32 (3.01)			
			8 Weeks	150	2.34 (2.95 SD)**		152	3.61 (3.65 SD)			
			24 Weeks	150	3.43 (3.81 SD)**		152	3.70 (3.49 SD)			
Hartke 2003	CES-D	Telephone Group Support Therapy	Baseline	43	13.93 (9.71)	Usual Care	45	9.49 (6.72)			
			24 Weeks	43	14.16 (10.28)		45	10.09 (7.55)			
Kornblith 2006	GDS-15~	Telephone Monitoring + Education	Baseline	68	3.35 (3.74)	Education	60	2.83 (3.08)			
			24 Weeks	68	2.98 (3.19)		60	3.15 (3.18)			
Mavandadi 2015	PHQ-9	Mental Health Case Management	Baseline	509	8.83 (4.56)	Monitoring Alone	509	8.64 (4.27)			
			12 Weeks	509	5.70 (4.48)**		509	6.04 (4.72)			
			24 Weeks	509	5.68 (4.57)**		509	6.82 (4.91)			

Abbreviations: Patient Health Questionnaire (PHQ-9), Montgomery Åsberg Depression Rating Scale (MADRS), or Geriatric Depression Scale (GDS), Centre for Epidemiology Studies Depression Scale (CES-D), Beck Depression Inventory (BDI-I), Cognitive Behavioural therapy (CBT)

^ Results of RCT reported across two papers^{12, 24}

*p-value <0.05, compared to control

**p-value <0.01, compared to control

‡Non-inferior to comparator

~ Study reports Hospital Anxiety and Depression Scale – Depression subscale, symptoms were significantly reduced when examining this tool.

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.
2. Schillerstrom JE, Royall DR, Palmer RF. Depression, Disability and Intermediate Pathways: A Review of Longitudinal Studies in Elders. *Journal of Geriatric Psychiatry and Neurology* 2008;21:183-197.
3. Doraiswamy PM, Khan ZM, Donahue RMJ, Richard NE. The Spectrum of Quality-of-Life Impairments in Recurrent Geriatric Depression. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 2002;57:M134-M137.
4. MacQueen GM, Frey BN, Ismail Z, et al. Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive Disorder: Section 6. Special Populations: Youth, Women, and the Elderly. *Can J Psychiatry* 2016;61:588-603.
5. Kirkham JG, Choi N, Seitz DP. Meta-analysis of problem solving therapy for the treatment of major depressive disorder in older adults. *Int J Geriatr Psychiatry* 2016;31:526-535.
6. Raue PJ, McGovern AR, Kiosses DN, Sirey JA. Advances in Psychotherapy for Depressed Older Adults. *Current Psychiatry Reports* 2017;19.
7. Armitage R, Nellums LB. COVID-19 and the consequences of isolating the elderly. *Lancet Public Health* 2020.
8. Steinman MA, Perry L, Perissinotto CM. Meeting the Care Needs of Older Adults Isolated at Home During the COVID-19 Pandemic. *JAMA Intern Med* 2020.
9. Yang Y, Li W, Zhang Q, Zhang L, Cheung T, Xiang YT. Mental health services for older adults in China during the COVID-19 outbreak. *Lancet Psychiatry* 2020;7:e19.
10. Egede LE, Acierno R, Knapp RG, et al. Psychotherapy for depression in older veterans via telemedicine: a randomised, open-label, non-inferiority trial. *Lancet Psychiatry* 2015;2:693-701.
11. Egede LE, Acierno R, Knapp RG, Walker RJ, Payne EH, Frueh BC. Psychotherapy for Depression in Older Veterans Via Telemedicine: Effect on Quality of Life, Satisfaction, Treatment Credibility, and Service Delivery Perception. *J Clin Psychiatry* 2016;77:1704-1711.
12. Brenes GA, Danhauer SC, Lyles MF, Hogan PE, Miller ME. Telephone-Delivered Cognitive Behavioral Therapy and Telephone-Delivered Nondirective Supportive Therapy for Rural Older Adults With Generalized Anxiety Disorder: A Randomized Clinical Trial. *JAMA Psychiatry* 2015;72:1012-1020.
13. Gros DF, Lancaster CL, Lopez CM, Acierno R. Treatment satisfaction of home-based telehealth versus in-person delivery of prolonged exposure for combat-related PTSD in veterans. *J Telemed Telecare* 2018;24:51-55.
14. Egede LE, Gebregziabher M, Walker RJ, Payne EH, Acierno R, Frueh BC. Trajectory of cost overtime after psychotherapy for depression in older Veterans via telemedicine. *J Affect Disord* 2017;207:157-162.

15. Rapid Reviews to Strengthen Health Policy and Systems: A Practical Guide. Geneva: World Health Organization, 2017.
16. Moher D, Liberati A, Tetzlaff J, Altman DG, Group P. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Int J Surg* 2010;8:336-341.
17. McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS Peer Review of Electronic Search Strategies: 2015 Guideline Statement. *J Clin Epidemiol* 2016;75:40-46.
18. Chaimani A CD, Li T, Higgins JPT, Salanti G. Chapter 11: Undertaking network meta-analyses. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). . *Cochrane Handbook for Systematic Reviews of Interventions* version 6.0 (updated July 2019). : Cochrane, 2019. .
19. Beck AT, Steer RA, Carbin MG. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review* 1988;8:77-100.
20. Watt J, Tricco AC, Talbot-Hamon C, et al. Identifying older adults at risk of harm following elective surgery: a systematic review and meta-analysis. *BMC Med* 2018;16:2.
21. Higgins JPT, Green S. *Cochrane Handbook for Systematic Reviews of Interventions*, Version 5.1.0 [updated March 2011] ed.
22. Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. JAMA* 1999;282:1737-1744.
23. Brenes GA, Miller ME, Williamson JD, McCall WV, Knudson M, Stanley MA. A randomized controlled trial of telephone-delivered cognitive-behavioral therapy for late-life anxiety disorders. *Am J Geriatr Psychiatry* 2012;20:707-716.
24. Brenes GA, Danhauer SC, Lyles MF, Anderson A, Miller ME. Long-Term Effects of Telephone-Delivered Psychotherapy for Late-Life GAD. *Am J Geriatr Psychiatry* 2017;25:1249-1257.
25. Dear BF, Zou JB, Ali S, et al. Clinical and Cost-Effectiveness of Therapist-Guided Internet-Delivered Cognitive Behavior Therapy for Older Adults With Symptoms of Anxiety: A Randomized Controlled Trial. *Behavior Therapy* 2015;46:206-217.
26. Gould CE, Kok BC, Ma VK, Wetherell JL, Sudheimer K, Beaudreau SA. Video-Delivered Relaxation Intervention Reduces Late-Life Anxiety: A Pilot Randomized Controlled Trial. *American Journal of Geriatric Psychiatry* 2019;27:514-525.
27. Hartke RJ, King RB. Telephone group intervention for older stroke caregivers. *Top Stroke Rehabil* 2003;9:65-81.
28. Jones SL, Hadjistavropoulos HD, Soucy JN. A randomized controlled trial of guided internet-delivered cognitive behaviour therapy for older adults with generalized anxiety. *Journal of anxiety disorders* 2016;37:1-9.
29. Kornblith AB, Dowell JM, Herndon JE, 2nd, et al. Telephone monitoring of distress in patients aged 65 years or older with advanced stage cancer: a cancer and leukemia group B study. *Cancer* 2006;107:2706-2714.
30. Mavandadi S, Benson A, DiFilippo S, Streim JE, Oslin D. A Telephone-Based Program to Provide Symptom Monitoring Alone vs Symptom Monitoring Plus Care Management for Late-Life Depression and Anxiety: A Randomized Clinical Trial. *JAMA Psychiatry* 2015;72:1211-1218.

31. Read J, Sharpe L, Burton AL, et al. A randomized controlled trial of internet-delivered cognitive behaviour therapy to prevent the development of depressive disorders in older adults with multimorbidity. *J Affect Disord* 2020;264:464-473.
32. Silfvernagel K, Westlinder A, Andersson S, et al. Individually tailored internet-based cognitive behaviour therapy for older adults with anxiety and depression: A randomised controlled trial. *Cognitive Behaviour Therapy* 2018;47:286-300.
33. Titov N, Dear BF, Ali S, et al. Clinical and Cost-Effectiveness of Therapist-Guided Internet-Delivered Cognitive Behavior Therapy for Older Adults With Symptoms of Depression: A Randomized Controlled Trial. *Behavior Therapy* 2015;46:193-205.
34. Titov N, Fogliati VJ, Staples LG, et al. Treating anxiety and depression in older adults: randomised controlled trial comparing guided v. self-guided internet-delivered cognitive-behavioural therapy. *BJPsych Open* 2016;2:50-58.
35. Gellis ZD, Kenaley BL, Have TT. Integrated telehealth care for chronic illness and depression in geriatric home care patients: The integrated telehealth education and activation of mood (I-TEAM) study. *Journal of the American Geriatrics Society* 2014;62:889-895.
36. Lowe B, Unutzer J, Callahan CM, Perkins AJ, Kroenke K. Monitoring depression treatment outcomes with the patient health questionnaire-9. *Med Care* 2004;42:1194-1201.
37. Duru G, Fantino B. The clinical relevance of changes in the Montgomery-Asberg Depression Rating Scale using the minimum clinically important difference approach. *Curr Med Res Opin* 2008;24:1329-1335.
38. Dear BF, Zou J, Titov N, et al. Internet-delivered cognitive behavioural therapy for depression: A feasibility open trial for older adults. *Australian and New Zealand Journal of Psychiatry* 2013;47:169-176.
39. Olthuis JV, Watt MC, Bailey K, Hayden JA, Stewart SH. Therapist-supported Internet cognitive behavioural therapy for anxiety disorders in adults. *Cochrane Database Syst Rev* 2016;3:CD011565.
40. Gotzsche PC, Gotzsche PK. Cognitive behavioural therapy halves the risk of repeated suicide attempts: systematic review. *J R Soc Med* 2017;110:404-410.
41. Wuthrich VM, Rapee RM. Randomised controlled trial of group cognitive behavioural therapy for comorbid anxiety and depression in older adults. *Behav Res Ther* 2013;51:779-786.
42. Jayasekara R, Procter N, Harrison J, et al. Cognitive behavioural therapy for older adults with depression: a review. *J Ment Health* 2015;24:168-171.
43. Huibers M. Review: group cognitive behavioural therapy reduces depression symptoms in older adults with depression compared with waiting list control. *Evid Based Ment Health* 2011;14:107.
44. Hall J, Kellett S, Berrios R, Bains MK, Scott S. Efficacy of Cognitive Behavioral Therapy for Generalized Anxiety Disorder in Older Adults: Systematic Review, Meta-Analysis, and Meta-Regression. *Am J Geriatr Psychiatry* 2016;24:1063-1073.
45. O'Neill J, Tabish H, Welch V, Petticrew M, Pottie K, Clarke M. Applying an equity lens to interventions: Using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. *Journal of Clinical Epidemiology* 2014;67:56-64.
46. Watt J, Tricco AC, Straus S, Veroniki AA, Naglie G, Drucker AM. Research Techniques Made Simple: Network Meta-Analysis. *J Invest Dermatol* 2019;139:4-12 e11.

