Feasibility of Central Meditation and Imagery Therapy for Dementia Caregivers

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Abstract

Objectives—Family dementia caregivers are at high risk of depression and burnout. We aimed to assess the feasibility of Central Meditation and Imagery Therapy for Caregivers (CMIT-C), a novel 8-week group meditation and guided imagery group therapy program, for dementia caregivers reporting stress due to caregiving responsibilities.

Methods—12 family dementia caregivers enrolled in CMIT-C. Primary outcomes included depression and anxiety, and secondary included insomnia, quality of life, and mindfulness. Changes over the study and three month follow-up were analyzed with non-parametric related samples tests. Correlations of feeling state changes from meditation diaries at 1 week were made with symptom changes post meditation training.

Results—10 participants completed the study. Completers came to an average of 7 ± 1 sessions out of a possible 8, and turned in home practice logs $90 \pm 10\%$ of the time. Anxiety, depression and insomnia symptoms decreased, and mindfulness ratings improved with large effects (all $p < 0.05$ and Cohen's d ≥ 0.7). Gains were stable at 3 months. Early response during the first week of meditation practice was associated with subsequent home meditation practice, anxiety change at eight weeks, and endpoint satisfaction with CMIT-C.

Conclusions—CMIT-C is a feasible intervention for dementia caregivers. Results suggest that this therapeutic technique can reduce symptoms of anxiety, depression, and insomnia, and increase levels of mindfulness. Early response to meditation practice predicted those with the greatest short-term benefits, and this may inform future studies of meditation. Larger, controlled efficacy studies of CMIT-C for dementia caregivers are warranted.

Keywords

caregivers; dementia; mindfulness; meditation; depression; anxiety

Introduction

Millions of people provide care for a family member with dementia (Schulz and Martire, 2004). While the caregiving role may benefit both the caregiver and care recipient, it

frequently comes at great cost to the caregivers themselves, who suffer from a high prevalence of depressive and anxiety disorders (Schulz *et al.*, 1995), along with physical morbidity including reductions in immune system function (Kiecolt-Glaser *et al.*, 1991), and increased mortality (Schulz and Beach, 1999). Demographic factors, relationship to the patient with dementia, resilience of the caregiver, as well as behavioral disturbances of the patient predispose caregivers to negative outcomes (Covinsky *et al.*, 2003; O'Rourke *et al.*, 2010; Teri, 1997).

In the stress/health model of caregiving (Schulz and Martire, 2004), the caregiver experiences a number of stressors including problem behaviors on the part of the relative with dementia, decline in the quality of the relationship with the relative, loss of time, and physical exhaustion. Caregivers appraise the stressors, and may experience severe stress if they perceive the stressors as overwhelming their ability to cope. Depending on whether their coping style is characterized by avoidance or approach behaviors, they may seek ways of attempting to avoid certain thoughts or feelings about the future (a maladaptive strategy for chronic stressors) (Billings *et al.*, 2000), or (more optimally) they might engage in approach oriented behaviors such as problem solving, seeking emotional support and finding emotional outlets (Taylor and Stanton, 2007). The purpose of Central Meditation and Imagery Therapy for Caregivers (CMIT-C) intervention is to aid caregivers in their appraisal and reactivity to caregiving stressors by providing a calm, meditative environment, in which they can recontextualize the stressors, and increase coping strengths that they might be able to utilize in the day-to-day caregiving process.

CMIT-C draws on a philosophical model originating within Kashmir Shaivism (Singh, 1979) in which important aspects of human suffering are seen to arise from perceptions of individual smallness and isolation, and disconnection from important parts of self and others. Its techniques incorporate methods of self-observation, from both ancient Indic Upaniṣadic (Olivelle, 1996) and mindfulness (Anālayo, 2003) traditions. In dementia caregivers, attention may become focused on the problem and illness of the relative almost exclusively, such that other aspects of self and relationships are neglected. We hypothesized that CMIT-C might help caregivers reduce psychological distress by increasing their ability to maintain awareness of the wholeness of the self (body, emotions, thoughts, spirituality according to beliefs) and others (through the lens of common origin, constituents, and unity) as they went about their day-to-day lives. We speculated that CMIT-C could help them to place their negative (and positive) appraisals in a larger experiential context of connectedness with their social and physical environments, allow them the opportunity to engage in empathic perspective taking with their relative with dementia, as well as encourage them to engage in approach oriented coping by identifying ways of remaining more centered in the context of stressful situations.

Methods

This open-label feasibility study enrolled 12 dementia caregivers in CMIT-C, an eight-week long meditation and guided imagery intervention. Participants were recruited through the known dementia pool at UCLA, as well as through flyers provided to local dementia support

groups. All procedures were approved by the Institutional Review Board of the University of California, Los Angeles.

Participants

All subjects met the inclusionary criteria for the study: endorsing elevated levels of stress and reduced quality of life due to caregiving, over the age of 45, caring for a family member with dementia, in contact with the individual with dementia at least three times per week for no less than one year, being the spouse or adult child of the care-recipient, adequate written and oral fluency in English to understand and complete study forms and converse with study personnel. Subjects were excluded who had current psychiatric diagnoses, such as unipolar major depression, schizophrenia, bipolar, psychotic disorders including psychotic depression or dementia, attention deficit or hyperactivity disorder, anxiety, and alcohol or drug dependence. Those with lifetime history of psychiatric conditions other than unipolar major depression were also excluded. Subjects were also excluded who were medically unstable, delirious, or terminally ill (e.g. medical illness requiring hospitalization or intense outpatient management, such as heart disease; heart attack in the past 6 months; congestive heart failure; severe heart arrhythmias; unstable hypertension; poorly controlled diabetes; recent head trauma with loss of consciousness; recent stroke with residual neurological symptoms; recent cancer with ongoing treatment, or any other medical conditions requiring weekly visits to PCP or pending surgery). Finally, participants were excluded who regularly (> 2 times per week) practiced meditation or guided imagery.

Procedures

Participants underwent a 15-minute telephone interview by a trained project coordinator to ensure that they met the screening eligibility criteria. Eligible subjects were invited for an in person interview during which study details were described, and written informed consent obtained. Subjects were provided with a packet of questionnaires to complete prior to the first meditation training session, after the 8 weeks of meditation training, and at 3-months post meditation training. Meditation training occurred during 90-minute sessions over the course of 8 weeks, in groups of 2 to 6 depending on subject availability, that were led by the PI (FAJ). Daily meditation and guided imagery exercises were assigned for home practice, and compliance assessed with daily meditation practice journals that included 11-point Likert rating scales for participants to rate their overall feeling state before and after meditation (-5 indicating "very bad", 0 indicating "neutral", and +5 indicating very good", with intermediate integer values). The journals also included space for participants to write about their thoughts, feelings, and physical sensations during practice. Questionnaires and assessments were scored by raters blinded to treatment outcome.

Measures—The following measures were administered at baseline and post-training (8 weeks): Center for Epidemiologic Studies Depression Scale (CES-D), Zung Anxiety Scale (ZAS), Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form (QLESQ-SF), Insomnia Severity Index (ISI), Five Factor Mindfulness Questionnaire (FFMQ). Credibility of therapy ratings were obtained at eight weeks, utilizing the following questions (adapted from Borkovec and Nau, 1972): 1) "How confident are you that this treatment will reduce your stress?" 2) "How logical does this type of treatment seem to you?" 3) "Would

you recommend this treatment to another caregiver?" At three months post meditation training, (five months after subjects began meditation training), CES-D, ZAS, and QLESQ-SF were repeated.

Meditation and Guided Imagery Training—CMIT-C is a manualized 8-week group meditation and mental imagery therapy developed by the Principal Investigator, with philosophical roots in Kashmir Shaivism, in which experiencing a lack of connection to others and the world (*mayiya mala*), and feeling a profound sense of individual smallness and incompleteness (*anava mala*), are seen as important origins of human suffering (Singh, 1979). Previously, practices of CMIT-C have been found to be helpful for a patient with treatment refractory depression and an eating disorder (Jain *et al.*, 2012). The treatment manual is available to researchers on request from the PI (*unpublished manuscript*). Practical elements are drawn from Upani adic (Olivelle, 1996) and mindfulness (An layo, 2003) traditions, as well as imagery rehearsal and mental contrasting. There are three major components:

1) Imaginal self-modeling. Creating mental models of how a person fits into the larger world, and using those models to mindfully observe the self in a larger context over a sustained period of time. These models began with an individual's experience of their body, cognitions, and feelings, on a moment to moment basis, and moved to incorporate friends and relatives, communities, and a larger sense of the world and universe as an interconnected whole;

4) Imagery rehearsal (Arntz and Weertman, 1999; Krakow *et al.*, 2001). Mentally rehearsing a different outcome to challenging and stressful present-day situations, encouraging participants to empathically shift perspectives, and see themselves feeling centered and connected to the things and people around them.

3) Mental contrasting (Oettingen *et al.*, 2009; Sheeran *et al.*, 2012). Contrasting the rehearsed situation with previous situations in which the person did not act in an optimal fashion.

Statistical Analysis—Pre to post assessments, and meditation home practice logs, were analyzed with related-samples Wilcoxon signed-rank test utilizing IBM SPSS Version 21. Linear regression was performed to predict changes in symptoms at eight weeks, with the independent variable binary early response to meditation within the first week of practice. For these analyses, the median and interquartile range were calculated, and early responders to meditation were defined as those who exhibited an average change in the Likert rating scale greater than the first quartile, whereas non-responders were considered to be those whose change in feeling state was equal to or less than the lowest quartile.

Results

Completers

Out of 12 subjects who enrolled in the study, there were 10 completers. One subject dropped out after the first week after a death in the family made his participation unfeasible, and the

other (82 years old) after four sessions due to a sprained ankle, which precluded driving himself to treatment. Both of the dropouts expressed verbal interest in participating in a future meditation group. Demographics of the completers are shown in Table 1.

Attendance and home practice

Completers came to an average of 7 ± 1 sessions, and turned in weekly home practice logs $90 \pm 10\%$ of the time. Evaluation of home practice logs indicated completion of meditation an average of 4 ± 1 days out of the week, for 22 ± 5 minutes per session. Over the entire study, feeling state improved from pre to post home practice, aggregated across all meditation sessions, for 9 of the 10 subjects (median significance $p < 10^{-4}$, range $p < .1$ to $p < 10^{-8}$). The median change in feeling state from before to after home meditation practice sessions was an increase of 2 points on the 11-point Likert scale (first quartile = 1, third quartile = 3).

Qualitative reports

All of the subjects reported that the mental imagery and meditation exercises required mental effort, as opposed to being purely relaxing in nature. Of 9 subjects who filled out 3-month follow-up post meditation training questionnaires, 2 (22%) continued to practice the techniques daily at five months; 5 (56%) practiced weekly or "as needed", while 2 (22%) did not continue to practice at all. Participants also reported qualitative shifts in their relationships with care recipients, including greater understanding and compassion, improved ability to manage their day-to-day caregiving, and reduced arguing (Box 1).

Psychological symptoms, mindfulness and quality of life (Table 2)

Depression, anxiety, and insomnia symptoms declined ($p < 0.05$) with large effect sizes (all at least 0.7). Overall mindfulness increased ($p < 0.05$). Three facets of mindfulness (act with awareness, nonjudgment, and observation) increased ($p < 0.05$), while two facets remained unchanged (describe, nonreactivity). Quality of life did not change over the course of the study. The subset of questionnaires administered at 5 months (CES-D and ZAS) indicated that the benefits of CMIT-C were maintained up to 3 months after meditation training ended. Three of four subjects with elevated depressive symptoms at baseline (CES-D 16) demonstrated improvements consistent with a pattern of clinical response to treatment, with depression symptom reduction on the order of ~50% (53%, 47%, and 51%) at the three month follow-up. All three of the subjects with elevated depressive symptoms who showed benefit had achieved at least 75% of their endpoint reductions in depressive symptoms by week 4, suggesting that the largest effects on depression occurred in the early stages of learning the CMIT techniques.

Early prediction of benefit

Participants were dichotomized into early meditation responders (those with change greater than the first quartile during the first week of practice, $N = 7$) versus early non-responders (those with feeling state change within the first quartile, $N = 3$). Both early responders and non-responders were equally likely to complete home meditation practice during the first week; however, early responders were more likely to subsequently complete home

meditation practice in weeks two to eight ($\beta = .650$, $t(8) = 2.42$, $p < 0.05$), and at three months post-training ($\beta = .707$, $t(7) = 2.65$, $p < 0.05$). Early responders were also more likely to exhibit improvements in anxiety at week eight ($\beta = .724$, $t(8) = 2.97$, $p < 0.02$), but changes in depression symptoms were not different between the two groups ($p = 0.72$). Credibility of therapy ratings at week eight post meditation training were higher for those who exhibited an early response to meditation relative to those who did not, including 1) how logical the therapy was to them ($\beta = .717$, $t(8) = 2.91$, $p = 0.02$), 2) how likely they were to recommend it to other caregivers ($\beta = .831$, $t(8) = 4.22$, $p < 0.01$), and 3) how confident they were that the meditation would reduce their stress ($\beta = .803$, $t(8) = 3.81$, $p < 0.01$).

Discussion

This study demonstrated that CMIT-C is a feasible intervention for caregivers. A large proportion of subjects completed the study, and those who withdrew did not cite intolerability of the treatment program, but rather changes in life circumstances precluding further participation. Caregivers participated in CMIT-C sessions with regularity, and completed home practice exercises consistently. The majority of caregivers experienced value from the program, as measured by improvement in symptoms associated with stress, including depression, anxiety, and insomnia, as well as increases in mindfulness, and these subjects provided high credibility ratings at eight weeks. These findings are consistent with a broader literature suggesting that psychosocial interventions for dementia caregivers may reduce symptoms of caregiver psychological distress as well as improve patient mood (Brodaty *et al.,* 2003).

Other meditation techniques have previously been studied to reduce caregiver distress, and improve symptoms of anxiety and depression. Specifically, a form of meditation derived from the Kundalini Yoga tradition, Kirtan Kriya, as well as mindfulness-based therapies, have been found to improve the well-being of dementia caregivers. Lavretsky *et al.* (2012) found that Kundalini Yoga meditation over 8 weeks significantly improved indices of mental health and cognitive measures, and reduced depressive symptoms relative to listening to a relaxation recording for caregivers with elevated depression symptoms. Oken *et al.* (2010), utilizing an 8-week mindfulness meditation intervention, found a decrease in reactivity to caregiver stress relative to respite care, but did not demonstrate any benefits for mindfulness, nor for depression or anxiety symptoms. Franco *et al.* (2010), utilizing a different mindfulness meditation protocol that lasted 10 weeks, found large reductions in psychological domains tested by the PCL-90, including depression and anxiety symptoms, but by 4-month follow-up there was a significant return of symptoms. Whitebird *et al.* (2012) found that mindfulness-based stress reduction (MBSR) reduced symptoms of caregiver stress, depression and anxiety relative to a control group over the short-term, and that the gains were stable over six months. Our results suggested that CMIT-C was most similar to MBSR in its impact on symptoms over the short-term, and stability of improvement.

There are several possible advantages to the CMIT techniques. First, relative to the mindfulness and Kundalini yoga approaches, CMIT focuses the caregivers not only on their

own mind, but also on the mind of the care recipients with dementia, and encourages the caregivers to explicitly mentalize, or imaginally simulate, the care recipients' experience of receiving care. This practice may help to increase caregivers' insight into and empathy for the care recipients' mental processes. Second, participants in CMIT learn to see themselves and others as integrally linked within a larger, interconnected universe. For example, CMIT fostered a sense that both caregiver and care recipient were "in it together", as was eloquently described by the caregiver who gained insight into how to better help dress her husband (Box 1). Practical relational improvements such as these were not reported with the other approaches. Third, whereas MBSR includes a weekend retreat day of practice in addition to weekly meditation training sessions, CMIT consists only of weekly meditation sessions. Because dementia caregivers already experience significant time constraints, CMIT might be a more feasible intervention than MBSR in this population.

Some of the largest effects of CMIT were observed on the psychological quality of mindfulness. Previously, mindfulness has been found to correlate with depressive symptoms (Oken *et al.*, 2010), and mediate the beneficial effects of mindfulness-based cognitive therapy (MBCT) on depression relapse (Bieling *et al.*, 2012; Kuyken *et al*, 2010.). Some of the symptom reduction benefits of CMIT may therefore be attributable to the large improvements in mindfulness over the course of the study. To our knowledge, this is the first study of a meditation intervention in caregivers that resulted in mindfulness improvements; a previous study of mindfulness meditation for dementia caregivers did not demonstrate increases in mindfulness (Oken *et al.*, 2010). Within the mindfulness construct, domains including acting with awareness, non-judgment, and observation increased substantially. This suggests that the particular techniques utilized within CMIT-C were particularly helpful for generating an attentive, observing, non-judgmental attitude, amidst caregivers' daily activities.

An important question in meditation research is discerning who will receive the greatest benefit from a meditation intervention (Walsh, 1982). A majority of subjects in this study exhibited an early response to meditation, and this predicted response to some outcome measures as well as continued home practice compliance. To our knowledge, this is the first study to evaluate the relationship between early perceived benefit of meditation practice (feeling state change), and later outcome. Previously, Delmonte (1988) reported that personality variables influenced meditation compliance over 3 months in a clinical sample of patients with psychosomatic and neurotic complaints: particularly, low levels of pretest sensitization, introversion, suggestibility and neuroticism, were associated with increased meditation compliance. Davidson *et al.* (2003) did not find a correlation between the time or duration of home practice and changes in negative affect or brain activity over the course of mindfulness based stress reduction. Vettese *et al.* (2009) reported that out of 24 mindfulness meditation studies that evaluated the relationship between compliance with home practice and treatment outcome, only 13 found a significant relationship. Our study suggests that early feeling state change during meditation practice may be an important predictor of who is most likely to be compliant with meditation therapies, and who will receive the greatest benefit.

Limitations of the study included lack of a control group, which precluded attributing symptomatic reductions to a specific effect of the group therapy intervention versus non-specific effects of placebo or natural history. However, the benefits of CMIT-C were unlikely to be due to pure relaxation alone, as several participants commented that the guided imagery exercises were challenging and required effort. Although rating scales were self-report and did not involve independent clinician ratings, they were scored by raters blinded to treatment outcome. Low number of subjects also increased the likelihood of Type II error.

Conclusion

CMIT-C was found to be a feasible intervention for dementia caregivers, with promising improvements in symptoms of depression, anxiety, and insomnia. Most of those with elevated depressive symptoms at baseline exhibited a substantial improvement of mood over the course of follow-up, suggesting that the CMIT-C intervention may be useful for dementia caregivers with depression. Future studies may prospectively account for early response to meditation and mental imagery practice. This may be useful for determining who is most likely to benefit from CMIT-C in clinical practice. These findings merit confirmation in larger, prospective, controlled trials, along with concomitant neurophysiological studies to investigate the biological underpinnings of treatment response.

Acknowledgments

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Key points

1. Central Meditation and Imagery Therapy is a feasible intervention for dementia caregivers.

2. There are promising benefits for symptoms of depression, anxiety, insomnia, as well as levels of mindfulness.

3. Prediction of treatment outcome was possible utilizing early response to meditation.

Box 1. Case study

Ms. M. was a 66 year-old married female who had been the primary caregiver for her spouse with dementia for 6 years. She complained of stress pertaining to caregiving responsibilities, and suffered from mild depressive and anxious symptoms. One of the caregiving situations she "dreaded" was helping him to get dressed in the morning. After doing the "Situation Solver" mental imagery exercise, which involved making an imaginal model of her husband, looking through his eyes in the situation, and then remembering that they both existed as parts of a larger whole, she was "excited" to wake up the next morning and get her husband dressed. As she recounted, "Before, I dreaded it as something I had to help him with because he was 'sick' – it was something I was doing to him, not with him. But after doing the meditation, I could think of dressing him as the two of us working as partners through one difficulty amongst thousands of difficulties that we have encountered throughout our marriage. I was actually able to put this into practice, and felt better as I was dressing him. I had more patience, and more acceptance, and could realize that he was trying the best he could. Although I was saying exactly the same things to get him dressed, and going through the same sequence of motions, my husband noticed that something had changed in me. He said to me after the dressing, 'You are so kind. You're so caring.' And he felt so much love, that he actually became amorous with me for the first time in years."

Table 1

Demographics (N = 10)	
Gender (female)	100%
Age (years)	64 ± 7
Race	
Caucasian	80%
African American	20%
Marital Status	
Married	70%
Divorced	20%
Education (years)	18 ± 2
Retired	90%
Years caregiving	8 ± 7
Weekly hours caregiving	20 ± 16
Living with care recipient	70%

Table 2

Changes in psychological symptoms, mindfulness, and quality of life. d = Cohen's d from baseline to post, f/u = follow-up, Post = immediately after 8-week meditation training,

	Baseline (N = 10)	Post (N = 10)	3 month f/u (N = 9)	d
Anxiety (ZAS)	35.1 ± 7.5	31.7 ± 6.4^T	29.6 ± 4.6$^{*\natural}$	-0.8
Depression (CES-D)	16.8 ± 11.2	12.6 ± 10.1*	11.4 ± 6.6 $^{T\natural}$	-0.7
Insomnia (ISI)	13.2 ± 5.9	9.4 ± 5.6*	n/a	-0.8
Mindfulness total (FFMQ)	134.8 ± 25.6	146.8 ± 24.7*	n/a	1.1
Act with awareness	27.0 ± 7.0	29.6 ± 6.1*	n/a	0.9
Describe	30.8 ± 5.6	31.8 ± 6.2	n/a	0.3
Non-judgment	26.7 ± 8.1	30.8 ± 8.5*	n/a	0.8
Non-reactivity	23.8 ± 5.5	24.0 ± 5.0	n/a	0.1
Observation	26.6 ± 6.5	30.7 ± 6.7*	n/a	0.7
Quality of Life (QLESQ-SF)	66.2 ± 10.5	67.4 ± 10.8	70.2 ± 11.1$^\natural$	0.2

* p < 0.05 relative to baseline,

^{T} p 0.1 relative to baseline,

$^\natural$ p > 0.1 relative to post treatment. Data presented as mean ± standard deviation.