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Long-Term Effects of Telephone-Delivered Psychotherapy for Late-Life GAD

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Abstract

Objective—To examine the long-term effects of telephone-delivered cognitive-behavioral therapy (CBT-T) compared with nondirective supportive therapy (NST-T) in rural older adults with generalized anxiety disorder (GAD).

Methods—141 adults aged 60 years and older with a principal/co-principal diagnosis of GAD were randomized to either CBT-T or NST-T. CBT-T consisted of up to 11 sessions (9 were required) focused on recognition of anxiety symptoms, relaxation, cognitive restructuring, and use of coping statements, problem-solving, worry control, behavioral activation, exposure therapy, and relapse prevention, with optional chapters on sleep and pain. NST-T consisted of 10 sessions focused on providing a supportive atmosphere in which participants could share and discuss their feelings and did not provide any direct suggestions. Primary outcomes included interviewer-rated anxiety severity and self-report worry severity measured at 9 months and 15 months after randomization. Mood-specific secondary outcomes included self-report GAD symptoms and depressive symptoms.

Results—At 15 months, after adjustment for multiple testing, there was a significantly greater decline in general anxiety symptoms (difference in improvement: 3.31; 95% CI: 0.45–6.17; $t = 2.29$; $df = 136$; $p = 0.024$) and worry (difference in improvement: 3.13; 95% CI: 0.59–5.68; $t = 2.43$; $df = 136$; $p = 0.016$) among participants in CBT-T compared with those in the NST-T group. There were no significant differences between the conditions in terms of depressive symptoms (difference in improvement: 2.88; 95% CI: 0.17–5.60; $t = 2.10$; $df = 136$; $p = 0.0376$) and GAD symptoms (difference in improvement: 1.65; 95% CI: –0.20 to 3.50; $t = 1.76$; $df = 136$; $p = 0.080$).

Conclusions—CBT-T is superior to NST-T in reducing worry and anxiety symptoms 1 year after completing treatment.

Keywords

Social isolation; social network; cognitive functioning; mental demands; aging

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Despite high rates of anxiety and depression among older adults, 70% of those suffering with these conditions do not receive treatment.¹⁻³ Recent efforts have focused on alternative methods of treatment delivery in an attempt to decrease the effect of barriers on receiving treatment. Rural elders are one group that could potentially benefit from such efforts, as they face significant barriers to receiving mental health treatment,⁴ such as transportation difficulties and lack of nearby providers. One method of reducing barriers to treatment is delivery of treatment by telephone.

In a recent study, Mohr et al.⁵ compared face-to-face cognitive-behavioral therapy (CBT) with telephone-delivered CBT (CBT-T) for the treatment of depression in urban primary care patients. They found that both face-to-face and telephone-delivered CBT yielded similar short-term effects on depressive symptoms. Participants who received telephone-delivered CBT, however, were less likely to maintain these gains 6 months later. The authors suggested that studies examining the effects of telephone-delivered psychotherapy should include longer-term follow-up data.

The focus of the current study is on long-term follow-up for generalized anxiety disorder (GAD) in rural-dwelling elders. GAD is characterized by excessive and uncontrollable worry and restlessness, fatigue, poor concentration, irritability, muscle tension, and/or sleep disturbance.⁶ A handful of studies have demonstrated the superiority of CBT to less active comparators (e.g., enhanced usual care, discussion group, wait list) for the treatment of late-life GAD.⁷⁻¹¹ In these studies, the effects of CBT on outcomes were largely maintained at 6 to 12 months of follow-up. Only one study has examined the effects of CBT-T for the treatment of late-life anxiety disorders (>90% had GAD). Brenes et al.¹² found that CBT-T was superior to information only in reducing anxiety, worry, and anxiety sensitivity. Only the reduction in worry was maintained at the 6-month follow-up, however. No one has examined the effects of CBT-T on long-term outcomes assessed 1 year after completion of treatment.

The data for this study are from a randomized clinical trial of CBT-T and telephone-delivered nondirective supportive therapy (NST-T) for the treatment of GAD in rural-dwelling elders. We demonstrated the superiority of CBT-T for reducing worry, GAD symptoms, and depressive symptoms¹³ immediately upon completing treatment. The purpose of the current study is to determine if intervention effects were still present 1 year after completing treatment.

METHODS

Participants were adults aged 60 years or older with a principal or co-principal diagnosis of GAD based on the DSM-IV⁶ and living in one of 41 rural North Carolina counties. Exclusion criteria included current psychotherapy, active alcohol/substance abuse, dementia, global cognitive impairment based on the Telephone Interview for Cognitive Status-modified,¹⁴ psychotic symptoms, active suicidal ideation with plan and intent, change in psychotropic medications within 30 days prior to screening, bipolar disorder, and hearing loss that would prevent an individual from participating in the telephone sessions. This study

was approved by the Wake Forest School of Medicine institutional review board, and all participants provided written informed consent.

Procedure

The recruitment procedure is described elsewhere.¹⁵ In brief, a commercial mailing company was used to mail study flyers to adults aged 60 years and older living in rural North Carolina. Interested participants contacted study personnel and were screened by telephone. Potential participants then underwent a diagnostic assessment and eligibility interview, also completed by telephone. Eligible participants were randomized to one of two treatments (CBT-T or NST-T) and one of three therapists. Randomization was stratified by presence of depression diagnosis and psychotropic medication use. Randomization was conducted using a permuted block algorithm and random block lengths by staff not involved in the assessments.

Assessment

Self-report assessments were collected through the mail. Interviewer-rated measures were collected by telephone by study staff blinded to participant condition. Assessments were conducted at month 0 (baseline), month 2 (mid-intervention; Hamilton Anxiety Rating Scale, Penn State Worry Questionnaire-Abbreviated, and Beck Depression Inventory only), month 4 (immediately post-intervention), month 9 (6 months post-intervention), and month 15 (1 year post-intervention).

Primary Outcomes—Anxiety symptoms were assessed with the Structured Interview Guide for the Hamilton Anxiety Rating Scale (HAMA),^{16,17} a 14-item interviewer-rated measure of general anxiety. Ratings were made on a 5-point scale ranging from 0 (none) to 4 (very severe). This scale has been validated in samples of older adults with GAD and demonstrates good inter-rater reliability ($r = 0.81\text{--}0.85$).^{8,18,19} Ten percent of HAMA interviews were randomly selected and rated by an assessor masked to condition and otherwise not involved with the study (intraclass correlation coefficient: 0.95).

Worry was assessed with the Penn State Worry Questionnaire-Abbreviated (PSWQ-A),^{20,21} an eight-item self-report measure of the frequency and intensity of worry. Participants rated each item on a 5-point scale and responses were summed, with higher scores indicating greater worry. The PSWQ-A has better test–retest reliability and comparable validity as the full-length version.^{20,22} The internal consistency of the PSWQ-A in our previous study was 0.86.¹²

Secondary Outcomes—The GAD-7²³ is a self-report measure of DSM-IV symptoms of GAD. Participants rated seven questions on a 4-point Likert scale, and responses were summed to create a total score. It has good internal consistency ($\alpha = 0.89\text{--}0.92$) and test–retest reliability (intraclass correlation coefficient: 0.83).^{23,24}

The Beck Depression Inventory (BDI)²⁵ is a 21-item measure of depressive symptoms. Responses were summed, with higher scores indicating greater depressive symptoms. The BDI has good psychometric properties in samples of older adults with GAD.²⁶

Interventions

CBT-T consisted of up to 11 weekly sessions focused on recognition of symptoms of anxiety, relaxation, cognitive restructuring, use of coping statements, problem solving, worry control, behavioral activation, exposure therapy, and relapse prevention. Two additional chapters focused on pain and sleep were provided to those participants with problems in these areas. NST-T consisted of 10 weekly sessions focused on providing a “high-quality therapeutic relationship that provides a warm, genuine, and accepting atmosphere through the use of supportive and reflective communications” (p. 9).^{27,28} Supportive therapy focused on reflective listening and supportive statements without introducing other techniques to process emotions. Both treatments were manualized, and therapists underwent training that included practice cases prior to seeing study participants. All sessions were audiotaped, and 10% were reviewed for therapist adherence to the protocol and competence in delivering the interventions by two independent evaluators. Mean ratings for each were above 6 on a 0 to 8 scale. All participants received booster sessions 2, 4, 8, and 12 weeks after completing the weekly sessions.

Statistical Analyses

Demographic and health characteristics were summarized with means, standard deviations, counts, and percentages. Comparison of the outcomes between intervention groups was made using constrained mixed-model repeated measures analysis of covariance with an unstructured covariance matrix to account for the fact that the multiple measurements (at baseline, 2, 4, 9, and 15 months post-randomization) from participants are not independent. The models contained terms for therapist (a factor to which participants were randomized), baseline presence/absence of current depressive disorder (used to stratify randomization), use of psychotropic medications at baseline (used to stratify randomization), and intervention effects that were specific to each follow-up time. Because this was a randomized trial, we constrained pre-randomization, intervention-specific outcome means to be the same.²⁹ For randomized trials, constrained mixed-models can provide more efficient estimates of post-randomization treatment differences when either baseline or post-randomization measures are missing.³⁰ A contrast was used to test the effect of the intervention at the 15-month visit. All analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC).

As this is a tertiary analysis of both primary and secondary outcomes, to control the false discovery rate at the $p = 0.05$ level for the overall question of a long-term effect, we used the multiple-comparison procedure of Benjamini and Hochberg³¹ across the four tests of hypotheses on different outcomes at the 15-month visit. This procedure amounts to ordering the four p values and comparing the largest to 0.05. If the largest p value is less than 0.05, all tests are declared significant. If not, then the procedure is repeated in order, using the following critical values for the second largest p value (0.0375), the third largest (0.025), and the smallest (0.0125). This procedure is slightly less conservative than controlling the familywise error rate with an approach like a Bonferroni correction, whereby all p values would be compared to 0.0125.

Finally, we performed analyses to explore differences in the percentages of participants in each group that experienced clinically meaningful responses to treatment. Fisher's exact tests and nominal p values are reported for these analyses.

RESULTS

Participants ranged in age from 60 to 87 years (M: 66.8 years, SD: 6.2 years). The sample consisted of predominantly white, married, well-educated, women. Most participants were nonsmokers. The most commonly used psychotropic medications were antidepressants and anxiolytics. Almost two-thirds of the sample had hypertension and about one-fifth had diabetes. Over one-third of the sample had a comorbid depression diagnosis and over half had a comorbid anxiety diagnosis. See Table 1 for demographic, health, and baseline outcome variable descriptive information. Figure 1 displays participant flow through the study in a CONSORT diagram.

Primary Outcomes

Figure 2 displays the results for the primary outcomes. There was a significant decline in anxiety symptoms (HAMA) at the 15-month assessment among participants in both treatments (CBT-T -7.60 , 95% CI: -9.84 to -5.36 ; NST-T -4.29 , 95% CI: -6.32 to -2.27), but the decline was significantly greater among participants who received CBT-T (difference in improvement: 3.31 ; 95% CI: 0.45 – 6.17 ; $t = 2.29$; $df = 136$; $p = 0.024$ compared with Benjamini and Hochberg critical value of 0.025). Similarly, at 15 months there was a significant decline in worry (PSWQ-A) among participants in both treatments (CBT-T -11.3 , 95% CI: -13.30 to -9.41 ; NST-T -8.20 , 95% CI: -9.99 to -6.41) but the decline was significantly greater among participants who received CBT-T (difference in improvement: 3.13 ; 95% CI: 0.59 – 5.68 ; $t = 2.43$; $df = 136$; $p = 0.016$ compared with Benjamini and Hochberg critical value of 0.025). (See the Supplemental Table S1 for the analyses at all study time points.)

Secondary Outcomes

Figure 3 displays the results for the secondary outcomes. There was a significant decline at the 15-month assessment in depressive symptoms (BDI) among participants in both treatments (CBT-T -11.3 , 95% CI: -13.3 to -9.19 ; NST-T -8.37 , 95% CI: -10.3 to -6.46), but there was no significant difference in depressive symptoms between interventions (difference in improvement: 2.88 ; 95% CI: 0.17 to 5.60 ; $t = 2.10$; $df = 136$; $p = 0.0376$ compared with Benjamini and Hochberg critical value of 0.0375). Similarly, there was a significant decline in GAD symptoms (GAD-7) in both treatments (CBT-T -5.29 , 95% CI: -6.75 to -3.83 ; NST-T -3.64 , 95% CI: -4.98 to -2.30), but there was no significant effect of treatment on GAD symptoms (difference in improvement: 1.65 ; 95% CI: -0.20 to 3.50 ; $t = 1.76$; $df = 136$; $p = 0.080$ compared with Benjamini and Hochberg critical value of 0.05). (See the Supplemental Table S1 for the analyses at all study time points).

Treatment Response

A meaningful response to treatment with respect to worry has been defined as a 5.5-point reduction in the PSWQ-A.^{9,32,33} A significantly greater percentage of participants in the

CBT-T intervention (86.0%) demonstrated this decline than participants in the NST-T intervention (66.1%; Fisher's exact test; table probability = 0.0094; $p = 0.0172$). For anxiety symptoms, a meaningful response to treatment is a 50% or greater reduction in HAMA scores, and remission has been defined as a HAMA score less than or equal to 7.^{34,35} A greater percentage of participants in the CBT-T condition experienced a 50% or greater reduction in HAMA scores (39.6% versus 27.4%), although this difference was not statistically significant (Fisher's exact test; table probability = 0.0661; $p = 0.2202$). Further, a significantly greater percentage of participants in the CBT-T condition (31.3%) had a HAMA score of 7 or less than participants in the NST-T condition (14.5%; Fisher's exact test; table probability = 0.0210; $p = 0.0397$).

DISCUSSION

Brenes and colleagues previously demonstrated the superiority of CBT-T to NST-T in reducing mood symptoms in older adults with GAD upon intervention completion.¹³ The current findings demonstrate the superiority of CBT-T on reducing worry and general anxiety symptoms measured 12 months after the cessation of the intervention. The effect on depressive symptoms was borderline ($p = 0.0376$ versus a critical value of 0.0375) and the effect was not maintained on GAD symptoms, which was somewhat reduced ($p = 0.088$) by the 1-year follow-up assessment. Our findings add to the literature suggesting that there are long-term effects of CBT for late-life GAD. Stanley et al. have found that the effects of individual CBT on mood outcomes are maintained up to 1 year after completing treatment.^{7,9} Nevertheless, these studies used enhanced usual care and minimal contact control groups as comparators. The current study found that the superiority of CBT-T to NST-T on worry and anxiety was present 1 year after completing treatment.

Our findings contrast with those of Mohr et al.,⁵ who compared face-to-face CBT with telephone-delivered CBT for the treatment of depressive symptoms. Although Mohr et al. found that face-to-face and telephone-delivered psychotherapy produced similar reductions in depressive symptoms at treatment completion, they found that the effects of CBT-T were not maintained at the 6-month follow up. Further, they found that CBT-T was less efficacious for participants with comorbid anxiety.³⁶ In contrast, we found that the effects of CBT-T on worry were comparable to those of other face-to-face CBT trials for late-life GAD,^{7,8,37-39} and the effects were maintained up to 1 year after treatment completion. One reason for the inconsistent findings may be that the current study also included exposure therapy as a component of the CBT treatment, increasing opportunities for social contact compared with Mohr et al.'s participants. Alternatively, a younger urban population (as sampled in Mohr et al.⁵) may have different reasons for seeking telephone-based psychotherapy than rural older adults, such as work schedules and caring for children, whereas older, rural people may be more constrained by a lack of transportation or a lack of local providers.

One interesting finding is that significant differences emerged between the CBT-T and NST-T groups on the HAMA at the 15-month assessment. There was a reduction in anxiety scores from baseline to 15-month follow-up, but participants in the CBT-T group reported significantly greater decline than participants in the NST-T group. This is not likely due to

poor reliability of the HAMA, as 10% of HAMA interviews were randomly selected to be scored by a second person masked to condition and inter-rater reliability was high (intraclass correlation coefficient: 0.95). This result is unexpected, and further studies are needed to confirm this finding.

The primary limitation of this study is the limited generalizability of the findings, as the sample consisted predominantly of white women. Nonetheless, the results of this study demonstrate that a relatively short-term approach has seemingly long-term benefits in reducing worry. At the 1-year follow-up, 86% of participants who received CBT-T experienced a clinically significant reduction in worry symptoms. Further, the 1-year effect of treatment on worry was large (effect size = 0.56), and the effects on anxiety, depression, and GAD symptoms were medium (effect sizes = 0.43, 0.32, and 0.38, respectively). The cost-effectiveness of CBT-T relative to psychotropic medications, and, in particular, anxiolytic medications, needs to be examined. Given intervention brevity, client satisfaction, safety, and efficacy, CBT-T should be recommended by physicians for the treatment of late-life GAD.

CONCLUSIONS

Among rural-dwelling older adults, both CBT-T and NST-T produced improvements in anxiety symptoms, worry, GAD symptoms, and depressive symptoms that were maintained 1 year after treatment. The superiority of CBT-T for reducing worry and anxiety symptoms was present 1 year after treatment, however.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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APPENDIX: SUPPLEMENTARY MATERIAL

Supplementary data to this article can be found online at doi:10.1016/j.jagp.2017.05.013.

FIGURE 1.
CONSORT diagram of the study.

FIGURE 2. Adjusted mean scores of PSWQ-A [left] and HAMA [right] over time, by intervention arm.

FIGURE 3.
Adjusted mean scores of GAD-7 [left] and BDI [right] over time, by intervention arm.

TABLE 1**Baseline Characteristics of Randomized Participants**

Characteristic	Total (N = 141)	CBT (N = 70)	NST (N = 71)
Sex, N (%)			
Male	26 (18.4)	12 (17.1)	14 (19.7)
Female	115 (81.6)	58 (82.9)	57 (80.3)
Race, N (%)			
Black or African American	8 (5.7)	4 (5.7)	4 (5.6)
Caucasian or white	128 (90.8)	64 (91.4)	64 (90.1)
Other	5 (3.5)	2 (2.9)	3 (4.2)
Age, N (%), years			
60–64	66 (46.8)	29 (41.4)	37 (52.1)
65–69	38 (27.0)	20 (28.6)	18 (25.4)
70–74	19 (13.5)	8 (11.4)	11 (15.5)
75+	18 (12.8)	13 (18.6)	5 (7.0)
Education, N (%)			
Less than high school	7 (5.0)	4 (5.7)	3 (4.2)
High school grad or GED	18 (12.8)	9 (12.9)	9 (12.7)
Some college	53 (37.6)	19 (27.1)	34 (47.9)
College degree	63 (44.7)	38 (54.3)	25 (35.2)
Income, N (%)			
Less than \$24,999	33 (23.4)	12 (17.1)	21 (29.6)
\$25,000 to \$49,999	41 (29.1)	21 (30.0)	20 (28.2)
\$50,000 to \$74,999	19 (13.5)	10 (14.3)	9 (12.7)
More than \$75,000	16 (11.4)	7 (10.0)	9 (12.7)
Missing	32 (22.7)	20 (28.6)	12 (16.9)
Marital status, N (%)			
Never been married	1 (0.7)	1 (1.4)	0 (0.0)
Married or living with someone	75 (53.2)	37 (52.9)	38 (53.5)
Divorced	27 (19.2)	13 (18.6)	14 (19.7)
Separated	9 (6.4)	4 (5.7)	5 (7.0)
Widowed	29 (20.6)	15 (21.4)	14 (19.7)
Currently employed, N (%)	38 (27.0)	17 (24.3)	21 (29.6)
Living status, N (%)			
With others	87 (61.7)	41 (58.6)	46 (64.8)
Alone	54 (38.3)	29 (41.4)	25 (35.2)
Smoking status, N (%)			
Never	68 (48.2)	37 (52.9)	31 (43.7)
Current	14 (9.9)	6 (8.6)	8 (11.3)
Former	59 (41.8)	27 (38.6)	32 (45.1)
Current psychotropic medication usage, N (%)			
Anxiolytics	38 (27.0)	22 (31.4)	16 (22.5)

Characteristic	Total (N = 141)	CBT (N = 70)	NST (N = 71)
Hypnotics	12 (8.5)	5 (7.1)	7 (9.9)
Antidepressants	54 (38.3)	29 (41.4)	25 (35.2)
Antipsychotics/neuroleptics	3 (2.1)	1 (1.4)	2 (2.8)
Stimulants	1 (0.7)	0 (0.0)	1 (1.4)
History of self-reported health problems, N (%)			
Hypertension	92 (65.7)	43 (62.3)	49 (69.0)
Myocardial infarction	9 (6.4)	4 (5.8)	5 (7.0)
Congestive heart failure	8 (5.7)	4 (5.7)	4 (5.6)
Stroke	11 (7.9)	5 (7.2)	6 (8.5)
Diabetes	29 (20.6)	9 (12.9)	20 (28.2)
TICS-m score, mean (SD)	36.9 (4.6)	36.7 (4.5)	37.2 (4.6)
PSWQA score, mean (SD)	31.0 (5.57)	30.6 (5.53)	31.4 (5.62)
HAMA score, mean (SD)	21.0 (7.70)	20.1 (7.14)	21.9 (8.18)
BDI score, mean (SD)	23.0 (9.08)	21.6 (8.84)	24.4 (9.18)
GAD-7 score, mean (SD)	11.7 (4.29)	11.1 (4.25)	12.3 (4.28)
Presence of comorbid depression diagnosis, N (%)			
Total	102 (72.3)	51 (72.9)	51 (71.8)
Current	54 (38.3)	23 (32.9)	31 (43.7)
Past	48 (34.0)	28 (40.0)	20 (28.2)
Presence of comorbid anxiety diagnosis, N (%)	72 (51.1)	31 (44.3)	41 (57.8)

Notes: Reproduced with permission from Brenes et al.¹³ Copyright © (2015) American Medical Association. All rights reserved. CBT: cognitive-behavioral therapy; NST: nondirective supportive therapy.