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Maintenance of Quality of Life Improvements in Diverse Rural Older Adults

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Abstract

The maintenance of effects from home-delivered cognitive-behavioral therapy (CBT) was examined. One hundred thirty-four participants, predominantly African American and primarily rural, low-resource, and physically frail, were randomly assigned to either immediate or delayed CBT. The six-month follow-up assessments indicated that among those who remained in the study, participants evidenced significantly improved quality of life and reductions in psychological symptoms at follow-up, relative to pretreatment levels. Posttreatment gains were maintained at follow-up. These data suggest that treatment effects can be achieved and perhaps maintained with a disadvantaged sample of older adults and suggest that evidence-based treatments delivered through nontraditional means can have effects beyond posttreatment.

Keywords

quality of life; rural; CBT; older adults; African American

In our 2007 study, we (Scogin, Morthland, Kaufman, Burgio, Chaplin, & Kong) found that home-delivered cognitive-behavioral therapy (CBT) produced posttreatment improvements in quality of life (QOL), reductions in psychological symptoms, and better self-rated health status than a minimal-support control condition. In this paper, we report the status of participants at six months following the end of treatment. We had predicted that participants would maintain improvements evidenced at posttreatment and that they would be significantly improved at follow-up, relative to pretreatment.

Method

A more detailed description of the method is provided in Scogin et al. (2007). Briefly, inclusion criteria for participation were: (a) 65 years or older, (b) a T-score of 55 or below on the Quality of Life Inventory (QOLI; Frisch, 1992), (c) a T-score of greater than 45 on the Global Severity index (GSI) of the Symptoms Checklist-90-R (SCL-90-R; Derogatis, Rickels, & Rock, 1976), and (d) rural residence. Exclusion criteria were: (a) a self-reported history of schizophrenia, bipolar disorder, or current substance abuse, (b) current receipt of psychotherapy, or (c) significant cognitive impairment as indicated by a score of 23 or less (16 or less for those with less than a ninth grade education) on the Mini-Mental Status Examination (MMSE; Folstein, Folstein, & McHugh, 1975).

Measures

Background information—Information was obtained on age, sex, race, marital status, educational attainment, income, subjective financial burden, and self-reported medical comorbidity.

Outcome measures—The QOLI (Frisch, 1992) was used to measure self-reported overall quality of life. In this inventory, sixteen domains are assessed: health, self-regard, philosophy of life, standard of living, work, recreation, learning, creativity, helping, love relationship, friendships, relationships with children, relationships with relatives, home, neighborhood, and community. Each domain is rated for importance on a 3-point Likert scale and for satisfaction on a 6-point Likert scale. The cross-product is summed, and this score is converted to T-scores. The SCL-90-R (Derogatis, Rickels, & Rock, 1976) was used as a measure of overall psychological symptomatology. We used the Global Severity Index (GSI) as an indicant of overall symptom distress. Health status was evaluated through a self-reported one-item rating of general health (Wisniewski et al., 2003). The general health rating was from poor (1) to excellent (5). These were the primary measures showing evidence of improvement as a result of CBT in the controlled trial portion of this study that was previously reported (Scogin et al., 2007). Consequently, they were used for analyses in this study to assess maintenance.

Procedure

Participants ($n = 134$) were randomized to CBT ($n = 70$) or the minimal support condition (MSC; $n = 64$) following baseline assessment (see Figure 1 and Figure 2). Following randomization, participants in the CBT condition were assessed on outcome variables at posttreatment (Time 2). Those assigned to the MSC were assessed a second time at approximately three months following randomization. Following Time 2 assessment, MSC participants then received CBT as outlined above. Participants were assessed a final time six months following the CBT intervention. Forty-seven participants (34%) completed the six-month follow-up.

Treatment

The therapists were five licensed MSW clinical social workers who had no prior CBT-delivery experience. Treatment was delivered in the homes of participants and followed the manual developed by Thompson, Gallagher-Thompson and Dick (1995) for the delivery of CBT to older adults. The standard course of treatment was 16 sessions, with the opportunity to extend treatment to 20 sessions if needed. Twice-weekly sessions were planned for the first month, with weekly sessions planned for the remainder of the treatment. Major components of the treatment included activity scheduling, identifying and changing unhelpful thoughts, relaxation, and assertiveness. Two booster sessions were scheduled during the six-month follow-up interval, the first at one month following the end of

treatment and the second at three months following the end of treatment. These sessions served as reviews of the principles of CBT and as problem-solving sessions on ways to implement CBT strategies.

Statistical Analyses

For the purpose of the present analyses, the immediate CBT and delayed CBT conditions were collapsed and matched on the time of assessment such that there were pretreatment, posttreatment, and six-month follow-up assessments. For all analyses reported in this article we also tested whether original assignment to the CBT or MSC condition significantly interacted with follow-up findings. There were no such interaction effects and thus collapsing across conditions appears justified. Mixed effects regression analyses (SPSS 16.0) were used on the intent-to-treat sample with a critical alpha level of .05 for determining statistical significance; exact levels are reported in this article unless they are less than .01. An assumption that arises from the use of mixed effects regression analysis in the presence of missing data is that the different patterns of missing data are not systematically associated with different values of the dependent variables (i.e. Missing at Random, MAR Little & Rubin, 1987). Although there is no test of this assumption, we tested the more stringent assumption that the data are MCAR (Missing Completely at Random) using Little's (1988) chi-square test for each of the three dependent variables (QOL, SCL-90, and self-rated health). For all variables the test suggested that the patterns of missing data were consistent with an MCAR model (all p 's > .50). The full randomized sample ($n = 134$) was used for analyses comparing pretreatment and follow-up QOLI, SCL and self-rated health data. For comparisons of posttreatment and follow-up data, only those participants who had completed posttreatment assessments were included in the analyses. This is a more scientifically conservative test of the maintenance of effects as opposed to using data from earlier dropouts in intent-to-treat analyses, given the prediction that no statistically significant change would occur between posttreatment and follow-up.

Results

Participants

Characteristics of the sample are presented in Table 1 and dependent variable means and standard deviations by time of assessment are presented in Table 2. This sample is mostly female (83%), predominately African American (57%) and somewhat older ($M = 75.4$ years) than typically seen in community intervention studies with older adults.

Attrition

Figure 2 illustrates the flow of participants through the study and the reasons for non-completion of the study. We compared those who completed the study ($n = 47$) to those who did not ($n = 87$) on pretreatment characteristics (age, sex, ethnicity, education, income, income adequacy, marital status, and comorbidity) and pre- and posttreatment outcome measures (QOLI, SCL, and self-rated health). We found that those who completed the study had better self-rated health at both pretreatment and posttreatment assessments; no other group differences were significant. These differences in self-rated health should be kept in mind when interpreting the findings of this study.

We also compared those who completed the posttreatment assessment but not the follow-up on the three outcome variables. There were no significant differences on these variables between the two groups.

Finally, we dichotomized the reasons for discontinuation into an external circumstance (e.g., entered long-term care, died, became too sick) or a nonexternal circumstance that appeared

more under the control of the participant (e.g., actively withdrew, project staff lost contact with participant). Twenty-two of the participants who did not complete the study died, were placed in long-term care, or entered hospice care. We were interested in any demographic or outcome variable differences in these broad categories of attrition. Only sex of participant was significant, with 92% of the men categorized as not completing because of external circumstances, whereas 58% of the women did not complete due to external circumstances. No other demographic or outcome measures were related to reasons for attrition.

Outcomes

We used mixed regression analyses to test the effect of treatment on the follow-up outcomes. Results for the QOLI indicated a change from pretreatment to follow-up, $t(178) = 5.31, p < .01; d = 1.11$ and no statistically significant change from posttreatment to follow-up ($t(137) = 1.00, p = .32; d = .23$). For the SCL, results indicated a change from pretreatment to follow-up, $t(179) = -3.76, p < .01; d = .79$ and no statistically significant change from posttreatment to follow-up, $t(138) = -.31, p = .76; d = .02$. For self-rated health, results indicated a change from pretreatment to follow-up ($t(177) = 3.78, p < .01; d = .49$) and no statistically significant change from posttreatment to follow-up, $t(117) = .57, p = .57; d = .002$. These analyses indicate maintenance of gain on these outcome measures. We also conducted the same set of analyses using only data from the 47 participants who completed the follow-up, and we found the same set of results.

We also examined the possibility that participants who responded well to treatment were more likely to complete the six-month follow-up than people who showed a lesser response. We found no evidence for an interaction of attrition status with response to treatment on the outcome measures.

Moderation of Treatment Effect by Ethnicity

In our original report of the controlled trial (Scogin et al., 2007), we found that ethnicity significantly moderated improvement on the QOLI, such that African American participants showed a greater response to CBT than did White participants. This finding was corroborated in the current data compilation as evidenced by a significant Ethnicity $\times$ Time (pretreatment to follow-up) interaction ($t(176) = -2.11, p = .04$), indicating that African American participants demonstrated greater increase in QOLI scores from pretreatment to follow-up. There was no evidence of moderation on the SCL GSI or the health status rating.

Discussion

The results of this follow-up study indicate that home-delivered CBT resulted in maintained improvement of QOL and reduced psychological symptoms for a sample of medically frail, low-resource, and primarily rural older adults. These findings, coupled with the findings from the original controlled trial, are important for several reasons. Most obviously, these results suggest that the improvements evidenced with CBT have some durability. Although we cannot ascribe the maintenance of gain unequivocally to the mechanisms of CBT, it is possible that using strategies such as behavioral activation and identification of unhelpful thoughts helped participants cope with challenges. Second, finding maintenance of gain in QOL suggests that the usefulness of CBT need not be restricted to those with a diagnosable mental disorder. Diminished QOL is associated with many issues of late life, including chronic health conditions, activity restriction, cognitive impairment, and subsyndromal mental disorders; interventions that can improve QOL through psychological means are an important addition to the care of older adults. Third, it is noteworthy that these maintained gains were found in a more cognitively compromised (MMSE $M = 24.9$) and less educated (education years $M = 9.6$) sample than typically seen in community-based studies of mental

health interventions. Also, these data lend further support to the viability of home-delivered CBT, an alternative particularly suited for use by rural-based service agencies. Moreover, the providers in this study were masters' level social workers with no previous experience in CBT delivery. Finally, these findings suggest that gains can be maintained among an ethnically diverse population of older adults. The majority of participants in this study were African American. These data add to the sparse literature on the benefit of psychotherapeutic intervention (in particular CBT) to older African Americans.

African American participants evidenced a greater response on the QOLI from pretreatment to follow-up than did White participants. This was an unexpected finding and the reasons for such differential improvement are not apparent. Prior analyses indicated that African American participants had significantly lower years of education and MMSE scores at baseline, but these factors did not appear to diminish the response to the intervention. One might expect these characteristics to attenuate improvement, but this did not appear to be the case with the QOLI end-point. Further research to replicate and better understand this moderation would be helpful.

With regards to health status, improvements in self-rated health were maintained at follow-up. This is a particularly interesting finding because this sample might best be described as highly vulnerable. The finding that improvements in self-rated health were durable adds further credence to the potential benefits of psychological treatment for vulnerable older adults.

Limitations

Several limitations to this follow-up evaluation should be noted. First, the follow-up was not of a controlled nature; we did not have a group of untreated randomly assigned participants to illuminate the natural course of six-month changes in QOL, psychological symptoms, and self-rated health. Arguably, participants could have maintained their status on these variables without having received a psychological intervention. Moreover, we cannot be certain that the maintained improvements are due to the ingredients of CBT. Finally a high percentage of participants were unavailable for follow-up assessment. The sample for this study was quite vulnerable, and thus, it is not surprising that the number of participants was considerably reduced at follow-up. Comparison of those who completed the study versus those who did not indicated that completers had better self-rated health at both pre- and posttreatment assessments. Both the high rate of attrition, and the differential attrition due to self-rated health, complicate interpretation of the follow-up results and suggest caution in attributing maintenance to the effects of the intervention.

Summary

Participants receiving CBT who remained in the study maintained gains six months following the termination of treatment. For this follow-up evaluation, we used only those endpoints found significantly improved in the original clinical trial: QOL, psychological symptoms and self-rated health. These findings add to the broad efficacy base for CBT and suggest that efforts to make this and similar evidence-based treatments available to older adults should be continued.

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Figure 1. Design of follow-up study. Note. CBT = Cognitive Behavioral Therapy; MSC = Minimal Support Condition. Arrows represent assessment data collapsed for analyses.

Figure 2.
Flow of participants through study and reasons for discontinuation.

Table 1Pretreatment Sample Characteristics of Full Randomized Sample ($n = 134$) and Study Completers ($n = 47$)

Variable	$M \pm SD$ or n (%)	$M \pm SD$ or n (%)
Age	75.4 $\pm$ 7.1	75.0 $\pm$ 7.3
Sex		
Female	111 (82.8)	39 (82.9)
Male	23 (17.2)	8 (17.0)
Race/ethnicity		
African American/Black	77 (57.5)	29 (61.7)
Caucasian/White	57 (42.5)	18 (38.3)
Years of education		
0–8	49 (36.6)	19 (40.4)
9–11	33 (24.6)	11 (23.4)
12	29 (21.6)	12 (25.5)
13–16	20 (14.9)	4 (8.5)
17–20	3 (2.2)	1 (2.1)
Income		
\$0–\$4999	3 (2.2)	0 (0.0)
\$500–\$9999	59 (44.0)	24 (51.1)
\$10000–\$14999	25 (18.7)	9 (19.1)
\$15000–\$19999	9 (6.7)	3 (6.4)
\$20000–\$49999	11 (8.2)	4 (8.5)
\$50000–\$70000 >	3 (2.2)	1 (2.1)
Income Adequacy		
Not difficult	14 (10.4)	3 (6.4)
Not very difficult	17 (12.7)	4 (8.5)
Somewhat difficult	50 (37.3)	20 (42.6)
Very difficult	49 (36.6)	18 (38.3)
Marital status		
Never married	8 (6.0)	4 (8.5)
Married	27 (20.1)	5 (10.6)
Widowed	78 (58.2)	27 (57.4)
Divorced	12 (9.0)	5 (10.6)
Separated	8 (6.0)	5 (10.6)
Self-reported level of health		
Poor	46 (34.3)	10 (21.3)
Fair	60 (44.8)	25 (53.2)
Good	18 (13.4)	7 (14.9)
Very good	6 (4.5)	3 (6.4)
Excellent	2 (1.5)	1 (2.1)
Comorbidity	3.05 $\pm$ 1.3	2.41 $\pm$ 1.5
MMSE	24.9 $\pm$ 3.5	25.8 $\pm$ 3.2

Note. MMSE = Mini-Mental State Examination. Table includes 134 randomized participants who completed baseline and 47 participants who completed follow-up. Missing data for participants (for baseline and follow-up assessments, respectively) in the following categories: income (24 and 6), income adequacy (4 and 2), marital status (1 and 1), self-reported level of health (2 and 1), comorbidity (7 and 3). Comorbidity is the number of reported chronic health conditions from a list of seven.

Table 2

Means and Standard Deviations for Outcome Variables

Measures	Pretreatment	Posttreatment	Follow-up
QOLI	43.37 (11.28) (<i>n</i> = 134)	52.02 (12.69) (<i>n</i> = 93)	54.43 (14.55) (<i>n</i> = 46)
SCL-90 (GSI)	59.40 (8.66) (<i>n</i> = 134)	54.25 (10.30) (<i>n</i> = 93)	53.68 (9.84) (<i>n</i> = 47)
General Health Rating	1.93 (.92) (<i>n</i> = 133)	2.44 (.97) (<i>n</i> = 73)	2.54 (1.00) (<i>n</i> = 46)

Note. QOLI = Quality of Life Inventory; SCL-90 (GSI) = Symptom Checklist-90 (Global Severity Index).