Efficacy of Cognitive Behavioral Therapy for Anxiety Disorders in Older People: A Meta-Analysis and Meta-Regression of Randomized Controlled Trials

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OBJECTIVES: To review the magnitude and duration of and factors associated with effects of cognitive behavioral therapy (CBT) for anxiety disorders in older people.

DESIGN: Electronic literature databases and the Cochrane Trials Registry were searched for articles. A systematic critical review, random-effects meta-analysis, and meta-regression of randomized controlled trials were conducted.

SETTING: Community outpatient clinics.

PARTICIPANTS: People with diagnoses of anxiety disorders.

MEASUREMENTS: Outcome measures of anxiety and depression.

RESULTS: Twelve studies were included. CBT was significantly more effective than treatment as usual or being on a waiting list at reducing anxiety symptoms at 0-month follow-up, with the effect size being moderate, but when CBT was compared with an active control condition, the between-group difference in favor of CBT was not statistically significant, and the effect size was small. At 6- but not 3- or 12-month follow-up, CBT was significantly more effective at reducing anxiety symptoms than an active control condition, although the effect size was again small. Meta-regression analyses revealed only one factor (type of control group) to be significantly associated with the magnitude of effect sizes.

CONCLUSION: The review confirms the effectiveness of CBT for anxiety disorders in older people but is suggestive of lower efficacy in older than working-age people. The small effect sizes in favor of CBT over an active control condition illustrate the need to investigate other treatment approaches that may be used to substitute or augment CBT to increase the effectiveness of treatment of anxiety disorders in older people. **J Am Geriatr Soc 60:218–229, 2012.**

Key words: cognitive behavioral therapy; anxiety; meta-analysis; older people

A recent review[1] reported that current estimates of the prevalence of anxiety disorders in older people range from 3.2%[2] to 14.2%.[3] Generalized anxiety disorder (GAD) and phobias are the most prevalent, with up to 7.3% of older adutls experiencing GAD[4] and 7.5% experiencing phobias[5] at any time. Social phobia follows, with estimates of up to 6.6%,[5] whereas posttraumatic stress disorder (PTSD, $\leq$2.5%), panic disorder (PD, 2.0%), and obsessive-compulsive disorder (OCD, 1.5%) are the least prevalent.[5,6]

Anxiety disorders in older people are associated with worse well-being and health-related quality of life and greater disability and healthcare utilization.[7–10] Current evidence-based practice guidelines recommend pharmacotherapy (selective serotonin reuptake inhibitors) and psychotherapy (cognitive behavioral therapy (CBT)), regardless of age.[11,12] Although such recommendations may hold for working-age adults, they may be less applicable to older people, given the multitude of psychological, biological, physical, and social factors involved in the development and maintenance of anxiety disorders in this population.

Several meta-analyses of CBT for anxiety disorders in working-age adults have been conducted. These have shown that CBT is effective, with moderate to large effect sizes reported in favor of CBT over control conditions.[13,14] Unsurprisingly, larger effect sizes have been reported for comparisons of CBT with nonactive control conditions (e.g., waiting list than with active controls (e.g., psychotherapy placebo[15])). Some meta-analyses have focused on specific disorders such as GAD,[15] PD,[16] and social phobia.[17] These analyses have reported moderate to large effect sizes for CBT in working-age adults. Meta-analyses have also shown that effect sizes are smallest for PD[13] and GAD[14] and largest for OCD[13] and PTSD.[14]

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The efficacy of CBT for anxiety disorders in older people has been less clearly demonstrated, partly because of the relative paucity of randomized controlled trials (RCTs). Three meta-analyses have been conducted,[18–20] which have included studies up to 2006. Small to moderate effect sizes in favor of CBT over control conditions were reported in two meta-analyses,[18,20] which contrasts with moderate to large effect sizes reported for working-age adults and suggests that CBT may be less effective in older people. A large effect size was reported in one meta-analysis,[19] but these authors failed to distinguish between controlled and uncontrolled studies when calculating overall effect size, which will have overestimated it. Further evidence of lower efficacy in older people is age-related differences in the magnitude of effect sizes in favor of CBT.[21] In a meta-analysis of RCTs of CBT for chronic worry in GAD, large effect sizes in favor of CBT over any control condition were reported in younger and older people, although the effect size in older people was approximately half that in younger people. Comparing across meta-analyses can be problematic because effect sizes may vary as a function of the methodology used (e.g., how effect sizes are calculated, whether outcome measures are pooled) and degree of heterogeneity. Consequently, it is likely that such variations may explain some but not all of the age-related effect size differences noted above.

Methodological concerns aside, why CBT for anxiety disorders may be more effective for working-age than older people has yet to be elucidated; an examination of predictors of efficacy of CBT in older people may help to address this. In addition, an up-to-date meta-analysis, together with an assessment of study quality, will permit accurate evaluation of effect sizes in this population. Finally, a meta-analytical exploration of longevity of outcomes after CBT, a previously unexplored topic, will clarify treatment efficacy.

The aims of this study were to critically review the quality of RCTs of CBT for anxiety disorders in older people; compare the effectiveness of CBT with that of active and nonactive control conditions; assess the efficacy of CBT at 3-, 6- and 12-month follow-up; and examine the predictors of efficacy of CBT.

METHODS

Selection of Studies

Web of Science, Medline, PsycInfo, and the Cochrane Collaboration Central Register of Controlled Trials were searched up to November 2010 using the following terms: [*anxi** OR *phob** OR *panic* OR *"obsessive compulsive"* OR *OCD* OR *"post traumatic stress"* OR *PTSD* OR *"generalised anxiety disorder"* OR *GAD* OR *agoraphobia* OR *"adjustment disorder"* OR *"acute stress"*] AND [*older** OR *elder** OR *geriatr** OR *senil** OR *"late life"* OR *"late onset"* OR *"old age"*] AND [*CBT* OR *"cognitive behaviour therapy"* OR *"cognitive behavior therapy"* OR *"cognitive behavioural therapy"* OR *"cognitive behavioral therapy"* OR *"cognitive therapy"*]. Manual searches were also completed of reference lists of meta-analyses and reviews of CBT for late-life anxiety[1,18–20,22–24] and of leading journals. Studies were screened and selected for inclusion into the meta-analyses if:

- The study was a peer-reviewed RCT that employed an active control (defined as other treatment, e.g., pharmacotherapy or a social support or attention placebo, e.g., supportive psychotherapy or counselling, psychoeducation, discussion group, or enhanced treatment as usual involving support every week or every other week) or a nonactive control (defined as no social support or attention placebo or other treatment, e.g., minimal-contact treatment-as-usual or waiting list);
- One of the treatment arms comprised CBT that lasted longer than two sessions;
- Participants were aged 55 and older (studies examining older and younger people were included if age-specific analyses were reported);
- Participants had a diagnosis of PD, GAD, agoraphobia, phobia, PTSD, OCD, or anxiety disorder not otherwise specified (ADNOS);
- The number of participants in each condition was five or more at any time;
- Sufficient data were provided for effect size calculation (if this information was unavailable, it was requested from authors and included if obtained); and
- Evidence-based anxiety outcome measures were used to assess the effectiveness of CBT. Depression outcome measures were also included given the prevalence of comorbid anxiety and mood disorders.

Two authors (RLG and MCC) independently screened and selected studies for inclusion in the meta-analyses. Findings were reviewed and disagreements resolved through discussion.

Assessment of Trial Quality

Study quality was assessed using a risk of bias tool recommended by the Cochrane Collaboration.[25] This tool addresses five areas of bias known to affect clinical outcomes: sequence generation, allocation concealment, blinding, incomplete outcome data, and selective outcome reporting. Two authors (RLG and MCC) independently and blindly assessed each study as to whether control of bias was adequate, partially adequate, inadequate, or unclear. Findings were reviewed and disagreements resolved through discussion. Additional factors that may have confounded results (e.g., concurrent pharmacotherapy), affected their generalizability (e.g., demographically unrepresentative samples), or influenced statistical significance (e.g., statistically controlling for pretreatment scores) were also examined.

Extraction of Data and Statistical Analysis

Data Extraction and Meta-Analysis

For each study, means and standard deviations (or standard errors) for each anxiety and depression outcome measure in each condition at each time point were extracted to calculate between-group effect sizes. Baseline-adjusted mean change scores were calculated using the following formula: (0/3/6/12-month mean—preintervention

mean)/preintervention standard deviation. Between-group standardized mean differences were then calculated using Hedge's *g* formula because it can adjust for bias resulting from small sample sizes.[26] A negative effect size reflected a better outcome for intervention than control conditions. When studies assessed more than one anxiety or depression outcome measure, an overall mean effect size was calculated by averaging across individual effect sizes. Therefore, only one effect size for anxiety (and depression) per study was entered into meta-analyses (avoiding difficulties with nonindependence of effect sizes).

Separate random-effects meta-analyses were conducted for different time-points (0/3/6/12-month follow-up vs preintervention). For 0-month follow-up (after vs before intervention), separate meta-analyses were conducted for studies that compared CBT with an active and nonactive control condition. For 3-, 6-, and 12-month follow-up, meta-analyses were conducted only for CBT versus active control because of the lack of nonactive control data at follow-up. Finally, within the above categories, meta-analyses were conducted separately for anxiety and depression outcome measures.

For each meta-analysis, an overall effect size was estimated by weighting the average effect size for each study according to sample size and then pooling across studies. The z statistic was used as a test of whether the pooled mean effect size differed significantly from 0. Variability in effect sizes across studies was assessed using the Q test of heterogeneity and the I^2 statistic, which estimates the proportion of variation in effect sizes due to heterogeneity. I^2 estimates of 25% to 49%, 50% to 75%, and greater than 75% indicate low, moderate, and high heterogeneity, respectively.[27] Funnel plots and the Egger regression asymmetry test were used to estimate publication bias.[28]

Data Extraction and Meta-Regression

Numerous factors may influence the efficacy of CBT for anxiety disorders. Consequently, data pertaining to trial-, clinical-, practice-, and quality-related factors were extracted from each study and entered into meta-regression analyses. Trial-related factors were type of control group, age, years of education, postrandomization sample size, and attrition rate. Clinical-related factors were diagnosis, concurrent pharmacotherapy, and mean years of anxiety duration. Practice-related factors were number of CBT sessions and mode of therapy. Quality-related factors were sequence generation, blinding of outcome assessor, and therapy adherence checks. Missing data were replaced with variable-specific mean values if the percentage of missing data was less than 30%; otherwise, the variable was excluded. Each variable was initially entered into random-effects univariate metaregression analyses with restricted maximum likelihood estimation and Knapp-Hartung adjustment (to control for the risk of false positives with multiple covariates). Variables that showed a moderator effect (significant in univariate analyses) were submitted to random-effects multivariate metaregression analyses. Data were analyzed using Stata 11.2 and meta-analysis commands (Stata Corp., College Station, TX).

RESULTS

Study Characteristics

Three hundred fifty-six studies were identified, 12 of which[29–40] were included in the meta-analyses. (Since completion of the literature search on January 11, 2010, two further RCTs have been conducted.[41,42] Some ongoing and currently funded studies have also been identified.[43]) Study characteristics are listed in Table 1. Nine were conducted in the United State and three in Europe. The mean age of participants was 68.2. Mean years of education was 15.2, although 50% of studies did not report this information. The most common anxiety disorder examined was GAD (n = 7), whereas four studies examined a range of anxiety disorders. The mean percentage of participants with a comorbid psychiatric diagnosis was 41.5%. The control condition was active in six studies. Follow-up data were available for 11 studies, with the most common maximum follow-up period being 6 months. With respect to the CBT intervention, the mean number of sessions was 12.0, most frequently delivered in an individual format (n = 9). The majority of studies included components of cognitive therapy (n = 12), psychoeducation (n = 11), relaxation training (n = 11), and graded exposure (n = 11); problem solving training (n = 6), worry behavior prevention (n = 6), sleep hygiene (n = 6), and behavioral activation (n = 5) were included in fewer studies. The most frequently used anxiety and depression outcome measures were the Penn State Worry Questionnaire (n = 9) and the Beck Depression Inventory (n = 10).

Quality of Studies

Table 2 lists potential sources of bias in included studies. The most adequately addressed areas of bias were incomplete outcome data (n = 10), selective outcome reporting (n = 8), and blinding of outcome assessors (n = 8). Randomization, in terms of sequence generation and allocation concealment, was the most inadequately addressed area. Six studies reported adequate sequence generation, with this being unclearly reported in the rest, and all studies were unclear in reporting of allocation concealment.

Additional factors that may have confounded results, affected generalizability, or influenced statistical significance are shown in Table 3. Six studies permitted concurrent pharmacotherapy, so some symptomatic improvement may have been attributable to this (or a combination of pharmacotherapy and psychotherapy). All but one study failed to recruit a demographically representative sample, so results may only generalize to populations from which samples were drawn. Furthermore, 11 studies permitted self-referral, so results may not generalize to non-self-referrers. Adequate control of nonspecific therapeutic effects (e.g., social support and attention) was used in three studies (through the use of a discussion group and supportive psychotherapy/counseling) and was partially adequate in two studies (through the use of enhanced treatment as usual involving support every week or every other week). Consequently, it is difficult to identify the mechanism of therapeutic change in the majority of studies. Finally,

Table 1. Characteristics of Studies Included in the Meta-Analyses

Study	Primary Diagnosis	Comorbid Diagnosis, %	Condition	n (Completers, n)			Attrition in Each Group,%	Age, Mean (Range)	Education, Years, Mean	Individual or Group	Anxiety Outcome Measures	Depression Outcome Measures	Maximum Posttreatment Follow-Up, Months
				CBT Group	Other Treatment Group	Control Group							
Hendriks et al.[29]	PD	28.6	CBT vs pharmacotherapy vs waiting list	20 (19)	17 (14)	12 (11)	5/18/8	68.6 (≥60)	—	Individual	ACQ, MIAS	—	3
Stanley et al.[30]	GAD	71.6	CBT vs enhanced TAU*	70 (65)	—	64 (50)	7/22	66.9 (≥60)	15.9	Individual	GADSS, HARS, PSWQ	BDI	12
Wetherell et al.[31]	GAD, ADNOS	38.5	CBT (modular psychotherapy) vs minimal contact TAU	15 (12)	—	16 (16)	20/0	72.1 (≥60)	15.5	Individual	HARS, PSWQ	BDI	—
Schuurmans et al.[32, 33]	GAD, PD, agoraphobia, SP	—	CBT vs pharmacotherapy vs waiting list	42 (30)	29 (17)	13 (9)	29/41/31	69.8 (61–81)	—	Individual	BAI, HARS, WDQ	CES-D	12 (for 2009), 3 (for 2006)
Gorenstein et al.[34]	GAD, PD, ADNOS	—	CBT (plus treatment for anxiolytic dependence) vs enhanced TAU†	23 (14)	—	19 (14)	39/26	68.2 (≥60)	15.7	Individual	PSWQ, STAI	BDI	6
Mohlman et al.[35]	GAD	56.0	CBT vs minimal contact waiting list	10 (8)	—	10 (10)	20/0	65.1 (60–78)	—	Individual	BAI, PSWQ, STAI	BDI	18
Mohlman et al.: Study 1[36]	GAD	58.0	CBT vs minimal contact waiting list	14 (11)	—	13 (10)	21/23	66.4 (60–74)	—	Individual	BAI, PSWQ, STAI	BDI	6
Mohlman et al.: Study 2[36]	GAD	57.0	CBT (plus cognitive training) vs minimal-contact waiting list	8 (8)	—	7 (7)	0/0	67.5 (60–79)	—	Individual	BAI, PSWQ, STAI	BDI	6
Wetherell et al.[37]	GAD	52.0	CBT vs discussion group vs waiting list	26 (18)	26 (18)	23 (21)	31/31/9	67.1 (≥55)	14.5	Group	ADIS-IV:GAD, BAI, HARS, PSWQ	BDI, HDRS	6
Stanley et al.[38]	GAD	65.0	CBT vs minimal contact waiting list	39 (29)	—	41 (35)	26/15	66.2 (≥60)	14.8	Group	ADIS-R:GAD, FQ, HARS, PSWQ, STAI, WS	BDI, GDS, HDRS	12

(*Continued*)

Table 1. (Contd.)

Study	Primary Diagnosis	Comorbid Diagnosis, %	Condition	n (Completers, n)			Attrition in Each Group,%	Age, Mean (Range)	Education, Years, Mean	Individual or Group	Anxiety Outcome Measures	Depression Outcome Measures	Maximum Posttreatment Follow-Up, Months
				CBT Group	Other Treatment Group	Control Group							
Barrowclough et al.[39]	GAD, PD, SP, ADNOS	23.0	CBT vs supportive counseling	27 (19)	—	28 (24)	30/14	72.0 ($\geq$ 55)	—	Individual	BAI, HARS, STAI	BDI, GDS	12
Stanley et al.[40]	GAD	48.0	CBT vs supportive psychotherapy	26 (18)	—	20 (13)	31/35	68.3 (55–81)	14.5	Group	ADIS-R:GAD, FQ, HARS, PSWQ, STAI, WS	BDI, HDRS	6

* Telephone calls every other week lasting 15 minutes each.

† Weekly sessions lasting 10–15 minutes each.

PD = panic disorder (with or without agoraphobia); GAD = generalized anxiety disorder; ADNOS = anxiety disorder not otherwise specified; SP = social phobia; CBT = cognitive behavioral therapy; TAU = treatment as usual; ACQ = Agoraphobic Cognitions Questionnaire; MIAS = Mobility Inventory Avoidance Scale; GADSS = Generalized Anxiety Disorder Severity Scale; HARS = Hamilton Anxiety Rating Scale; PSWQ = Penn State Worry Questionnaire; BAI = Beck Anxiety Inventory; WDQ = Worry Domain Questionnaire; STAI = State-Trait Anxiety Inventory: Trait Scale; ADIS-IV:GAD = GAD section of the Anxiety Disorders Interview Schedule (ADIS) for the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*; ADIS-R:GAD = GAD section of the ADIS-Revised; FQ = Fear Questionnaire; WS = Worry Scale; BDI = Beck Depression Inventory; GDS = Geriatric Depression Scale; CES-D = Center for Epidemiologic Studies Depression Scale; HDRS = Hamilton Depression Rating Scale.

statistical control of pretreatment scores (by including them as covariates or reporting baseline-corrected effect sizes) was used in only four studies, and adjustment for multiple statistical comparisons was reported in three. Failure to adopt either of these measures may artificially inflate effect sizes.

Meta-Analysis

0-Month Follow-Up

As shown in Table 4, there was a small effect size of −0.20 in favor of CBT over active controls for anxiety outcome measures ($z = 1.85$, $P = .06$). In contrast, the pooled effect size for CBT was larger than for nonactive controls, with a statistically significant moderate effect size of −0.66 in favor of CBT ($z = 4.64$, $P < .001$). The test of heterogeneity was nonsignificant in both meta-analyses, with the I^2 statistic indicating 0 heterogeneity in effect sizes across studies (active control: $Q = 5.54$, $P = .48$; nonactive control: $Q = 3.47$, $P = .75$). A subgroup meta-analysis stratified according to diagnosis was not performed because of nonsignificant meta-regression results (see below).

A similar pattern of results was found for depression outcome measures. There was a nonsignificant small effect size of −0.16 in favor of CBT over active controls ($z = 0.94$, $P = .35$), and a statistically significant moderate effect size of −0.47 was found when CBT was compared with nonactive controls ($z = 2.18$, $P = .03$). The test of heterogeneity was not significant in either meta-analysis, with the I^2 statistic indicating low heterogeneity in effect sizes across studies (active control: $Q = 9.97$, $P = .08$; nonactive control: $Q = 9.38$, $P = .10$).

3-, 6-, and 12-Month Follow-Up

Small to moderate pooled effect sizes in favor of CBT over active controls were found at 3, 6, and 12 months of follow-up for anxiety outcome measures. At 3-month follow-up, a moderate but nonsignificant effect size of −0.40 was found ($z = 1.51$, $P = .13$). A statistically significant but small effect size of −0.29 was found at 6-month follow-up ($z = 2.02$, $P = .04$). Finally, a small and nonsignificant effect size of –0.21 was found at 12-month follow-up ($z = 0.72$, $P = .47$). The test of heterogeneity was nonsignificant in all analyses, although the I^2 statistic indicated a moderate degree of heterogeneity in effect sizes at 3- and 12- but not 6-month follow-up when there was 0 heterogeneity (3-month follow-up: $Q = 4.46$, $P = .11$; 6-month follow-up: $Q = 1.33$, $P = .72$; 12-month follow-up: $Q = 5.74$, $P = .06$). CBT could not be compared with nonactive control at follow-up because of ethical limitations preventing withholding of treatment from participants.

With respect to depression outcome measures, the pooled effect size at 3-month follow-up could not be estimated because of a paucity of studies, but at 6- and 12-month follow-up, small but nonsignificant effect sizes of −0.16 ($z = 0.92$, $P = .36$) and −0.18 ($z = 0.54$, $P = .59$), respectively, were found. The test of heterogeneity was nonsignificant at 6-month follow-up, with the I^2 statistic indicating low heterogeneity ($Q = 3.94$, $P = .27$), although

Table 2. Potential Sources of Bias in Studies Included in the Meta-Analyses

Study	Adequate Randomization: Sequence Generation	Adequate Randomization: Allocation Concealment	Adequate Blinding of Therapists and Participants	Adequate Blinding of Outcome Assessors	Incomplete Outcome Data Adequately Addressed	Adequate Reporting of Outcome Data	Intention-to-Treat Analyses	Additional Details
Hendriks et al.[29]	✓	?	N/A	✓	✓	✓	X	No information reported about whether sealed envelopes were opaque or sequentially numbered
Stanley et al.[30]	✓	?	N/A	✓	✓	✓	✓	No information reported about whether sealed envelopes were opaque; allocation may have been predictable from block randomization; chronological bias may have been present (correction of allocation of Hispanic participants to conditions using a stratified randomization schedule may have resulted in time effects being confounded with treatment effects)
Wetherell et al.[31]	✓	?	N/A	✓	✓	✓	✓	No information reported about allocation concealment
Schuurmans et al.[32, 33]	✓	?	N/A	X	?	X	✓	No information reported about whether the envelope was opaque; all labels were in one envelope, so it was unsealed after first allocation; no blinding of outcome assessor; reasons for attrition not specified for each group; pre and post data not reported for cognitive behavioral therapy vs waiting list contrast; data not adequately reported for entry into a meta-analysis (Schuurmans et al., 2006)
Gorenstein et al.[34]	✓	?	N/A	✓	~	✓	✓	No information reported about allocation concealment; unclear reporting of numbers of dropouts and withdrawals
Mohlman et al.[35]	?	?	N/A	?	✓	✓	X	No information reported about randomization process or allocation concealment; unclear whether outcome assessor was blinded
Mohlman et al.: Study 1[36]	?	?	N/A	✓	✓	X	X	No information reported about randomization process or allocation concealment; some reporting of questionnaire subscales, in addition to total scores, that was not prespecified (selective reporting)
Mohlman et al.: Study 2[36]	?	?	N/A	✓	✓	X	X	No information reported about randomization process or allocation concealment; some reporting of questionnaire subscales, in addition to total scores, that was not prespecified (selective reporting)
Wetherell et al.[37]	?	?	N/A	✓	✓	✓	✓	No information reported about randomization process or allocation concealment
Stanley et al.[38]	?	?	N/A	?	✓	X	✓	No information reported about randomization process or allocation concealment; unclear whether outcome assessor was blinded; no data reported for Fear Questionnaire (selective reporting)
Barrowclough et al.[39]	✓	?	N/A	✓	✓	✓	X	Not enough information reported about allocation concealment
Stanley et al.[40]	?	?	N/A	X	✓	✓	X	No information reported about randomization process or allocation concealment; no blinding of outcome assessor

✓ = yes; X = no; ~ = partially adequate; ? = unclear; N/A = not applicable because blinding of participants and therapists is difficult in trials of psychotherapy.

Table 3. Additional Factors that May Confound the Results, Affect the Generalizability of the Results or Influence the Interpretation of Results of Studies Included in the Meta-Analyses

Study	Concurrent Use of Anxiolytic Medication	Unrepresentative Sample Because Self-Referral Allowed	Unrepresentative Sample Because of Demographic Characteristics	Treatment Adherence Checks	Allegiance to Treatment by Therapists	Statistical Control of Pretreatment Scores (e.g., Covariate in Analysis of Covariance, Baseline-Corrected Effect Sizes)	Adjustment for Multiple Statistical Comparisons	Nonspecific Therapeutic Effects (e.g., Social Support, Attention) Controlled For	Other
Hendriks et al.[29]	X	X	X	3	✓	✓	✓	X	Exclusion criteria of previous failure of cognitive behavioral therapy or paroxetine; no placebo group for pharmacotherapy; N < 15 randomized to one or more groups; short follow-up period (only 3 months); no depression-specific outcome measure
Stanley et al.[30]	✓	✓	✓	2	~	✓	✓	~	—
Wetherell et al.[31]	✓	✓	✓	2	✓	X	X	X	No follow-up period
Schuurmans et al.[32, 33]	✓	✓	✓	3	✓	✓	X	X	"Our randomization procedures were unsuccessful" (p. 1157); no placebo group for pharmacotherapy; N < 15 randomized to one or more groups; attrition rate ≥ 30% in one or more groups
Gorenstein et al.[34]	✓	✓	✓	2	✓	X	X	~X	Individuals with a diagnosis of current major depression excluded; attrition rate ≥ 30% in one or more groups
Mohlman et al.[35]	X	✓	✓	2	✓	X	X	X	Individuals with a diagnosis of current major depression excluded; N < 15 randomized to one or more groups
Mohlman et al.: Study 1[36]	X	✓	✓	2	✓	X	X	X	Between-group differences at baseline not controlled for in statistical analyses; N < 15 randomized to one or more groups
Mohlman et al.: Study 2[36]	X	✓	✓	2	✓	X	X	X	N < 15 randomized to one or more groups
Wetherell et al.[37]	✓	✓	✓	2	~	X	X	✓	Attrition rate ≥ 30% in one or more groups
Stanley et al.[38]	X	✓	✓	2	~	X	X	X	—

(*Continued*)

Table 3. (Contd.)

Study	Concurrent Use of Anxiolytic Medication	Unrepresentative Sample Because Self-Referral Allowed	Unrepresentative Sample Because of Demographic Characteristics	Treatment Adherence Checks	Allegiance to Treatment by Therapists	Statistical Control of Pretreatment Scores (e.g., Covariate in Analysis of Covariance, Baseline-Corrected Effect Sizes)	Adjustment for Multiple Statistical Comparisons	Nonspecific Therapeutic Effects (e.g., Social Support, Attention) Controlled For	Other
Barrowclough et al.[39]	✓	✓	✓	2	✓	✓	X	✓	Exclusion criteria of engagement in psychotherapy in past 6 months; attrition rate ≥ 30% in one or more groups
Stanley et al.[40]	X	✓	✓	1	~	X	✓	✓	Attrition rate ≥ 30% in one or more groups

✓ = yes; X = no; ~ = partially adequate; ? = unclear; 1 = rating or review of all tapes or transcripts; 2 = rating or review of a selection of tapes or transcripts; 3 = identification or discussion of deviations from treatment manual/protocol; 4 = no adherence checks.

Table 4. Pooled Effect Sizes for Anxiety and Depression Outcome Measures for the Comparison Between Cognitive Behavioral Therapy for Anxiety Disorders and an Active or Nonactive Control Condition at 0-, 3-, 6-, and 12-Month Follow-Up

Outcome Measure	Follow-Up, Months	Type of Control Condition	Studies, n	Overall Participants, n	Pooled Effect Size, *g* (95% Confidence Interval)	I^2 Statistic, %	Chi-Square		Test of Overall Pooled Effect Size		Egger's Asymmetry Test	
							Q Test (Test of Heterogeneity)	*P*-Value	z	*P*-Value	Bias Coefficient	*P*-Value
Anxiety	0	Active	7	348	−0.20 (−0.42–0.01)	0.0	5.54	.48	1.85	.06	0.67	.70
	0	Nonactive	7	215	−0.66 (−0.94 to −0.38)	0.0	3.47	.75	4.64	<.001	1.04	.46
	3	Active	3	164	−0.40 (−0.91–0.12)	55.1	4.46	.11	1.51	.13	−0.27	.96
	6	Active	4	202	−0.29 (−0.57 to −0.01)	0.0	1.33	.72	2.02	.04	0.24	.90
	12	Active	3	172	−0.21 (−0.76–0.35)	65.1	5.74	.06	0.72	.47	0.79	.92
Depression	0	Active	6	315	−0.16 (−0.50–0.17)	49.9	9.97	.08	0.94	.35	0.03	.99
	0	Nonactive	6	188	−0.47 (−0.90 to −0.05)	46.7	9.38	.10	2.18	.03	1.30	.62
	3	Active	2	—	—	—	—	—	—	—	—	—
	6	Active	4	202	−0.16 (−0.49–0.18)	23.9	3.94	.27	0.92	.36	−0.93	.77
	12	Active	3	172	−0.18 (−0.82–0.46)	73.2	7.46	.02	0.54	.59	2.09	.80

Table 5. Univariate Regression Analyses of Effect Sizes for Anxiety and Depression Outcome Measures for the Comparison Between Cognitive Behavioral Therapy (CBT) for Anxiety Disorders and an Active or Nonactive Control Condition

Variable	Regression Coefficient (Standard Error)	95% Confidence Interval	*P*-Value	I^2 (%)	Adjusted Coefficient of Determination (%)
Anxiety					
Continuous variables					
Age	0.06 (0.05)	−0.06–0.17	.31	15.15	6.86
Number of CBT sessions	0.35 (0.06)	−0.10–0.17	.59	22.12	−48.01
Postrandomization sample size, n	0.00 (0.00)	−0.01–0.01	.86	23.17	−49.24
Percentage attrition rate	0.01 (0.01)	−0.01–0.04	.21	11.25	19.75
Noncontinuous variables					
Inclusion criteria for diagnosis (0=GAD, 1=panic, 2=mixed)	0.11 (0.12)	−0.14–0.36	.35	16.77	−3.14
Concurrent use of anxiolytic medication (0=yes, 1=no)	−0.04 (0.21)	−0.51–0.43	.86	22.79	−32.26
Type of control group (0=active, 1=non-active)	−0.46 (0.18)	−0.85 to −0.07	.02	0.00	100.00
Mode of therapy (0=individual, 1=group)	−0.20 (0.21)	−0.67–0.26	.36	16.09	9.34
Sequence generation (0=adequate, 1=inadequate or unclear)	−0.25 (0.20)	−0.68–0.19	.25	12.39	18.26
Blinding of outcome assessor (0=adequate, 1=inadequate or unclear)	0.12 (0.23)	−0.38–0.62	.61	21.88	−31.58
Adherence check (0=adequate, 1=inadequate or unclear)	0.44 (0.23)	−0.06–0.94	.08	0.00	72.51
Depression					
Continuous variables					
Age	0.04 (0.07)	−0.11–0.20	.56	53.84	−12.40
Number of CBT sessions	0.04 (0.09)	−0.16–0.23	.69	55.40	−22.32
Postrandomization sample size, n	0.00 (0.00)	−0.01–0.01	.81	55.76	−24.60
Percentage attrition rate	0.02 (0.01)	−0.01–0.05	.15	45.14	24.42
Noncontinuous variables					
Inclusion criteria for diagnosis (0=GAD, 1=panic, 2=mixed)	0.01 (0.16)	−0.34–0.36	.96	55.67	−20.77
Concurrent use of anxiolytic medication (0=yes, 1=no)	−0.10 (0.30)	−0.78–0.58	.75	55.01	−17.80
Type of control group (0=active, 1=nonactive)	−0.31 (0.28)	−0.93–0.31	.29	48.33	10.86
Mode of therapy (0=individual, 1=group)	0.04 (0.30)	−0.64–0.72	.89	55.74	−22.64
Sequence generation (0=adequate, 1=inadequate or unclear)	−0.02 (0.30)	−0.68–0.64	.95	55.66	−21.46
Blinding of outcome assessor (0= adequate, 1=inadequate or unclear)	0.03 (0.31)	−0.66–0.72	.92	55.66	−20.77
Adherence check (0= adequate, 1=inadequate or unclear)	0.70 (0.45)	−0.30–1.70	.15	44.23	24.80

Two variables (mean years of education and mean years anxiety duration) were excluded from meta-regression analyses because more than 30% of data was missing.
GAD = generalized anxiety disorder.

it was significant at 12-month follow-up, with a moderate degree of heterogeneity found ($Q = 7.46$, $P = .02$).

Publication Bias

There was no evidence of publication bias in any meta-analysis (Table 4).

Meta-Regression

0-Month Follow-Up

Two variables (mean years of education and anxiety duration) were excluded because there was more than 30% missing data; 2.7% missing data were replaced with variable-specific means. Only one of the remaining variables was found to be significantly related to effect size for anxiety outcome measures (Table 5). Type of control group was associated with effect size, whereby larger effect sizes in favor of CBT were found with nonactive than active controls (regression coefficient = −0.46, $P = .02$). No variables were significantly related to effect size for depression outcome measures.

3-, 6-, and 12-Month Follow-Up

It was not possible to conduct meta-regression analyses with follow-up data because of a paucity of studies at each time point.

DISCUSSION

Summary of Main Findings

Meta-analyses showed that, at 0-month follow-up, CBT was significantly and modestly more effective at reducing anxiety symptoms than treatment as usual or being on a waiting list, although the between-group difference in effect size with active control was not statistically significant, and the effect size was small. At 6- but not 3- or 12-month follow-up, CBT was significantly more effective at reducing anxiety symptoms than an active control, but the effect size was small. CBT was significantly and modestly more effective at reducing depression symptoms than treatment as usual or being on a waiting list at 0-month follow-up alone. The results suggest that treatment aimed

at alleviating anxiety can also be beneficial in reducing depression.

Meta-regression analyses conducted on 0-month follow-up data showed that CBT was significantly more effective at reducing anxiety but not depression symptoms when the control condition was nonactive as opposed to active. No other statistically significant relationships were found between trial-, clinical-, or practice-related variables and effect sizes for anxiety or depression outcome measures.

Comparison with Existing Meta-Analyses

In relation to anxiety, findings at 0-month follow-up were generally in accord with those reported elsewhere within the older adult literature, although in the current meta-analyses, a smaller effect size was found when comparing CBT with active control (−0.20 vs −0.33[20] and −0.51[18]), and there was a larger effect size for CBT than nonactive control (−0.66 vs −0.44[18]). These differences may be due to the inclusion of three RCTs published since previous meta-analyses were completed. They may also be related to inclusion criteria being more stringent here (e.g., diagnosis of an active disorder was required rather than subjective anxiety complaints) or to methodological concerns, as noted above. Finally, they may relate to between-review differences in the definition of active and nonactive controls (e.g., pharmacotherapy was categorized as an active control in the current study but not in previous meta-analyses[18,20]). (When pharmacotherapy was not included as an active control, the anxiety effect size was −0.31 ($z = 2.48$, $P < .05$) in favor of CBT.) No other meta-analyses have investigated the effectiveness of CBT at follow-up, so comparisons with previous literature cannot be made. In the current meta-analysis, a gradually decreasing effect size with time was found when CBT was compared with active control. The fact that CBT was significantly more effective at reducing anxiety symptoms at 6- but not 3- or 12-month follow-up is probably because of the larger number of studies included at 6 months and smaller heterogeneity in effect size rather than sudden beneficial gains from CBT.

For depression, current findings are partially consistent with the older adult literature. CBT was significantly more effective at reducing depression symptoms than treatment as usual or being on a waiting list at 0-month follow-up but not than active control (effect sizes of −0.47 and −0.16, respectively). Statistically significantly greater gains have previously been reported after CBT than with nonactive or active controls (effect sizes of −0.54 and −0.35, respectively).[18] It is likely that differences between meta-analyses are due to the factors noted above. A recent meta-analysis of CBT for depression in older people reported a large, statistically significant effect size of −1.34 in favor of CBT over placebo.[44] The larger effect size in the previous meta-analysis is probably partly because of methodological differences (e.g., no distinction between active and nonactive controls) and partly because CBT directly addresses depressive symptoms. This might suggest that CBT for anxiety needs to incorporate depression-specific components of CBT such as behavioral activation to more address depressive symptoms directly. It may also suggest that late-life depression is easier to treat with CBT than anxiety and that more basic research on late-life anxiety needs to be conducted to develop more-effective, alternative therapies.

Current findings are similar to those in working-age adults with respect to the influence of type of control condition on effect sizes,[15] but the magnitude of effect sizes at 0-month follow-up was small to moderate in older people, compared with moderate to large in working-age adults. "True" effect sizes may be smaller than calculated (e.g., artificially inflated) because the majority of studies failed to control statistically for pretreatment scores or adjust for multiple comparisons. These results may suggest that CBT for anxiety disorders is less effective in older people than working-age adults, although this may in part be because of methodological differences, as noted above.

Research and Clinical Implications

Although strong conclusions cannot be drawn about the magnitude of effect sizes between older and younger people, the results of the current meta-analysis suggest that further studies of CBT for anxiety disorders in older and working-age people need to be completed. In addition, questions remain as to why CBT for anxiety disorders may be less effective in older than working-age people at 0-month follow-up. It was hoped that an examination of predictors of CBT efficacy for anxiety disorders in older people would help to further address this issue, but only type of control group was significantly associated with effect size. It is likely that the small number of studies included in the meta-regression limited its utility in exploring the above issues. Further RCTs are needed to permit such analyses. These could explore factors such as cognitive impairment (e.g., disorientation), disorder severity, comorbidity, and homework adherence, which have all been found to predict response to CBT for GAD.[45,46] They could also explore the chronicity of the anxiety disorder because this could account for why CBT may be less effective in older than working-age people.[21,38] Studies examining mechanisms of change in CBT in older people are also necessary to elucidate factors associated with its efficacy. Currently, such an examination is not possible because control of nonspecific therapeutic effects (e.g., social support or attention) was adequate in only three studies[37,39,40] and partially adequate in two studies.[30,34] In addition, it would be useful to evaluate whether adapting CBT or existing models of anxiety for older people increases CBT efficacy.

Only two studies compared CBT for anxiety disorders with pharmacotherapy (in the form of selective serotonin reuptake inhibitors: paroxetine and sertraline) in older people, and both reported effect sizes in favor of pharmacotherapy.[29,32,33] Given the known effectiveness of each approach, it is important to examine whether their combination leads to therapeutic gains in addition to CBT or pharmacotherapy alone. Within the working-age adult literature, a recent meta-analysis suggested that combined pharmacotherapy and psychotherapy are superior to monotherapy for PD, whereas there is preliminary support for combination therapy versus monotherapy for social anxiety.[47]

Limitations

The main limitation of the current review was the small number of studies, particularly at follow-up, which may weaken conclusions that can be drawn from the meta-analyses and reduce the power to detect significant associations between trial-, clinical-, and practice-specific factors and effect sizes in meta-regression analyses. Although statistical tests revealed no evidence of publication bias, inclusion of unpublished data may have affected the magnitude of effect sizes and hence conclusions about CBT efficacy. The inclusion of studies published in languages other than English may also have influenced effect sizes. Furthermore, the small number of studies restricted the exploration of diagnosis on effect sizes, which would have been informative given reports within the working-age adult literature of smaller effect sizes for some anxiety disorders than others.[13,14] Finally, variations in trial-, clinical-, and practice-specific factors, including trial quality variables, as seen in Tables 1–3, may have resulted in heterogeneity, which will have reduced the likelihood of detecting significant differences between treatment and control groups.

CONCLUSIONS

The current review confirms the efficacy of CBT for anxiety disorders in older people but highlights the necessity of further research to examine why CBT may be less effective for older than working-age people. Furthermore, the small effect sizes in favor of CBT over active control illustrate the need to investigate other treatment approaches that may augment CBT (such as pharmacotherapy) and increase its effectiveness. They also highlight a need to explore other therapeutic approaches that may be more suitable for the multitude of psychological, biological, physical, and social problems typically seen in older people.

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REFERENCES

1. Wolitzky-Taylor KB, Castriotta N, Lenze EJ et al. Anxiety disorders in older adults: A comprehensive review. Depress Anxiety 2010;27:190–211.
2. Forsell Y, Winblad B. Anxiety disorders in non-demented and demented elderly patients: Prevalence and correlates. J Neurol Neurosurg Psychiatry 1997;62:294–295.
3. Ritchie K, Artero S, Beluche I et al. Prevalence of DSM-IV psychiatric disorder in the French elderly population. Br J Psychiatry 2004;184:147–152.
4. Beekman ATF, Bremmer MA, Deeg DJH et al. Anxiety disorders in later life: A report from the Longitudinal Aging Study Amsterdam. Int J Geriatr Psychiatry 1998;13:717–726.
5. Kessler RC, Berglund P, Demler O et al. Lifetime prevalence and age-of-onset distributions' of DSM-IV disorders in the National Comorbidity Survey replication. Arch Gen Psychiatry 2005;62:593–602.
6. Bland RC. Psychiatry and the burden of mental illness. Can J Psychiatry 1998;43:801–810.
7. Brenes GA, Penninx B, Judd PH et al. Anxiety, depression and disability across the lifespan. Aging Ment Health 2008;12:158–163.
8. de Beurs E, Beekman ATF, van Balkom A et al. Consequences of anxiety in older persons: its effect on disability, well-being and use of health services. Psychol Med 1999;29:583–593.
9. Wetherell JL, Thorp SR, Patterson TL et al. Quality of life in geriatric generalized anxiety disorder: A preliminary investigation. J Psychiatr Res 2004;38:305–312.
10. Porensky EK, Dew MA, Karp JF et al. The burden of late-life generalized anxiety disorder: Effects on disability, health-related quality of life, and healthcare utilization. Am J Geriatr Psychiatry 2009;17:473–482.
11. American Psychiatric Association Steering Committee on Practice Guidelines. American Psychiatric Association Practice Guidelines for the Treatment of Psychiatric Disorders Compendium. Washington, DC: American Psychiatric Publishing, 2002.
12. National Institute for Health and Clinical Excellence. Clinical guideline 22 (amended), 2007 [on-line]. Available at www.nice.org.uk/CG22. Accessed May 20, 2011.
13. Hofmann SG, Smits JAJ. Cognitive-behavioral therapy for adult anxiety disorders: A meta-analysis of randomized placebo-controlled trials. J Clin Psychiatry 2008;69:621–632.
14. Stewart RE, Chambless DL. Cognitive-behavioral therapy for adult anxiety disorders in clinical practice: A meta-analysis of effectiveness studies. J Consult Clin Psychol 2009;77:595–606.
15. Mitte K. Meta-analysis of cognitive-behavioral treatments for generalized anxiety disorder: A comparison with pharmacotherapy. Psychol Bull 2005;131:785–795.
16. Siev J, Chambless DL. Specificity of treatment effects: Cognitive therapy and relaxation for generalized anxiety and panic disorders. J Consult Clin Psychol 2007;75:513–522.
17. Acarturk C, Cuijpers P, van Straten A et al. Psychological treatment of social anxiety disorder: A meta-analysis. Psychol Med 2009;39:241–254.
18. Hendriks GJ, Voshaar RCO, Keijsers GPJ et al. Cognitive-behavioural therapy for late-life anxiety disorders: A systematic review and meta-analysis. Acta Psychiatr Scand 2008;117:403–411.
19. Pinquart M, Duberstein PR. Treatment of anxiety disorders in older adults: A meta-analytic comparison of behavioral and pharmacological interventions. Am J Geriatr Psychiatry 2007;15:639–651.
20. Thorp SR, Ayers CR, Nuevo R et al. Meta-analysis comparing different behavioral treatments for late-life anxiety. Am J Geriatr Psychiatry 2009;17:105–115.
21. Covin R, Ouimet AJ, Seeds PM et al. A meta-analysis of CBT for pathological worry among clients with GAD. J Anxiety Disord 2008;22:108–116.
22. Ayers CR, Sorrell JT, Thorp SR et al. Evidence-based psychological treatments for late-life anxiety. Psychol Aging 2007;22:8–17.
23. Nordhus I, Pallesen S. Psychological treatment of late-life anxiety: An empirical review. J Consult Clin Psychol 2003;71:643–651.
24. Wetherell JL, Sorrell JT, Thorp SR et al. Psychological interventions for late-life anxiety: A review and early lessons from the CALM study. J Geriatr Psychiatry Neurol 2005;18:72–82.
25. Cochrane Collaboration. Available at http://www.cochrane.org/. Accessed May 20, 2011.
26. Hedges LV, Olkin I. Statistical Methods for Meta-Analysis. Orlando, FL: Academic Press, 1985.
27. Higgins JPT, Thompson SG, Deeks JJ et al. Measuring inconsistency in meta-analyses. BMJ 2003;327:557–560.
28. Egger M, Smith GD, Schneider M et al. Bias in meta-analysis detected by a simple, graphical test. BMJ 1997;315:629–634.
29. Hendriks GJ, Keijsers GPJ, Kampman M et al. A randomized controlled study of paroxetine and cognitive-behavioural therapy for late-life panic disorder. Acta Psychiatr Scand 2010;122:11–19.
30. Stanley MA, Wilson NL, Novy DM et al. Cognitive behavior therapy for generalized anxiety disorder among older adults in primary care. A randomized clinical trial. JAMA 2009;301:1460–1467.
31. Wetherell JL, Ayers CR, Sorrell JT et al. Modular psychotherapy for anxiety in older primary care patients. Am J Geriatr Psychiatry 2009;17:483–492.

32. Schuurmans J, Comijs H, Emmelkamp PMG et al. A randomized, controlled trial of the effectiveness of cognitive—Behavioral therapy and sertraline versus a waitlist control group for anxiety disorders in older adults. Am J Geriatr Psychiatry 2006;14:255–263.
33. Schuurmans J, Comijs H, Emmelkamp PMG et al. Long-term effectiveness and prediction of treatment outcome in cognitive behavioral therapy and sertraline for late-life anxiety disorders. Int Psychogeriatr 2009;21:1148–1159.
34. Gorenstein EE, Kleber MS, Moblman J et al. Cognitive-behavioral therapy for management of anxiety and medication taper in older adults. Am J Geriatr Psychiatry 2005;13:901–909.
35. Mohlman J, Gorman JM. The role of executive functioning in CBT: A pilot study with anxious older adults. Behav Res Ther 2005;43:447–465.
36. Mohlman J, Gorenstein EE, Kleber M et al. Standard and enhanced cognitive-behavior therapy for late-life generalized anxiety disorder—Two pilot investigations. Am J Geriatr Psychiatry 2003;11:24–32.
37. Wetherell JL, Gatz M, Craske MG. Treatment of generalized anxiety disorder in older adults. J Consult Clin Psychol 2003;71:31–40.
38. Stanley MA, Beck JG, Novy DM et al. Cognitive-behavioral treatment of late-life generalized anxiety disorder. J Consult Clin Psychol 2003;71:309–319.
39. Barrowclough C, King P, Colville J et al. A randomized trial of the effectiveness of cognitive-behavioral therapy and supportive counseling for anxiety symptoms in older adults. J Consult Clin Psychol 2001;69:756–762.
40. Stanley MA, Beck JG, Glassco JD. Treatment of generalized anxiety in older adults: A preliminary comparison of cognitive-behavioral and supportive approaches. Behav Ther 1996;27:565–581.
41. Brenes GA, Miller ME, Williamson JD et al. A randomized controlled trial of telephone-delivered cognitive-behavioral therapy for late-life anxiety disorders [on-line]. Am J Geriatr Psychiatry. Available at http://journals.lww.com/ajgponline/Abstract/publishahead/A_Randomized_Controlled_Trial_of.99632.aspx Accessed November 22, 2011.
42. Wetherell JL, Afari N, Ayers CR et al. Acceptance and commitment therapy for generalized anxiety disorder in older adults: A preliminary report. Behav Ther 2011;42:127–134.
43. Shrestha S, Robertson S, Stanley MA. Innovations in research for treatment of late-life anxiety. Aging Ment Health 2011;15:811–821.
44. Peng XD, Huang CQ, Chen LJ et al. Cognitive behavioural therapy and reminiscence techniques for the treatment of depression in the elderly: A systematic review. J Int Med Res 2009;37:975–982.
45. Caudle DD, Senior AC, Wetherell JL et al. Cognitive errors, symptom severity, and response to cognitive behavior therapy in older adults with generalized anxiety disorder. Am J Geriatr Psychiatry 2007;15:680–689.
46. Wetherell JL, Hopko DR, Diefenbach GJ et al. Cognitive-behavioral therapy for late-life generalized anxiety disorder: Who gets better? Behav Ther 2005;36:147–156.
47. Bandelow B, Seidler-Brandler U, Becker A et al. Meta-analysis of randomized controlled comparisons of psychopharmacological and psychological treatments for anxiety disorders. World J Biol Psychiatry 2007;8:175–187.