

SHORT REPORT

The efficacy of mindfulness-based cognitive therapy to improve depression symptoms and quality of life in individuals with memory difficulties and caregivers: A short report

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Abstract

Introduction: Depression symptoms are common for older adults with memory difficulties and their caregivers. Mindfulness-based cognitive therapy (MBCT) reduces the risk of relapse in recurrent depression and improves depression symptoms. We explored recruitment and retention success and preliminary effect sizes of MBCT on depression and anxiety symptoms, as well as mindfulness facets, in individuals with memory difficulties and their caregivers.

Methods: A difficulty with memory group (DG) and caregiver group (CG) were randomized into either the MBCT intervention or waitlist control. After serving as controls, participants received the intervention. Mean pre-post changes by group were compared and effect sizes computed. Correlations between mindfulness facets and depression symptoms are also presented.

Results: Only 47% of the initial participants completed the study. The intervention did not have an effect on the outcome variables examined. However, improvements in non-judgmental scores were associated with reductions in the number of depression symptoms reported by DG participants ($r = -0.90$, 95% confidence interval [CI]: $-0.98, -0.52$) and CG participants ($r = -0.76$, 95% CI: $-0.95, -0.19$). Furthermore, improvements in awareness scores ($r = -0.69$, 95% CI: $-0.93, -0.05$) and level of burden ($r = 0.87$, 95% CI: $0.49, 0.97$) also significantly correlated with reduced depression symptoms in the CG group.

Conclusions: By determining preliminary MBCT effect sizes in individuals with memory difficulties and their caregivers, research with larger, controlled samples is now justified to determine the true effects of MBCT in these populations.

KEYWORDS

caregivers, cognitive impairment, cognitive therapy, depression, meditation, memory, mindfulness, mindfulness-based cognitive therapy, quality of life

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1 | INTRODUCTION

Besides early cognitive decline, increases in depression symptoms^{1,2} and apathy^{3,4} are often reported by individuals with mild cognitive impairment, Alzheimer's disease (AD), and other dementias. Heightened levels of depression are related to decreased cognitive function, changes in activities of daily living,² and lower quality of life.⁵ Caregivers can also experience high levels of depression, emotional stress, and burden,⁶ and often feel challenged to cope with their own distress.⁷

Mindfulness-based cognitive therapy (MBCT) has the potential to improve quality of life for individuals with memory difficulties and their caregivers. MBCT integrates aspects of cognitive behavioral therapy (CBT) with training in mindfulness meditation.⁸ Through meditation, participants learn to pay greater attention, boost concentration, increase awareness of dysphoric thinking, and learn how to de-center from problematic thoughts to apply more skillful means of coping. MBCT helps individuals regulate their emotions, and supports self-focus, acceptance, and kindness.⁹

Past research has found associations between MBCT interventions and reductions in depression symptoms in adults with prior major depression.¹⁰⁻¹³ In individuals with mild neurocognitive deficits, MBCT increased quality of life^{10,11} and mindfulness.¹¹ Results from a qualitative study indicated that older adults with depression and/or anxiety who participated in MBCT experienced fewer anxious and intrusive thoughts and saw improvements in their sleep.¹² Among caregivers, MBCT interventions were associated with a decrease in self-rated stress compared to a respite-only control group.¹³

Despite its potential, there is little research examining the effects of MBCT on older adults with cognitive impairment and their caregivers. However, to justify the resources and time required to conduct such a study, smaller feasibility studies are necessary. Accordingly, we aimed to: (1) examine recruitment and retention issues in mindfulness-based research involving participants with cognitive impairment; (2) determine preliminary effect sizes after MBCT on depression, apathy, quality of life, mindfulness, and self-compassion in individuals with cognitive impairment, and their caregivers; and (3) examine associations between changes in mindfulness and self-compassion, burden, coping, and depression symptoms.

2 | METHOD

2.1 | Participants

Participants were recruited from the community, through referral from a local geriatrician, physicians, the local Alzheimer's Society, posters in general practitioners' offices, word of mouth, and media sources. Evidence of depression symptoms with either a minimum score of 10 on the Geriatric Depression Scale (GDS) and/or a score of 10 on the depression subscale from the Depression, Anxiety and Stress Scale (DASS) was required for participation (the only exception was when we recruited dyads, where at least one person was required to have

RESEARCH-IN-CONTEXT

1. **Systematic review:** Mindfulness-based cognitive therapy demonstrates potential to improve depressive symptoms, quality of life, anxiety, and stress in certain populations. Yet, the utility of the intervention for older adults with cognitive decline or their caregivers is largely unexplored.
2. **Interpretation:** Results showed that while outcomes related to depression, stress, and anxiety did not change pre-post, increases in certain facets of mindfulness were associated with decreases in depression symptoms. These effects were more evident for caregivers than those with cognitive decline. A low completion rate suggests barriers to participation.
3. **Future directions:** Further research is necessary to explore how mindfulness is associated with improvements for older adults with cognitive decline and their caregivers. Future work must address the barriers that impede recruitment and retention in these populations.

depression symptoms). The difficulties with memory group (DG) consisted of individuals who scored between 19 and 25 on the Montreal Cognitive Assessment (MoCA). The caregiver group (CG) comprised caregiver participants who were either spouses of DM group participants (i.e., a dyad) or participated on their own. Participants were excluded if there was evidence of unusual psychological processes and neurological disorders as assessed by the Symptom Checklist-90 Revised (SCL-90-R) and a demographic/health questionnaire. Other eligibility criteria included fluency in English, and normal or corrected-to-normal vision. The local university and hospital research ethics boards approved the study as research involving human participants; informed consent was obtained from each participant.

2.2 | Measures

In addition to data mentioned above, we collected data specific to mindfulness, quality of life, and burden (for caregivers). We used the Five Facet Mindfulness Questionnaire (FFMQ), the Quality of Life in Alzheimer's Disease measure (QoL-AD), the Self-Compassion Scale (SCS), and the Apathy Evaluation Scale (AES). The CG completed informant versions of the latter two measures, the FFMQ, and two additional measures assessing burden and coping: the Zarit Burden Interview (ZBI)-short version, and the Brief Coping Orientation to Problems Experienced (Brief-COPE) Inventory. All measures are cited in Appendix A.

2.3 | Intervention

The MBCT intervention consisted of eight weekly 2-hour sessions. Participants engaged in concurrent DG or CG sessions involving formal

and informal mindfulness meditation, group discussion, and inquiry. Development of a daily meditation practice was assigned as homework (using a guided meditation CD), and participants were asked to self-report their daily meditation time and observations (changes, difficulties, etc.) DG sessions were modified to accommodate memory difficulties by adjusting the speed, intensity, and methods of teaching. Control participants were placed on a wait list to receive the MBCT intervention.

2.4 | Procedure

After screening, eligible participants were randomized (stratified by sex, age, and depression scores) to the control or intervention arm and

completed additional baseline measures. After completion of the 8-week intervention period, participants were re-assessed. Control participants had the opportunity to receive the intervention, followed by an additional post-intervention assessment.

2.5 | Data analyses

We present separate analyses for individuals experiencing memory difficulties and caregivers (SPSS 24.0; IBM, 2016). Because the intervention and control group sizes were too small to conduct meaningful parallel analyses we combined all participants who completed the MBCT intervention (treatment arm and crossover controls) and conducted pre-post analyses using paired t-tests. Change in mindfulness

TABLE 1 Depression, anxiety, stress, apathy, QoL, mindfulness and self-compassion, burden and coping outcomes pre- and post- MBCT intervention in difficulty with memory and caregiver group participants

Measure	Group	Pre mean score (SD)	Post mean score (SD)	t-test mean difference	Paired t score (p-value)	Effect size ^c
Depression (GDS) ^a	DG	12.86 (8.73)	10.88 (8.32)	-1.99	-2.36 (0.050)	-0.23
	CG	14.83 (8.50)	12.56 (8.63)	-2.27	-1.52 (0.168)	-0.27
Depression (DASS) ^a	DG	6.13 (4.22)	6.63 (4.41)	0.50	0.41 (0.695)	0.12
	CG	7.89 (7.29)	6.11 (4.68)	-1.78	-1.39 (0.202)	-0.22
Anxiety (DASS) ^a	DG	5.00 (3.78)	5.25 (4.77)	0.25	0.15 (0.888)	0.06
	CG	3.78 (3.63)	3.56 (2.79)	-0.22	-0.30 (0.772)	-0.06
Stress (DASS) ^a	DG	6.38 (4.21)	6.38 (4.10)	0.00	0.00 (1.00)	0.00
	CG	6.44 (4.59)	6.22 (4.27)	-0.22	-0.24 (0.813)	-0.05
Apathy (AES) ^b	DG	32.13 (6.45)	33.00 (7.54)	0.88	0.53 (0.610)	0.12
	CG	50.34 (13.59)	51.56 (14.69)	1.22	0.94 (0.377)	0.08
Awareness (FFMQ) ^b	DG	17.50 (3.07)	17.25 (2.49)	-0.25	-0.26 (0.802)	-0.09
	CG	17.11 (3.89)	14.44 (4.39)	-2.67	-1.97 (0.084)	-0.64
Describing (FFMQ) ^b	DG	16.38 (2.62)	17.25 (3.81)	0.88	0.68 (0.519)	0.26
	CG	17.56 (4.22)	15.33 (4.03)	-2.22	-1.71 (0.126)	-0.54
Non-judging (FFMQ) ^b	DG	15.63 (3.70)	16.13 (3.98)	0.50	0.27 (0.792)	0.13
	CG	13.33 (6.00)	14.22 (5.09)	0.89	0.45 (0.665)	0.16
Non-reactivity (FFMQ) ^b	DG	15.25 (3.65)	15.88 (2.59)	0.63	0.38 (0.716)	0.20
	CG	14.56 (4.33)	14.78 (3.38)	0.22	0.13 (0.899)	0.06
Observing (FFMQ) ^b	DG	14.71 (3.64)	14.00 (3.74)	-0.71	-0.80 (0.454)	-0.19
	CG	15.22 (3.53)	14.22 (4.02)	-1.00	-1.46 (0.184)	-0.26
Quality of life (QoL-AD) ^b	DG	2.46 (0.32)	2.63 (0.38)	0.17	2.53 (0.039)	0.46
	CG	2.04 (0.46)	2.05 (0.49)	0.02	0.29 (0.782)	0.03
Self-compassion (SCS) ^b	DG	3.25 (0.39)	3.39 (0.24)	0.14	1.17 (0.280)	0.40
	CG	3.12 (0.78)	3.00 (1.01)	-0.12	-0.69 (0.509)	-0.12
Burden (ZBI) ^a	CG	21.00 (14.34)	17.33 (11.86)	-3.66	-1.00 (0.345)	-0.27
Coping (COPE) ^a	CG	56.67 (9.71)	58.56 (6.84)	1.89	0.80 (0.445)	0.21

Abbreviations: AES, Apathy Evaluation Scale; CG, caregiver group; COPE, Coping Orientation to Problems Experienced; DASS, Depression, Anxiety and Stress Scale; DG, difficulty with memory group; FFMQ, Five Facet Mindfulness Questionnaire; GDS, Geriatric Depression Scale; MBCT, mindfulness-based cognitive therapy; QoL-AD, Quality of Life in Alzheimer's Disease; SCS, Self-Compassion Scale; SD, standard deviation; ZBI, Zarit Burden Interview.

^aNegative change scores are considered positive.

^bPositive change scores are considered positive.

^cCalculated using Dunlap T_c .¹⁴

TABLE 2 Correlations between the pre- and post-intervention change scores and depression symptoms in difficulty with memory and caregiver participants

Measures	Depression symptoms (GDS)	
	DG <i>r</i> (95% CI)	CG <i>r</i> (95% CI)
Depression (DASS)	0.55 (−0.26, 0.90)	0.23 (−0.52, 0.77)
Anxiety (DASS)	0.50 (−0.32, 0.89)	0.26 (−0.49, 0.79)
Stress (DASS)	0.46 (−0.36, 0.88)	0.62 (−0.07, 0.91)
Quality of Life (QoL-AD)	0.14 (−0.63, 0.77)	0.60 (−0.11, 0.90)
Non-Reactivity (FFMQ)	−0.06 (−0.73, 0.67)	0.13 (−0.58, 0.73)
Observing (FFMQ)	0.59 (−0.30, 0.93)	0.26 (−0.49, 0.79)
Awareness (FFMQ)	−0.54 (−0.90, 0.27)	−0.69 (−0.93, −0.05)
Describing (FFMQ)	0.67 (−0.06, 0.93)	0.15 (−0.57, 0.74)
Non-Judging (FFMQ)	−0.90 (−0.98, −0.52)	−0.76 (−0.95, −0.19)
Self-Compassion (SCS)	−0.48 (−0.88, 0.34)	−0.64 (−0.92, 0.04)
Burden (ZBI)	–	0.87 (0.49, 0.97)

Abbreviations: CG, caregiver group; CI, confidence interval; DASS, Depression, Anxiety and Stress Scale; DG, difficulty with memory group; FFMQ, Five Facet Mindfulness Questionnaire; GDS, Geriatric Depression Scale; QoL-AD, Quality of Life in Alzheimer's Disease; SCS, Self-Compassion Scale; ZBI, Zarit Burden Interview.

outcomes were correlated with changes in depression symptoms using Pearson's *r*.

3 | RESULTS

Thirty-six individuals volunteered. Twelve individuals did not start the trial (33% loss): seven individuals did not meet the MoCA eligibility criterion and five others declined to participate after enrolment, but before intervention initiation. The resulting 24 participants were randomized to the control and intervention arms of which 21 (11 interventions and 10 controls) completed the parallel phase of the trial (88% completion rate). Among the 5 DG and 5 CG control participants, respectively 4 (80% completion rate) and 2 (40% completion rate) completed the intervention after the cross-over.

The pre-post analyses revealed one statistically significant change (quality of life scores improved in DG participants; see Table 1). There was a statistically significant negative correlation between non-judgmental scores (measured by the FFMQ) and depression symptom scores (measured by the GDS) in both the DG ($r = -0.90$, 95% confidence interval [CI]: $-0.98, -0.52$) and the CG ($r = -0.76$, 95% CI: $-0.95, -0.19$), indicating that participants whose attitude became less judgmental had a reduction in depression symptoms (Table 2). Similarly, greater reductions in depression symptoms were observed among the CG participants who had greater improvements in acting with awareness scores ($r = -0.69$, 95% CI: $-0.93, -0.05$) and greater reductions in burden scores ($r = 0.87$, 95% CI: $0.49, 0.97$).

4 | DISCUSSION

We sought to examine recruitment/retention issues and determine preliminary effect sizes after MBCT on several mental health and mindfulness outcomes, as well as associations between changes in mindfulness and changes in depression.

We experienced challenges in recruiting and retaining participants—only 17 of the 36 initial participants completed the study. Recruitment and retention issues with cognitively impaired populations are known.^{15–17} Negative stigma around memory or other cognitive problems, and/or a caregiver's need for assistance may influence recruitment success in older adult populations,¹⁷ particularly in minority, ethnic groups.¹⁶ Moreover, caregivers may serve as the proxy, substitute decision-maker for individuals with dementia.¹⁵ While our sample population consisted of individuals who could consent to participating, it is possible that caregivers had some influence on DG group participation.

Recruitment and retention in our study may have been improved by addressing caregiver-specific barriers including time limitations, routine disruptions, and cost-benefit perceptions. It may also be desirable to address the unique challenges associated with differing severity of cognitive difficulties and/or other forms of impairment across individuals to support full involvement with the intervention. Hence, research on the specific accommodations required to facilitate participation, including cultural considerations, is desirable. Furthermore, work to investigate the value of the intervention at various stages of the condition, including with caregivers whose loved ones could not benefit from mindfulness interventions because of severe cognitive challenges, appears warranted.

Regarding the intervention results for the DG, MBCT did not result in statistically significant changes. The largest effect sizes identified were for quality of life, self-compassion, and to some extent depression. For the CG, only quality of life improved post-intervention. Effect sizes for awareness and describing were in the moderate range, but in the opposite direction from our expectations. MBCT may have, in some individuals, a negative impact.¹⁸ This finding could be explained by challenging life events during the study, or simply an artifact of the small study sample size.

Overall, other researchers have reported similar results to ours. In persons with mild dementia and depression, both Payne¹⁹ and Noone²⁰ found no improvements in quality of life after MBCT, nor reductions in depression symptoms. Oken et al.¹³ found no improvements in mindfulness, coping, and depression for caregivers of people with dementia compared to controls who participated in a separate education program, but did compared to a respite-only control group.¹³

We found that becoming less judgmental correlated with reductions in depression symptoms in both groups. Among caregivers, our results indicated that acting with greater awareness and reductions in burden were associated with lower levels of depression. This reflects MBCT's aim to improve self-awareness of, and disengagement from, negative judgmental thinking about one's own depression symptoms.²¹

Our study was limited by small sample sizes, yielding imprecise estimates and possible spurious findings. Our effect sizes were low, except for a few variables, and a larger sample size might not make a meaningful difference. Nonetheless, focusing interventions on those aspects of MBCT that were most highly correlated with reductions in depression symptoms might be an avenue worth pursuing. Such direction must consider the barriers to participation that these populations experience to improve recruitment and retention.

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CONFLICTS OF INTEREST

The authors report no conflicts of interest.

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APPENDIX A

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