VU Research Portal

Efficacy and effectiveness of psychological interventions on co-occurring mood and anxiety disorders in older adults

Wuthrich, Viviana M.; Meuldijk, Denise; Jagiello, Tess; Robles, Alberto González; Jones, Michael P.; Cuijpers, Pim

published in

International Journal of Geriatric Psychiatry
2021

DOI (link to publisher)

[10.1002/gps.5486](https://doi.org/10.1002/gps.5486)

document version

Publisher's PDF, also known as Version of record

document license

Article 25fa Dutch Copyright Act

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Wuthrich, V. M., Meuldijk, D., Jagiello, T., Robles, A. G., Jones, M. P., & Cuijpers, P. (2021). Efficacy and effectiveness of psychological interventions on co-occurring mood and anxiety disorders in older adults: A systematic review and meta-analysis. *International Journal of Geriatric Psychiatry*, 36(6), 858-872.
<https://doi.org/10.1002/gps.5486>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

RESEARCH ARTICLE

Efficacy and effectiveness of psychological interventions on co-occurring mood and anxiety disorders in older adults: A systematic review and meta-analysis

Viviana M. Wuthrich^{1,2} | Denise Meuldijk^{1,2} | Tess Jagiello¹ |
Alberto González Robles³ | Michael P. Jones¹ | Pim Cuijpers⁴

¹Department of Psychology, Centre for Emotional Health, Macquarie University, Sydney, Australia

²Department of Psychology, Centre for Ageing, Cognition and Wellbeing, Macquarie University, Sydney, Australia

³Department of Basic, Clinical Psychology, and Neuropsychology, Universitat Jaume I, Castellón, Spain

⁴Department of Clinical, Neuro and Developmental Psychology, Amsterdam Public Health Research Institute, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands

Correspondence

Viviana M. Wuthrich, Department of Psychology, Centre for Ageing, Cognition and Wellbeing, Macquarie University, Sydney 2019, Australia.

Email: viviana.wuthrich@mq.edu.au

Funding information

National Health and Medical Research Council, Grant/Award Number: APP1151138

Abstract

Objectives: Co-occurring mood and anxiety disorders are common in older adult populations and are associated with worse long-term outcomes and poorer treatment response than either disorder alone. This systematic review and meta-analysis aimed to examine the efficacy and effectiveness of psychological interventions for treating co-occurring mood and anxiety disorders in older adults.

Method: The study was registered (PROSPERO CRD4201603834), databases systematically searched (MEDLINE, PSYCINFO, PubMed and Cochrane Reviews) and articles screened according to PRISMA guidelines.

Inclusion: Participants aged ≥ 60 years with clinically significant anxiety and depression, psychological intervention evaluated against control in randomised controlled trial, changes in both anxiety and depression reported at post-treatment. Results Four studies were included (total $n = 255$, mean age range 67–71 years). Overall, psychological interventions (cognitive behavioural therapy, mindfulness) resulted in significant benefits over control conditions (active, waitlist) for treating depression in the presence of co-occurring anxiety (Hedges' $g = -0.44$), and treating anxiety in the presence of depression (Hedges' $g = -0.55$). However, conclusions are limited; the meta-analysis was non-significant, few studies were included, several were low quality and there was high heterogeneity between studies. Benefits at follow-up were not established.

Conclusion: Co-occurring anxiety and mood disorders can probably be treated simultaneously with psychological interventions in older adults with moderate effect sizes, however, more research is needed. Given comorbidity is common and associated with worse clinical outcomes, more high-quality clinical trials are needed that target the treatment of co-occurring anxiety and mood disorders, and report changes in diagnostic remission for both anxiety and mood disorders independently.

KEYWORDS

anxiety, comorbidity, depression, geriatric, meta-analysis, psychological therapy, systematic review

Key Points

- Comorbid anxiety and mood disorders are common in older adults and are associated with worse outcomes than anxiety or mood disorders alone
- Few psychological interventions have examined the efficacy of treating co-occurring mood and anxiety disorders in older adults, and the quality of these studies is mixed
- Limited evidence suggests that psychological therapy can simultaneously target anxiety and mood disorders with moderate effect sizes
- Significantly more research is needed to understand the efficacy of psychological interventions to target comorbid mood and anxiety disorders in older adults

1 | INTRODUCTION

Anxiety and depression are prevalent psychiatric conditions in older adults that commonly co-occur.^{1,2} In a large community sample of older adults (aged 55–85 years), Beekman et al.³ found that in older adults with major depression 47.5% also met criteria for an anxiety disorder, and in older adults with an anxiety disorder, 26.1% also met criteria for major depressive disorder (MDD). Similarly, in an older adult primary care sample (inpatient and outpatient), 35% of those with MDD reported lifetime history of anxiety disorder, and 23% reported a current anxiety disorder.⁴ These rates of comorbidity are similar to those in younger adults, for example, in the US National Comorbidity Survey,¹ 58% of 15–54 year old respondents with a lifetime history of depression also reported a comorbid anxiety disorder. Further in this sample, a primary diagnosis of MDD conferred a three to eightfold increased likelihood that the patient developed a comorbid anxiety disorder in the following 12 months, and a primary anxiety disorder diagnosis conferred a 7 to 62-fold increased likelihood of developing major depression within the following year.¹ The commonality of the comorbidity is not surprising given overlap of anxiety and mood disorders in terms of risk factors,^{5,6} phenomenology,⁷ and genetic factors.^{8,9}

Co-occurring anxiety and depression are associated with worse prognosis than either condition alone. In older adults, co-occurring anxiety and depression have been linked to more: severe depression, disability, chronic course, increased rates of suicide, increased risk of cognitive decline and dementia and higher healthcare costs.^{4,10–13} In addition, co-occurring anxiety in MDD has been shown to delay and reduce treatment response to antidepressants,¹⁰ stepped care approaches that combine psychological and pharmacological approaches¹⁴ and psychological interventions¹⁵ in older adult populations.

With the high prevalence of co-occurring anxiety and depression, and the severity of the consequences associated with this comorbidity, effective interventions are needed that demonstrate effects on *both* anxiety and depression in older adults. Few pharmacological studies have been conducted for co-occurring anxiety and depression in older adults and have generally found some improvement for patients with mood disorders on co-occurring anxiety symptoms but changes in anxiety disorder severity have not been measured.^{16,17} Psychological interventions are preferable to pharmacotherapies in this age group

due to medication side effects and drug–drug interaction effects,^{18,19} consumer preferences for psychological interventions over medication,²⁰ and given transdiagnostic mechanisms underlying anxiety and mood disorders,²¹ psychological interventions that target both disorders simultaneously are a viable alternative.

Efficacious and effective psychological therapies are available for mood and anxiety in older adults with the greatest evidence shown in systematic reviews for cognitive behavioural therapy (CBT).^{22–29} Randomised controlled trials (RCT) have primarily focused on the treatment of either an anxiety or mood disorder to the exclusion of the other. Further in the case of anxiety disorders, most RCTs have been conducted in Generalised Anxiety Disorder (GAD) to the exclusion of other anxiety disorders.^{30–34} Very few RCTs have examined treatment effects for other anxiety disorders in older samples.^{35,36} While these studies have primarily demonstrated good treatment effects, they have not focused on the treatment of co-occurring presentations.

Because co-occurring anxiety and mood disorders are so common and are associated with worst treatment outcomes, it is important to consider whether disorder-specific interventions have also been successful in reducing the secondary (co-occurring) disorders and symptoms. Meta-analyses in general adult samples found that CBT for depression was associated with similar improvements in anxiety symptoms³⁷; however, the presence of both co-occurring mood and anxiety disorders was not required at baseline and so it is not clear if CBT for depression would simultaneously treat anxiety disorders effectively. In older adult populations, very few RCTs for primary mood disorders have measured and reported on secondary effects on co-occurring anxiety symptoms,^{15,38,39} and the results are mixed. Some studies reported significant reductions in anxiety symptoms after treatment for primary depression,^{38,39} while others reported non-significant improvements in comorbid anxiety symptoms.^{15,40} None of the studies reported changes in anxiety disorder status or disorder severity pre to post-treatment.

In contrast, RCTs focused on treating primary anxiety disorders have been shown in meta-analysis to be associated with similar improvements in both anxiety and depressive symptoms in general adult populations⁴¹; however, changes in diagnostic status and severity were not generally reported. Similarly, studies in older populations in general report significant reductions in both post-treatment anxiety and depression symptoms on self-report

measures.^{30–36,42,43} In Stanley et al.'s³² sample with primary GAD, 28% also had comorbid MDD, 5% dysthymia and 9% Affective Disorder Not Otherwise Specified. In this study, they found that CBT for GAD was superior to a minimal contact control in reducing *both* symptoms of anxiety and depression on self-report measures. In a similar study by Stanley et al.³³ they found that 42% of their primary GAD sample had comorbid MDD, and that CBT was superior to usual care for reducing *both* self-reported anxiety and depression symptoms. In other studies, treatment for primary GAD was not associated with significant reductions in comorbid depressive symptoms (e.g., Mohlman et al.³⁰ nor was a CBT program used to treat a broad range of anxiety disorders associated with significant reductions in comorbid depressive symptoms.³⁶

Although some reductions in secondary depressive symptoms have been reported, very few studies have examined changes in secondary mood disorder diagnostic status or clinical severity at post-treatment. One study by Barrowclough et al.³⁵ found CBT produced significantly superior reductions in both anxiety and depressive symptoms in older adults with panic, social phobia, GAD, or anxiety disorder not otherwise specified compared to supportive therapy on self-report measures. However, when they compared the outcomes on diagnostic severity, CBT was only associated with significant reductions in anxiety disorder severity, and not mood disorder severity. Therefore, single disorder interventions may not sufficiently treat co-occurring disorders.

Given the worse outcomes associated with co-occurring disorders and the frequent overlap in disorders, psychological interventions designed to target both mood and anxiety disorders might be more efficacious, and cost-effective. In line with this, recent research in younger adults suggests that targeting comorbidity using transdiagnostic approaches might improve treatment outcomes for anxiety disorders,⁴⁴ and systematic and meta-analyses of psychological studies targeting co-occurring anxiety and mood disorders in younger adults found good outcomes for anxiety disorders and possibly superior outcomes for mood disorders than disorder-specific interventions (e.g., Newby and colleagues [2015]⁴⁵). However, it is not clear what evidence there is for treating co-occurring anxiety and depression in older adults. In this systematic review and meta-analysis, we aimed to review the literature reporting RCTs of psychological interventions of co-occurring anxiety and depression in older adults to determine the settings and types of interventions used and their efficacy and effectiveness. To the best of our knowledge, this is the first systematic review on this topic.

2 | METHOD

2.1 | Protocol and registration

A registered protocol (PROSPERO 2016: CRD4201603834) guided the conduct of this review which is reported in adherence to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement.⁴⁶

2.2 | Search strategy and selection of studies.

We used a comprehensive search in published literature in the following databases within the following dates: PubMed, PsycInfo (1806 to February Week 1, 2020), MedLine (1946 to January Week 5, 2020) and Cochrane Reviews (Issue 2 of 12, February 2020). The specific keywords used are presented in Appendix 1. The following limits were applied: English language (PsycInfo, MedLine and PubMed) and Aged 45+ (PsycInfo, MedLine and PubMed) or Aged 45–64 (PubMed) or Aged 65+ (PsycInfo, MedLine and PubMed) or Aged 80+ (PsycInfo, MedLine and PubMed) or aged 85+ (PsycInfo and MedLine).

Studies were included if they met the following criteria (PICOS). **Participants:** (1) Focused on treatment of older adults aged 60 years of age and over. Studies with a broader age range were included if they reported subgroup analyses of participants 60 years or older. (2) Participants met diagnostic criteria for a mood *and* anxiety disorder or exceeded a predetermined cut-off (clinical or subthreshold but clinically significant) for anxiety *and* depressive symptoms on a standardised measure. (3) All participant settings were included e.g. primary care, community, residential aged care. **Interventions:** (4) Evaluated a psychological intervention aimed at treating both anxiety and depressive symptoms in all delivery formats (e.g., group, individual, internet and stepped care). **Comparisons:** (5) Reported on a randomised controlled trial comparing any psychological intervention to any control comparison (e.g., active control, treatment as usual, wait list control, pharmacological interventions and non-pharmacological interventions). **Outcomes:** (6) The outcomes reported in the clinical trial was a change in anxiety and depression disorder status or symptom severity. **Study Design:** (7) Randomised controlled trial.

Studies were excluded if they reported on: (1) Purely pharmacological trials that did not include a psychological component. (2) Non-randomised trials (e.g., quasi-randomised, reviews). (3) Trials that did not require participants to have both anxiety and depression at a predetermined level at pre-intervention. (4) Studies that did not randomise eligible participants to treatment condition (e.g., studies that reported on changes in anxiety and depression in a subsample who were not randomly allocated to condition). (5) Other interventions that did not contain any psychological therapy (e.g., exercise, brain stimulation, acupuncture, music therapy and dance therapy). (6) Publications were not peer-reviewed or published in English. Note: No exclusions were made in relation to cognitive status.

2.3 | Data extraction and analysis

Databases were searched on the 10th of February 2020. Articles were uploaded into the online systematic review software, Covidence. Duplicates were removed automatically. Titles and abstracts were screened blindly and independently by authors Tess Jagiello, Alberto González Robles and Denise Meuldijk. Irrelevant studies

were excluded. Full texts were screened blindly and independently by Tess Jagiello, Alberto González Robles and Denise Meuldijk and conflicts were resolved by Viviana M. Wuthrich. Eligible articles were included in the review. Data was extracted in relation to the PICO statement, age ranges, education, intervention components, therapist qualifications, supervision, treatment adherence, analysis type, effect sizes, study quality (risk of bias data). In addition, references from retrieved papers were checked for relevant studies. Quality ratings were conducted by Pim Cuijpers and Denise Meuldijk.

2.4 | Meta-analyses

The primary analysis utilised a random effects model to form pooled estimates of effect size for anxiety symptoms and depressive symptoms separately with weights estimated via restricted maximum likelihood. Effect sizes were all converted to Hedges' g . Calculation of the variance of within-group change scores from separate pre- and post-standard deviations assumed a within-subject correlation of 0.5. Some studies reported effect sizes for more than one anxiety or depression instrument. For this analysis, only one estimate was utilized per study with the most commonly used instrument reported in the included studies given preference. Two studies had follow-up data at 4 weeks, one had no follow-up data for the control group and one had follow-up data at 6 months. Due to the variation in follow-up periods between studies, follow-up data was centred at 4 weeks post-baseline assessment. Between-study variance in effect size was evaluated via Cochrane's test⁴⁷ and quantified via the I^2 measure while evidence of publication bias was evaluated via Egger's test.⁴⁸ To examine the influence of omitting replicate effect size measures, a sensitivity analysis was conducted in which effect sizes for all instruments reported by a given study (where multiple exist) were included by weighted mixed models. The weights used were those calculated via the random effects model of DerSimonian and Laird and sampling of effect sizes was viewed as clustered by study in the *mixed* procedure of Stata 16.

Intervention and control conditions have also been compared with respect to (1) change from baseline to end of therapy and (2) change from end of therapy to follow-up. Since the duration of follow-up varied between studies, comparison of (2) have been reported both as observed and after adjusting for length of follow-up as duration appears to be related to effect size. Adjusted estimates of pooled effect size in (2) were obtained from meta-regression with follow-up duration centred at 4 weeks.

2.5 | Quality assessment

We assessed the validity of included studies using the five domains from the revised 'Risk of Bias' assessment tool developed by the Cochrane Collaboration⁴⁹: (1) Risk of bias arising from the

randomization process, (2) Risk of bias due to deviations from the intended interventions, (3) Risk of bias due to missing outcome data (when intent-to-treat analyses were conducted that included all randomised participants in the analyses we rated this as positive), (4) Risk of bias in measurement of the outcome (systematic differences between groups in how outcomes are assessed) and (5) Risk of bias in selection of the reported result (deviations from the pre-specified analysis plan on the basis of the study results). Quality was assessed by two raters (Denise Meuldijk and Pim Cuijpers) and disagreements were solved through discussion.

3 | RESULTS

Four studies met the inclusion criteria and are listed in Table 1. The flow chart for the selection strategy is presented in Figure 1.

3.1 | Quality assessment

The quality of the four included studies varied considerably (see Table 2). Four studies reported adequately on selective reporting; Three studies reported an adequate sequence generation and blinding of assessors; and two studies reported adequate allocation concealment and handling missing data; only one study met all bias criteria adequately.

3.2 | Study characteristics

Clinical trials were conducted in Australia ($n = 2$), Iran ($n = 1$) and the United States of America ($n = 1$). The sample sizes for the studies ranged from $n = 24$ (Sallis et al. 1983)⁵⁰ to $n = 133$ (Wuthrich et al. 2016),⁵¹ with a total of 255 participants in the four independent studies combined. The mean age for the sample included in the studies ranged from 67.35 years (Wuthrich et al. 2016)⁵¹ to 71.3 years (Sallis et al. 1983).⁵⁰

3.3 | Target populations

One study required participants to meet clinically significant symptoms for anxiety and depression on standardised self-report assessments⁵⁰ two studies required a diagnosis on a semi-structured interview of both an anxiety and mood disorders at baseline,^{51,52} and one study required a diagnosis of major depression on a structured clinical interview and in addition both anxiety and depression symptoms to be above a predetermined clinically relevant threshold on self-report measures.⁵³ Wuthrich & Rapee (2013)⁵² included participants with threshold and subthreshold anxiety and mood disorders on a diagnostic interview.

TABLE 1 Table of included articles

Author (country)	Sample (% Female)	Definition of diagnosis	Mean age (SD)	Anxiety & depression measures	Psychological treatment	Effect Sizes: Cohen's d or Hedges' g (partial eta2) 95% CI	Summary of findings
Ahmadpanah et al. (2017; Iran)	Community residents (education level unknown)	Moderate to major depressive disorders (SCID DSM disorder) and treated with a standard medication (citalopram)	69.2 (4.4) years	GDS ^a	Detached mindfulness therapy (MD) (cognitive psychotherapy using attention training techniques to develop cognitive flexibility) delivered by trained clinical psychologists, <i>n</i> = 19; group (60–90 min, 2 weekly/4 weeks) versus control condition, <i>n</i> = 17: Leisure activities, group (60–90 min, 2 weekly/4 weeks). No details of supervision or treatment adherence given.	Control versus MD (pre–post)	Symptoms of depression and anxiety declined significantly over time in MDD patients offered MD, but not in the control condition.
N = 36 analysed ITT (100%)				MADRS		GDS: –1.36 (–2.11 to –0.61) ^a	
				BAI ^b		BAI: –1.98 (–2.81 to –1.15) ^b	
						MADRS: –3.92 (–5.09 to –2.75)	
Sallis et al. (1983; USA)	Community residents (mean education level 12th grade)	Mild depression (BDI ≥12) and trait anxiety disorder (STAI ≥ 38)	71.3 (8.7) years	STAI ^b	Anxiety management treatment condition (psychological and cognitive arousal lowering), <i>n</i> = 8: Group, (60 min, 2 weekly, 5 weeks) versus depression management treatment condition (increasing participation in pleasant events), <i>n</i> = 8: Group, (60 min, 2 weekly/5 weeks) versus placebo (non-specific) condition, <i>n</i> = 8.	Placebo versus treatment (pre–post)	Learning-based methods (CBT based) to control emotional difficulties in elderly community residents showed to be effective in reducing depressive symptoms. Subjects in all conditions improved equally, only the placebo group made marginal improvements on trait anxiety. Neither of the treatment conditions was found to be more effective compared to the placebo condition, on any measure.

TABLE 1 (Continued)

Author (country)	Sample (% Female)	Definition of diagnosis	Mean age (SD)	Anxiety & depression measures	Psychological treatment	Effect Sizes: Cohen's d or Hedges' g (partial eta2) 95% CI	Summary of findings
	N = 24 analysed ITT (83%)			BDI ^a	All delivered by graduate students in counselling or clinical psychology. No details of supervision or treatment adherence given.	STAI	
	N = 38 completed baseline assessment and at least one group session. Dropout rates were:					Anxiety condition: 1.24 (–0.66 to 0.77) ^b	
	Depression management (38%), anxiety depression management (33%) and placebo (38%).						
						Depression condition: 0.25 (0.07–2.02)	
						BDI	
						Anxiety condition: 0.89 (–0.21 to 2.00)	
						Depression condition: 0.59 (–0.48 to 1.66) ^a	
Wuthrich & Rapee (2013; Australia)	Community residents (35% tertiary education)	Depression and anxiety symptoms (meeting full DSM IV criteria for both anxiety and a mood disorder based upon ADIS score of 4 or above)	67.4 (6.2) years	ADIS	Manualised group CBT (psycho-education, problem-solving, cognitive restructuring, sleep hygiene, assertiveness training, graded exposure and activity scheduling) delivered by trained clinical psychologists and graduates receiving weekly supervision,	Waitlist versus group CBT (pre–post)	Symptoms of anxiety and depression significantly reduced in the CBT condition compared to the waitlist condition. Self-reported anxiety and depression symptoms also significantly reduced over time, and these gains were maintained at the three-month follow-up period. No significant

(Continues)

TABLE 1 (Continued)

Author (country)	Sample (% Female)	Definition of diagnosis	Mean age (SD)	Anxiety & depression measures	Psychological treatment	Effect Sizes: Cohen's d or Hedges' g (partial eta2) 95% CI	Summary of findings
N = 62 analysed ITT (100%)							
				Severity primary disorder		ADIS:	
				GDS ^a		Anxiety disorder:	
				CES-D	n = 27; group (120 min, 12 weekly/12 weeks) versus Waitlist, n = 35. No treatment adherence data.	–5.57 (–6.81 to –4.57)	differences were found between groups on measures of worry and well-being.
				GAI ^b		Major depressive disorder:	
						–6.23 (–5.55 to –3.65)	
						GDS: –1.00 (–1.55 to –0.46) ^a	
						CES-D: –1.08 (–1.63 to –0.53)	
						GAI: –0.78 (–1.31 to –0.25) ^b	
Wuthrich et al. (2016; Australia)	Community residents	Anxiety and unipolar mood disorder (ADIS DSM disorder)	67.35, (5.44) years	ADIS	Manualised group CBT (cognitive behavioural skills for anxiety and depression), n = 76; group (120 min, 11 weekly/12 weeks) versus Discussion group (non-specific therapy skills, non-directive), n = 53; group (120 min, 11 weekly/12 weeks). Interventions delivered by graduate students in clinical psychology with fortnightly supervision. Treatment adherence and fidelity checks by independent coder.	Discussion group versus group CBT (pre-post)	Both conditions resulted in significant improvements over time on all diagnostic, symptom and well-being measures. Significant group × time interaction effects emerged at post-treatment only for diagnostic severity of the primary disorder, mean severity of all disorders, mood disorders, and recovery rates on primary disorder.

TABLE 1 (Continued)

Author (country)	Sample (% Female)	Definition of diagnosis	Mean age (SD)	Anxiety & depression measures	Psychological treatment	Effect Sizes: Cohen's d or Hedges' g (partial eta2) 95% CI	Summary of findings
N = 133 analysed ITT (100%)				GDS ^a		ADIS:	
				GAI ^b		Anxiety disorder: −4.76 (−6.89 to −5.27)	
						Major depressive disorder: −3.99 (−6.81 to −5.24)	
						GDS: −0.28 (−0.62 to 0.07) ^a	
						GAI: −0.06 (−0.40 to 0.29) ^b	

Abbreviations: ADIS, Anxiety Disorders Interview Schedule for DSM-IV; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; CES-D, Centre for Epidemiological Studies—Depression Scale; GAI, Geriatric Anxiety Inventory; GDS, Geriatric Depression Scale; HADS-A, Hospital Anxiety and Depression Scale (Anxiety Subscale); MADRS, Montgomery-Asberg Depression Rating Scale; MINI-Plus, Mini International Neuropsychiatric Interview; ITT, Intention-To-Treat analysis; SD, Standard Deviation; SCID, Structured Clinical Interview for DSM Disorders; STAI, State-Trait Anxiety Inventory; 95% CI, 95% Confidence Interval.

^aInstrument estimates included in meta-analysis calculation depressive scores (see also Figure 2).

^bInstrument estimates included in meta-analysis calculation anxiety scores (see Figure 3).

FIGURE 1 Flow chart

TABLE 2 Cochrane risk of bias assessment

Study	Random sequence generation	Allocation concealment	Dealing with missing data	Blinding of assessors	Selective reporting
Ahmadpanah et al. (2017)	+	+	-	+	+
Sallis et al. (1983)	?	?	-	?	+
Wuthrich & rapee (2013)	+	?	+	+	+
Wuthrich et al. (2016)	+	+	+	+	+

Notes: + = Low risk of bias; - = High risk of bias; ? = Unclear risk of bias; some concerns, as per the Revised Cochrane criteria.

3.4 | Settings

Studies were conducted in university clinics^{51,52} and community settings.^{50,53}

3.5 | Interventions

Studies evaluated group CBT⁵³ and a detached mindfulness intervention.⁵³ Interventions were delivered mainly by

psychologists or clinical psychologists or trainee clinical psychologists.⁵⁰⁻⁵³ Comparisons were made to active control^{50,51,53} or waitlist control.⁵²

3.6 | Outcomes

Studies varied in post-intervention assessment periods from 4 weeks post-baseline^{50,53} to 12 weeks,^{51,52} and follow-up assessment periods of 4 weeks⁵³ post-treatment to 26 weeks.⁵¹

All but one study⁵⁰ reported significant improvements in the intervention condition for both anxiety and depression.^{51–53} Significant reductions in anxiety and depression were found for a group detached mindfulness intervention compared to a control (leisure activities) in women already being treated pharmacologically for depression. Significant reductions in both anxiety and depression symptoms were also found for group CBT when compared to wait-list⁵² and to an active control.⁵¹ The Wuthrich et al. (2016)⁵¹ demonstrated similar reductions in recovery rates for mood and anxiety disorders following group CBT that were superior to an active control. One study did not show any significant improvements in depression or anxiety compared to the control condition, and instead found greater improvements for anxiety in the control condition, although with a total sample size of 24 participants this study was very likely underpowered.⁵⁰

Two studies reported diagnostic recovery rates and three reported on clinically reliable change. For diagnostic recovery in the primary disorder, Wuthrich & Rapee (2013) found statistically significant recovery for the intervention (53%) compared to control (11%), and Wuthrich et al. (2016) found significant recovery in the intervention (54%) compared to active control (24%). Ahmadpanah et al. (2017) reported clinically significant change (defined as 50% symptom reduction) was evidence for depression and anxiety symptoms in the intervention group but not the control condition. Wuthrich & Rapee (2013) reported significant clinical change using the Reliable Change Index⁵⁴ for all diagnostic severity and self-report measures in the intervention group compared to control, and Wuthrich et al. (2016) reported clinically significant change in the diagnostic severity of *all* disorders in the intervention condition (38%), compared to control (11%), but did not report clinically significant changes on self-report measures.

3.7 | Effect sizes

Pooling of effect sizes for self-reported measures of anxiety and depression was used. The effect sizes indicating the difference between two groups at post-test (psychological intervention vs. control group) for each measure within the studies are presented in Table 1. The effect sizes indicating the difference between the psychological and control interventions range from $g = -1.43$ to $g = 0.66$. In Figure 2, the pooled effect sizes for all measures examining depressive symptoms together (such as the BDI, CES-D, GDS or MADRS) was: $g = -0.55$ (95% CI: $-1.25, 0.14$; $p = .12$), with high heterogeneity ($I^2 = 82\%$). The pooled effect sizes for all measures examining anxiety symptoms together (such as the BAI, GAI, HADS-A or STAI) was: $g = -0.44$ (95% CI: $-1.38, 0.50$; $p = .4$), with very high heterogeneity ($I^2 = 90\%$) and are presented in Figure 3. The inclusion of replicate depression measures from individual studies in weighted linear mixed models, rather than selecting the most comparable, yields a larger effect size than the primary analysis. Based on seven effect size estimate pooled value of -0.72 (95% CI: $-2.10, 0.66$) is obtained but also fails to reach

statistical significance ($p = .3$). The larger pooled estimate is primarily due to Ahmadpanah et al. (2017)⁵³ in which the Hedges' g value for their MADRS score was -3.44 . See Figure 4.

The contrast of intervention and control groups with respect to change from end of therapy to follow-up suggested intervention on average did not perform as well as control $g = 0.16$ (95% CI: $-0.13, 0.44$; $p = 0.3$) although the difference was small in magnitude and failed to reach statistical significance. The estimated pooled effect size if all studies were of 4 weeks duration is smaller and slightly in favour of intervention at -0.10 (95% CI: $-0.01, 0.05$; $p = 0.3$) but also fails to reach statistical significance. Including all effect sizes from all studies in weight linear mixed models ($k = 5$) yielded a weighted average $g = 0.05$ (95% CI: $-0.29, 0.39$; $p = 0.8$). The corresponding findings for anxiety were similar with $g = 0.19$ (95% CI: $-0.09, 0.48$; $p = 0.2$) when only one effect size is included per study and $g = 0.16$ (95% CI: $-0.01, 0.34$; $p = 0.06$) when all effect sizes from all studies are included in a mixed model. The estimated pooled effect size if all studies in the primary analysis were of 4 weeks duration is smaller and slightly in favour of intervention at -0.09 (95% CI: $-0.61, 0.44$; $p = 0.8$) but also fails to reach statistical significance. For the primary analyses, effect sizes were generally homogeneous with both $I^2 = 0$ and $p > 0.3$ for both Cochrane tests. See Figure 4.

3.8 | Publication bias

There was no suggestion of publication bias with $p \geq 0.5$ for changes from baseline to end of therapy and $p \geq 0.17$ for changes from end of therapy to follow-up. We note however the unreliability of interpretation of Egger's test with small numbers of studies.

4 | DISCUSSION

The aim of this systematic review and meta-analysis was to examine the efficacy and effectiveness of psychological interventions to treat co-occurring anxiety and depression in older adults. Four efficacy studies were included, no effectiveness studies were found. Overall the pooled effect sizes indicated that psychological interventions may be efficacious for treating co-occurring anxiety and depression in older adults with moderate pooled effect sizes for depression in the presence of anxiety (Hedges $g = -0.55$) and moderate for anxiety in the presence of depression (Hedges $g = -0.44$). However, strong conclusions cannot be drawn due to the small number of studies, with several of low quality and small sample sizes, and high heterogeneity across studies. More research is needed to understand the true effects. These results; however, extend previous knowledge about the treatment of single mood and anxiety disorders in older populations^{23–25} and suggest that psychological interventions are efficacious for treating co-occurring mood and anxiety disorders in older populations. These findings are important as co-occurring mood and anxiety disorders are common in older populations,^{2–4} and this

FIGURE 2 Forest plot of all studies describing post-intervention depression scores [Colour figure can be viewed at wileyonlinelibrary.com]

FIGURE 3 Forest plot of all studies describing post-intervention anxiety scores [Colour figure can be viewed at wileyonlinelibrary.com]

comorbidity is associated with poor outcomes across a range of factors.^{11,55}

In general, psychological interventions delivered in the clinical populations were associated with significant improvements in both self-reported anxiety and depression compared to control conditions. Ahmadpanah et al. (2017)⁵³ found statistically significant reductions in self-reported anxiety and depressive symptoms and clinician rated depressive symptoms, as well as clinically significant reductions, with a detached mindfulness intervention. They report probable remission effects with a likely increased remission rate of 8–16 fold for the intervention on depressive symptoms, but there was no significant difference for anxiety symptoms. However, remission effects were based on reductions in scores on self-report measures and not diagnostic criteria, and as the management of missing data (last point carried forward) was not optimal, the findings need to be interpreted cautiously. Wuthrich & Rapee (2013)⁵² found significantly greater remission of primary mood and anxiety disorders with a CBT program (53% vs. 11%) that incorporated the key elements for targeting both mood disorders (activity scheduling and problem solving) and anxiety disorders (cognitive therapy, graded exposure). Only one study⁵¹ reported on pre- and post-disorder status for both mood and anxiety disorders separately to enable clear evaluation of the effects of treatment on co-occurring disorders. They reported similar (not significantly different) effects of CBT for both anxiety and mood

disorder remission (38% vs. 12% recovery from *all* disorders). This result is particularly encouraging and indicates that co-occurring anxiety and mood disorders can be successfully remitted with CBT in older adults.

One study failed to find any significant benefits of psychological interventions for either depression or anxiety⁵⁰ and instead found that the control condition was superior for anxiety reduction. With a total sample size of 24 participants, this study is likely underpowered to detect true effects. Although a novel study for its time, this study was rated as having a high risk of bias or unclear risk of bias for all factors. It appears unlikely that intent-to-treat analyses were used with no drop-outs or missing data reported, therefore the results for this study need to be interpreted with caution.

Overall, psychological interventions were generally successful at treating self-reported depressive symptoms in the presence of anxiety symptoms with moderate effect sizes, and treating anxiety symptoms in the presence of co-occurring depressive symptoms with moderate effect sizes at post-treatment. Only two studies reported clear and significant remission of anxiety disorders in the presence of co-occurring mood disorders,^{51,52} with the Wuthrich et al. (2016)⁵¹ study reporting similar remission rates for mood and anxiety disorders based on a diagnostic interview. Although evidence is limited, the clearer efficacy for treating anxiety disorders in these studies

(A) Depression Scores

(B) Anxiety Scores

FIGURE 4 Forest plot of all studies describing follow-up intervention depression (A) and anxiety scores (B) [Colour figure can be viewed at wileyonlinelibrary.com]

might relate to differences in the intervention components. The group CBT program used in the Wuthrich and colleagues studies (Ageing Wisely) included core CBT components for treating both anxiety disorders, namely graded exposure and cognitive therapy⁵⁶ and depression (behavioural activation and problem solving). The evidence in this review for the efficacy of detached mindfulness for treating anxiety disorder level symptomatology was less clear. More research is needed to understand how best to treat anxiety disorders in the presence of co-occurring mood disorders in older adults across a range of settings, populations and interventions.

The benefits of psychological treatments at follow-up on self-reported symptom measures were less clear. Depending on the follow-up measures used in the analyses, effects sizes vary either very small to small favouring the psychological intervention or the control. Heterogeneity was very high, and studies differed widely in the follow-up periods, measures used and in the control condition used. For example, smaller follow-up effects appeared to be associated with active controls that included other psychological interventions.

The conclusions need to be considered in light of the study limitations. First, the number of well-conducted studies was very small

limiting the conclusions that can be drawn. Second, the results may not be generalisable due to limitations in sample age (mean age of samples was young, ranging between 67 and 71 years of age), education and ethnicity. Third, the heterogeneity of studies was high. The Sallis et al. (1983)⁵⁰ study had high risk of bias, and a wide confidence interval for the effect sizes and therefore could be considered an outlier. Fourth, due to the limited number of studies, comparisons between types of psychological interventions (e.g., CBT, behavioural, mindfulness etc.), delivery methods (e.g., face to face, self-help) or settings (e.g., primary care, community) could not be made. Fifth, studies did not consistently report outcomes against diagnostic criteria, and so the results only report self-reported symptoms measures. Finally, the review excluded non-randomised trials, did not include grey literature and only included English studies. More rigorous research is needed using both diagnostic status and self-reported symptom changes over time, as well as more RCTs comparing both psychological interventions against other interventions, and psychological interventions against each other, and studies conducted in a range of settings. The evaluation of treatment effects in residential aged care was a particularly important gap as rates of depression and anxiety in residential aged care are particularly high.⁵⁷

Despite these limitations, this is the first systematic review and meta-analysis of the effects of psychological interventions for treating co-occurring anxiety and depression in older adults, and the findings are promising. The results suggest psychological interventions, particularly CBT, can be efficacious for treating co-occurring anxiety and depression in older adults simultaneously with moderate effect sizes at post-treatment on self-reported measures; however, more evidence is needed. Few robust trials exist and future trials would benefit from careful evaluating and reporting of anxiety and mood disorder status and severity pre- and post-treatment on diagnostic interviews to better ascertain effects, as well as assessment of the maintenance of effects at follow-up. Given the commonality of co-occurring anxiety and depression in the elderly, more attention needs to be placed on how to treat and prevent these disorders when they co-occur.

ACKNOWLEDGEMENT

This research was supported by the National Health and Medical Research Council, Grant Application Number: APP1151138.

CONFLICT OF INTEREST

The authors report no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

ORCID

Viviana M. Wuthrich <https://orcid.org/0000-0001-7227-229X>

REFERENCES

- Kessler RC, Nelson CB, McGonagle KA, Swartz M, Blazer DG. Comorbidity of DSM-III-R major depressive disorder in the general population: results from the US National Comorbidity Survey. *Br J Psychiatry*. 1996;168(Suppl 30):17-30.
- Kvaal K, McDougall FA, Brayne C, Matthews FE, Dewey ME. Co-occurrence of anxiety and depressive disorders in a community sample of older people: results from the MRC CFAS (Medical Research Council Cognitive Function and Ageing Study). *Int J Geriatric Psychiatry*. 2008;23(3):229-237.
- Beekman ATF, de Beurs E, van Balkom A, Deeg DJH, van Dyck R, van Tilburg W. Anxiety and depression in later life: co-occurrence and communality of risk factors. *Am J Psychiatry*. 2000;157(1):89-95.
- Lenze EJ, Mulsant BH, Shear MK, et al. Comorbid anxiety disorders in depressed elderly patients. *Am J Psychiatr*. 2000;157(5):722-728.
- Vink D, Aartsen MJ, Schoevers RA. Risk factors for anxiety and depression in the elderly: a review. *J Affect Disord*. 2008;106:29-44.
- Blanco C, Rubio J, Wall M, Wang S, Jiu CJ, Kendler KS. Risk factors for anxiety disorders: common and specific effects in a national sample. *Depress Anxiety*. 2014;31:756-764.
- Watson D, Clark LA, Weber K, Assenheimer JS, Strauss ME, McCormick RA. Testing a tripartite model, II: exploring the symptom structure of anxiety and depression in student, adult, and patient samples. *J Abnorm Psychol*. 1995;104:15-25.
- Kendler KS, Gardner CO, Gatz M, Pedersen NL. The sources of comorbidity between major depression and generalised anxiety disorder in a Swedish national twin sample. *Psychol Med*. 2007;37:453-462.
- Craske MG. Transdiagnostic treatment for anxiety and depression. *Depress Anxiety*. 2012;29:749-753.
- Cohen A, Gilman SE, Houck PR, Szanto K, Reynolds CF. Socioeconomic status and anxiety as predictors of antidepressant treatment response and suicidal ideation in older adults. *Soc Psychiatry Psychiatr Epidemiol*. 2009;44:272-277.
- Almeida OP, Draper B, Pirkis J, et al. Anxiety, depression, and comorbid anxiety and depression: risk factors and outcome over two years. *Int Psychogeriatrics*. 2012;24(10):1622-1632.
- Prina AM, Ferri CP, Guerra M, Brayne C, Prince M. Co-occurrence of anxiety and depression amongst older adults in low- and middle-income countries: findings from the 10/66 study. *Psychol Med*. 2011;41:2047-2056.
- Vasiliadis H-M, Dionne P-A, Preville M, Gentil L, Berbiche D, Latimer E. The excess health care costs associated with depression and anxiety in elderly living in the community. *Am J Geriatric Psychiatry*. 2013;21(6):536-548.
- Hegel MT, Unutzer J, Tang L, et al. Impact of comorbid panic and posttraumatic stress disorder on outcomes of collaborative care for late-life depression in primary care. *Am J Geriatr Psychiatry*. 2005;13(1):48-58.
- Gum AM, Arean PA, Bostrom A. Low-income depressed older adults with psychiatric comorbidity: secondary analyses of response to psychotherapy and case management. *Int J Geriatr Psychiatry*. 2007;22(2):124-130.
- Russell J, Raskin J, Wiltse C, Walker D, Brawman-Mintzer O. Efficacy and tolerability of duloxetine treatment in elderly patients with major depressive disorder and concurrent anxiety symptoms. *Psychiatry (Edmont)*. 2007;4(6):33.
- Sheehan D, Dunbar GC, Fuell DL. The effect of paroxetine on anxiety and agitation associated with depression. *Psychopharmacol Bull*. 1992;28(2):139-143.
- Krasucki C, Howard R, Mann A. Anxiety and its treatment in the elderly. *Int Psychogeriatrics*. 1999;11(1):25-45.
- Stanley MA, Beck JG. Anxiety disorders. *Clin Psychol Rev*. 2000;20(6):731-754.
- Wuthrich VM, Frei J. Barriers to treatment for older adults seeking psychological therapy. *Int Psychogeriatr*. 2015;27(7):1227-1236.
- Norton PJ, Roberge P. Transdiagnostic therapy. *Psychiatric Clinics of North America*; 2017;40(4):675-687.
- Ayers CR, Sorrell JT, Thorp SR, Wetherell JL. Evidence-based psychological treatments for late-life anxiety. *Psychol Aging*. 2007;22(1):8.
- Cuijpers P, Karvotaki E, Pot AM, Park M, Reynolds CF. Managing depression in older age: psychological interventions. *Maturitas*. 2014;79(2):160-169.
- Gould RL, Coulson MC, Howard RJ. Cognitive behavioral therapy for depression in older people: a meta-analysis and meta-regression of randomized controlled trials. *J Am Geriatrics Soc*. 2012a;60:1817-1830.
- Gould RL, Coulson MC, Howard RJ. Efficacy of cognitive behavioral therapy for anxiety disorders in older people: a meta-analysis and meta-regression of randomized controlled trials. *J Am Geriatr Soc*. 2012b;60(2):218-229.
- Mohlman J. Psychosocial treatment of late-life generalized anxiety disorder: current status and future directions. *Clin Psychol Rev*. 2004;24:149-169.
- Nordhus IH, Pallesen S. Psychological treatment of late-life anxiety: an empirical review. *J Consult Clin Psychol*. 2003;71(4):643-651.
- Wetherell J, Lenze EJ, Stanley MA. Evidence-based treatment of geriatric anxiety disorders. *Psychiatric Clin N Am*. 2005a;28:871-896.
- Wetherell J, Sorrell JT, Thorp SR, Patterson TL. Psychological interventions for late-life anxiety: a review and early lessons from the CALM study. *J Geriatric Psychiatry Neurology*. 2005b;18(2):72-82.

30. Mohlman J, Gorenstein EE, Kleber M, deJesus M, Gorman JM, Papp LA. Standard and enhanced cognitive behavior therapy for late life generalized anxiety disorder: two pilot investigations. *Am J Geriatric Psychiatry*. 2003;11:24-32.
31. Stanley MA, Beck J, Glassco JD. Treatment of generalized anxiety in older adults: a preliminary comparison of cognitive-behavioral and supportive approaches. *Behav Ther*. 1996;27(4):565-581.
32. Stanley MA, Beck J, Novy DM, et al. Cognitive-behavioral treatment of late-life generalized anxiety disorder. *J Consult Clin Psychol*. 2003;71(2):309-319.
33. Stanley MA, Hopko DR, Diefenbach GJ, Bourland SL, Rodriguez H, Wagener P. Cognitive-behavior therapy for late-life generalized anxiety disorder in primary care: preliminary findings. *Am J Geriatric Psychiatry*. 2003;11(1):92-96.
34. Mohlman J, Gorman JM. The role of executive functioning in CBT: a pilot study with anxious older adults. *Behav Res Ther*. 2005;43(4):447-465.
35. Barrowclough C, King P, Colville J, Russell E, Burns A, Tarrier N. A randomized trial of the effectiveness of cognitive-behavioral therapy and supportive counseling for anxiety symptoms in older adults. *J Consult Clin Psychol*. 2001;69(5):756-762.
36. Gorenstein EE, Kleber MS, Mohlmann J, DeJesus M, Gorman JM, Papp LA. Cognitive-behavioural therapy for management of anxiety and medication taper in older adults. *Am J Geriatr Psychiatry*. 2005;13(10):901-909.
37. Weitz E, Kleiboer A, van Straten A, Cuijpers P. The effects of psychotherapy for depression on anxiety symptoms: a meta-analysis. *Psychol Med*. 2018;48(13):2140-2152.
38. Haringsma R, Engels G, Cuijpers P, Spinhoven P. Effectiveness of the coping with depression (CWD) course for older adults provided by the community-based mental health care system in The Netherlands: a randomized controlled field trial. *Int Psychogeriatrics*. 2006;18(2):307-325.
39. Thompson LW, Gallagher D, Breckenridge SJ. Comparative effectiveness of psychotherapies for depressed elders. *J Consult Clin Psychol*. 1987;55(3):385-390.
40. Serfaty M, Haworth D, Blanchard M, Buszewicz M, Murad S, King M. Clinical effectiveness of individual cognitive behavioral therapy for depressed older people in primary care: a randomized controlled trial. *Archives general psychiatry*. 2009;66(12):1332-1340. <http://cochranelibrary-wiley.com/o/cochrane/clcentral/articles/014/CN-00733014/frame.html>
41. Cuijpers P, Cristea IA, Weitz E, Gentili C, Berking M. The effects of cognitive and behavioural therapies for anxiety disorders in depression: a meta-analysis. *Psychol Med*. 2016;46(16):3451-3462.
42. DeBerry S, Davis S, Reinhard KE. A comparison of meditation-relaxation and cognitive/behavioral techniques for reducing anxiety and depression in a geriatric population. *J Geriatric Psychiatry*. 1989;22(2):231-247.
43. Wetherell JL, Gatz M, Craske MG. Treatment of generalised anxiety disorder in older adults. *J Consult Clin Psychol*. 2003;71(1):341-340.
44. Norton PJ, Barrera TL, Mathew AR, et al. Effect of transdiagnostic CBT for anxiety disorders on comorbid disorders. *Depress Anxiety*. 2013;30:168-173.
45. Newby JM, McKimmon A, Kuyken W, Gilbody S, Dalgleish T. Systematic review and meta-analysis of transdiagnostic psychosocial treatments for anxiety and depressive disorders in adulthood. *Clin Psychol Rev*. 2015;40:31-110.
46. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann Intern Med*. 2009;151(4):264-269.
47. DerSimonian R, Laird N. Meta-analysis in clinical trials. *Controlled clinical trials*. 1986;7(3):177-188.
48. Egger M, Smith GD, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *BMJ*. 1997;315(7109):629-634.
49. Higgins JP, Sterne JA, Savovic J, et al. A revised tool for assessing risk of bias in randomized trials. *Cochrane Database Syst Rev*. 2016;10(Suppl 1):29-31.
50. Sallis JF, Lichenstein KL, Clarkson AD, Stalgaitis S, Campbell M. Anxiety and depression management for the elderly. *Int J Behav Geriatrics*. 1983;1(4):3-12.
51. Wuthrich V, Rapee R, Kangas M, Perini S. Randomized controlled trial of group cognitive behavioral therapy compared to a discussion group for co-morbid anxiety and depression in older adults. *Psychological medicine*. 2016;46(4):785-795. <http://cochranelibrary-wiley.com/o/cochrane/clcentral/articles/451/CN-01259451/frame.html>
52. Wuthrich V, Rapee R. Randomised controlled trial of group cognitive behavioural therapy for comorbid anxiety and depression in older adults. *Behav Res Ther*. 2013;51(12):779-786. <http://cochranelibrary-wiley.com/o/cochrane/clcentral/articles/045/CN-00915045/frame.html>
53. Ahmadpanah M, Akbari T, Akhondi A, et al. Detached mindfulness reduced both depression and anxiety in elderly women with major depressive disorders. *Psychiatry Res* 2017;257:87-94.
54. Jacobson NS, Truax P. Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *J Consult Clin Psychol*. 1991;59(1):12-19.
55. DeLuca AK, Lenze EJ, Mulsant BH, et al. Comorbid anxiety disorder in late life depression: association with memory decline over four years. *Int J Geriatric Psychiatry*. 2005;20(9):848-854.
56. Arch JJ, Craske MG. First-line treatment: a critical appraisal of cognitive behavioral therapy developments and alternatives. *Psychiatric Clinics*. 2009;32(3):525-547.
57. Davison TE, McCabe MP, Mellor D, Ski C, George K, Moore KA. The prevalence and recognition of major depression among low-level aged care residents with and without cognitive impairment. *Aging Ment Health*. 2007;11(1):82-88.

How to cite this article: Wuthrich VM, Meuldijk D, Jagiello T, Robles AG, Jones MP, Cuijpers P. Efficacy and effectiveness of psychological interventions on co-occurring mood and anxiety disorders in older adults: A systematic review and meta-analysis. *Int J Geriatr Psychiatry*. 2021;36:858–872. <https://doi.org/10.1002/gps.5486>

APPENDIX

Search terms

- 'anxiety' or 'anxious' or 'worry' or 'fear' or 'phobic' or 'phobics' or 'phobia' or 'phobias' or 'panic' or 'obsessive compulsive' or 'ocd' or

'ptsd' or 'anxiety disorder' or 'post-traumatic stress' or 'acute stress' or 'hypochondria' or 'hypochondriasis' or 'hypochondriac' or 'hypochondriacs' AND

- 'depression' or 'depressed' or 'depressive' or 'mood' or 'dysthymic' or 'dysthymics' or 'dysthymia' or 'unipolar mood' or 'negative affect' or 'mood disorder' AND

- 'randomised controlled trial' or 'randomized controlled trial' or 'rct' or 'clinical trial' AND.
- 'psychotherapy' or 'psychotherapies' or 'psychotherapeutic' or 'psychotherapeutics' or 'psychosocial' or 'psychodynamic' or 'psychoanalytic' or 'psychoanalytical' or 'psychoanalysis' or 'cbt' or 'cognitive behavior therapy' or 'cognitive behavioural therapy' or 'cognitive behaviour treatment' or 'cognitive behavioural treatment' or 'cognitive behaviour intervention' or 'cognitive behavioural intervention' or 'cognitive behavioural therapy' or 'cognitive behavioural treatment' or 'cognitive behavioural intervention' or 'cognitive behavioural intervention' or 'cognitive therapy' or 'cognitive treatment' or 'cognitive intervention' or 'cognitive restructuring' or 'cognition therapy' or 'cognition treatment' or 'cognition intervention' or 'behaviour therapy' or 'behaviour treatment' or 'behaviour intervention' or 'behavioural therapy' or 'behavioural treatment' or 'behavioural intervention' or 'behavior activation' or 'behavioural activation' or 'behaviour therapy' or 'behaviour treatment' or 'behaviour intervention' or 'behavioural therapy' or 'behavioural treatment' or 'behavioural

intervention' or 'behaviour activation' or 'behavioural activation' or 'problem-solving therapy' or 'problem solving intervention' or 'problem-solving treatment' or 'relaxation' or 'activity scheduling' or 'pleasant event scheduling' or 'act' or 'acceptance and commitment therapy' or 'mindfulness' or 'exposure therapy' or 'metacognitive therapy' or 'metacognitive treatment' or 'metacognitive intervention' or 'meta-cognitive therapy' or 'meta-cognitive treatment' or 'meta-cognitive intervention' or 'dialectical behavior therapy' or 'dialectical behaviour therapy' or 'dialectical behavioral therapy' or 'dialectical behavioural therapy' or 'dbt' or 'interpersonal therapy' or 'counselling' or 'counseling' or 'assertiveness training' or 'compassion focused treatment' or 'compassion focused therapy' or 'compassion focused intervention' or 'compassion focussed treatment' or 'compassion focussed therapy' or 'compassion focussed intervention' or 'solution focused therapy' or 'solution focused treatment' or 'solution focused intervention' or 'solution focussed therapy' or 'solution focussed treatment' or 'solution focussed intervention' or 'self-control therapy' or 'self-control treatment' or 'self-control intervention' or 'self-control training.