Computer-assisted Cognitive-Behavior Therapy for Depression: Acute Treatment Phase Outcome

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ABSTRACT

154 drug-free patients with major depressive disorder were randomly assigned to treatment with standard CBT or computer-assisted CBT (CCBT). Treatment lasted 16 weeks. The total amount of clinician time was reduced in CCBT to about 1/3 of the time in standard CBT.

No differences in mean post-treatment HAMD-17 scores were observed, and completion rates were the same for both treatments. These results indicate that CCBT can provide an effective treatment while substantially reducing the amount of clinician time and effort required to deliver evidence-based therapy for depression.

BACKGROUND

- Computer-assisted CBT has been shown to be an effective treatment for depression[1-4]
- CCBT could reduce cost and expand access to psychotherapy .[1, 2, 5] .
- However, many RCTs have been flawed. Common problems have been failure to reliably assess diagnosis, lack of control of other treatments, and omission of a comparator therapy[6].

METHODS

Two NNDC Depression Sites: University of Louisville
University of Pennsylvania

Patients

- 154 adult outpatients with MDD diagnosis
- 17-item HRSD ≥ 14
- Not on antidepressants or other psychotropic medications
- Randomized to standard CBT or CCBT with *Good Days Ahead* computer program.

Exclusion criteria: bipolar disorder, current alcohol or drug dependence, psychotic symptoms, organic brain syndrome; ADHD; learning disorder; borderline, antisocial, or paranoid personality disorder; current active suicide potential; reading level <9th grade on WRAT-IV; <10th grade education or GED; severe or poorly controlled medical disorders that would interfere with participation in treatment.

Procedures

- Diagnostic evaluation with SCID
- Blind Assessments: pre-treatment, weeks 4, 8, & 16

Therapists

- Certified by the Academy of Cognitive Therapy
- Provided both CBT and CCBT.
- Therapist adherence and skill monitored.

Treatment Conditions

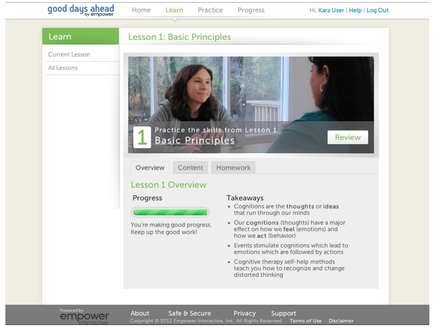
CBT:

- 16-week, 20-session protocol used by Thase et al.[7]
- 50-minute therapy sessions
- Twice weekly in weeks 1-4, weekly in weeks 5-16

CCBT

- 16-week, 12-session protocol.
- Session 1: 50-minute therapy + 25-35 min *GDA*.
- Sessions 2-12: 25-minute therapy + 25-min *GDA*
- All 9 modules of GDA completed in weeks 1-8

CBT = 16.6 hours of direct therapist contact
CCBT = 5.5 hours of direct therapist contact



COMPUTER-ASSISTED CBT

Good Days Ahead* (www.empower-interactive.com)

- Content authored by Jesse H. Wright, MD, PhD, Andrew S. Wright, MD, and Aaron T. Beck, MD
- 9 modules cover the basic principles and skills of CBT for depression
- Multimedia format with extensive use of video and audio
- Written at 9th reading grade level.
- Analyzes data from program and provides feedback to patients and clinicians.

Measures

- Diagnosis. SCID I & II
- Symptom Severity. HRSD-17, IDS-SR, and BDI-II.
- Additional outcome measures: GAF, Automatic Thoughts Questionnaire (ATQ), Inventory of Interpersonal Problems (IIP)
- Cost-effectiveness and patient perceptions of treatment were also assessed and will be reported later.

Statistical Methods:

- Baseline characteristics were compared using the Chi-square test and t-test.
- Confidence intervals were presented for the mean differences of outcome measures for CBT and CCBT completers and compared using the t-test.
- Effect sizes were calculated using Cohen's d statistic.

RESULTS

Patient Characteristics

There were no significant differences in baseline patient characteristics in the two treatment groups.

Completion Rates

Treatment completion rates were identical for CBT (84%) and CCBT (84%).

Table 1: Baseline characteristics of outpatients with MDD

Characteristic	*CBT*		*CCBT*		*Total*		*p*
	n	%	n	%	n	%	
Race							0.28
White	54	71.1	62	81.3	116	76.2	
Black	20	25.0	12	14.7	32	19.8	
Other	3	3.9	3	4.0	6	4.0	
Hispanic							0.74
No	70	92.1	72	93.5	142	92.8	
Yes	6	7.9	5	6.5	11	7.2	
Gender							0.73
Male	25	32.5	27	35.1	52	33.8	
Female	52	67.5	50	64.9	102	66.2	
Education							0.60
< High School	1	1.3	0	0	1	0.7	
High School but < College	34	44.2	34	44.2	68	44.1	
≥College	42	54.5	43	55.8	85	55.2	
	n	Mean (SD)	n	Mean (SD)	n	Mean (SD)	
Age (in years)	76	45.3 (13.8)	77	45.8(15)	153	45.5 (14.4)	0.85

Acute Treatment Phase Outcome: Depression Measures

There were no significant differences found between CBT and CCBT on any of the three measures of depression at the end of 16 weeks of treatment.

Table 2: Mean (SD) and its 95% confidence interval of outcome on primary depression measures at week 16

Symptom severity (week 16)	CBT			CCBT			p
	n	Mean (SD)	95% CL of Mean	n	Mean (SD)	95% CL of Mean	
HRSD-17	62	9.2 (6.3)	7.6 - 10.8	64	8.9 (5.6)	7.5 - 10.3	0.77
IDS-SR	61	16.1 (12.3)	12.9 - 19.2	61	16.9 (11.2)	14 - 19.8	0.70
BDI-II	62	11.3 (11.1)	8.5 - 14.1	64	11.7 (9.3)	9.3 - 14	0.83

Acute Treatment Phase Outcome: Other Measures

Data from additional outcome measures showed no significant differences between CBT and CCBT.

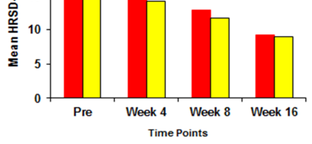
Table 3: Mean (SD) and its 95% confidence interval of

Symptom severity (week 16)	*CBT*			*CCBT*			*p*
	n	Mean (SD)	95% CL of Mean	n	Mean (SD)	95% CL of Means	
GAF	62	69.4 (9.3)	67.1 - 71.8	64	71.4 (10.7)	68.7 - 74.1	0.28
ATQ	62	54.2 (26.3)	47.6 - 60.9	64	52.1 (19.8)	47.2 - 57.1	0.61
IIP	61	71.7 (38.3)	61.9 - 81.5	60	73.9 (33)	65.3 - 82.4	0.74

Acute Treatment Phase Outcome: Course Over 16 Weeks

There were no significant differences in the time course of outcome between CBT and CCBT.

Figure 1: Acute Treatment Phase Outcome over 16 Weeks



Remission Rates for CBT and CCBT. There were no significant differences in remission rates (HRSD at 16 weeks ≤ 7, intention-to-treat analysis) between CBT (39.0%) and CCBT (39.0%); p = 0.86.

Effect sizes for CBT and CCBT. Strong pre-post effect sizes were observed for both CBT (2.0) and CCBT (2.4).

DISCUSSION

This study on drug-free patients with MDD compared CCBT to a full, 20-session course of standard CBT. Other than one preliminary study by Wright et al [1], there have been no previous investigations of computer-assisted therapy for depression in patients not receiving antidepressants. Because earlier studies of CCBT typically have compared CCBT to treatment as usual or a wait list control, it has been unclear how CCBT would fare when tested against the benchmark of a well-established, evidence-based treatment for depression.

The results of this investigation indicate that there is no loss of effectiveness of CBT when delivered via a hybrid method of limited therapist contact plus use of a CBT computer program. The software used in this investigation has been well-accepted by patients with depression and has produced no adverse effects[8].

Limitations of this study include lack of a no-treatment control group and/or a control group treated with antidepressants. However, earlier research with this method of CCBT showed significantly greater improvement with CCBT than a wait list control [1]. Also, remission rates in this study are comparable to those seen with antidepressant treatment[9].

The follow-up assessment phase of the investigation and a cost-effectiveness analysis will be completed within the next 6 months. If long-term results continue to show no differences between CCBT and CBT, and the cost-effectiveness analysis favors CCBT as predicted, there will be additional support for the dissemination of CCBT into clinical practice.

CONCLUSION

No significant differences in treatment outcome were found between computer-assisted CBT and a full course of standard CBT. We conclude that CCBT offers a method that improves the efficiency of treatment and has large potential for reducing costs and enhancing access to effective therapy for depression.

Acknowledgement: This research was supported by NIMH grant R01MH082762

Disclosure: Jesse H. Wright, M.D., Ph.D. has an equity interest in Empower Interactive, developers of the software used in this research. This conflict-of-interest is managed by a plan with the University of Louisville. He receives no financial remuneration from Empower Interactive. None of the other investigators have a conflict-of-interest regarding this study.

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