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TO STUDY ABOUT THE MEDIATION AND TRAINING FOR DEMENTIA CAREGIVERS

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ABSTRACT

Researchers set out to see if a mindfulness meditation intervention was beneficial for family caregivers of loved ones with dementia, and if so, how well it worked. They also hoped to learn how to improve the protocol for future, larger studies. Using the Mindfulness-Based Cognitive Therapy programme as a model, a pilot randomised trial evaluated the effectiveness of a mindfulness meditation intervention in comparison to two control groups: a caregiver education class using Powerful Tools for Caregivers as an active control group and a spite-only control group. Oregon Health & Science University in Portland, Oregon, did the research for this study. Caregivers of close relatives with dementia, ranging in age from 45 to 85, were studied in a community setting. Seven weeks were allocated to each of the two active treatments, which each included one 90-minute session per week as well as at-home application of what participants learned. Subjects in the respite-only group received the same amount of respite care before randomization as they received after completing the 8-week course. The Revised Memory and Behavior Problems Checklist, a self-reported assessment of caregiver stress, served as the study's major outcome measure (RMBPC). Mood, tiredness, self-efficacy, mindfulness, salivary cortisols, cytokines, and cognitive function were all considered secondary outcomes. We also looked at the respondents' perceptions of stress in their daily lives, as well as their hopes for change and the validity of the treatments. After a randomization process in which 31 caregivers were chosen at random, there were 28 people who completed the study. In comparison to the respite-only group, there was a significant influence on RMBPC by group co-variation for baseline RMBPC. The treatments had a minimal impact on secondary outcome indicators. In terms of caregiver self-efficacy and cognitive assessments, the intervention had an impact. There were strong links between mindfulness and self-rated mood and stress scores, even though the intervention had no effect on it. In comparison to the respite-only control, both mindfulness and education treatments reduced self-rated caregiver stress.

Keywords: Mediation; RMBPC; self-efficacy; salivary cortisols

1. Introduction

Alzheimer's disease (AD) and other dementias impact 5 million people in the United States, with family members or friends caring for more than half of them in accordance with the(Association,

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2010).Caregiver sadness, self-rated stress, and physical symptoms are all more common in dementia patients, as are the drugs carers use and the number of hospitalizations they have. These connections are thought to be mediated by the body's long-term response to stress. There have been several studies using a variety of psychosocial treatments in an effort to counter the harmful consequences of caregiver stress. Although there is an overall significant impact size of 0.31 on caregiver distress for psychosocial treatments in meta-analyses, the effect sizes are small and some individual studies have even yielded negative outcomes. Meditation and other mind–body treatments were not included in these meta-analyses as interventions. Mind–body treatments have been used in clinical settings to try to alter people's stress reactions. Many people use relaxation techniques as complementary and alternative medicine, with 30% of respondents to a national survey reporting that they had done so in the previous year. However, there is limited evidence that relaxation techniques have any benefit due to the lack of adequate control groups or controls that were very active.(Barnes et al., 2007).

In order to aid with the design of a bigger study's clinical trials, this research was carried out. The no-blind trial's caregiver interventions and deployment and assessment logistics both need optimization. To test the relationship between the mind and body, we employed a programme for caregivers that were developed from Mindfulness-Based Cognitive Therapy (MBCT). Adapted MBCT was evaluated by comparing self-reported and physiological stress markers between the MBC Treatment group, an education/society control group, and the respite alone control group.(Ahmadi et al., 2006).

2. Materials and Methods

2.1 Subjects

Participants ranged in age from 45 to 85 and were caring for a loved one with dementia. Subjects had to help the person with dementia for at least 12 hours each week (PWD). It was determined that the exclusion criteria were in place largely to guarantee that there were no underlying conditions that might restrict the intervention's benefit, impair or create excessive variations in outcome measures, or raise individuals' chances of dropping out of the research. Stable medical conditions, cognitive dysfunction, medications that have not been stable for at least two months, significant visual impairment (corrected binocular visual acuity worse than 20/50), and prior experience with similar stress reduction classes were all exclusion criteria for the participants (Welsh et al., 1993)

2.2 Interventions

The three groups included an MBCT-inspired active intervention, a Powerful Tools for Caregivers (PTC)-inspired dementia education session, and a respite-only intervention. We decided on a 7-week intervention period since it is close to the average length of the two active treatments we are studying. There will be little change in the PWD's health throughout this period, and caregiver adherence (class

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attendance) should be strong. The lesson period was set at ninety minutes. Dementia caregivers and PWD must be separated for no more than 2 hours in this class, which is shorter than other MBCT programmes. This was done to ensure that participants would stick to the intervention as much as possible. In addition, the length of the lessons in the two active intervention groups needed to be the same. As well as having similar amounts of social support conversation time and home tasks, the two active treatments had similar budgets. As part of the study endeavour, respite care for the PWD was given for three hours during class sessions for the active interventions, including transportation time to class. Some of the PWDs were just moderately handicapped, thus some participants would leave the PWD alone at home for several hours at a time without any ill effects. Three hours of respite care were also offered to the respite-only group. We recruited participants in batches to have two class sessions each year in order to preserve the class format for the active treatments (Cohen et al., 1983)

The first session was held for participants randomized to both the MBCT and PTC groups; group assignment was concealed from the participant until after the class was completed. The session consisted of an overview of dementia, including diagnostic issues, description of brain changes, current understanding of disease process, current medical treatments, course of the disease, and legal issues. This part of the lecture was adapted from the current Alzheimer's Association curriculum.

2.3 Mindfulness meditation

Meditation was used to help caregivers deal with the various and unexpected time demands they face. The intervention was based on Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) (Oken et al., 2010a) The intervention's goals were to assist participants understand how stress affects them personally, to teach techniques that can help them alter their stress reactions, and to encourage self-care and feelings of competence and mastery. A clinical psychologist (JBL) trained in MBSR and MBCT led the intervention, which was delivered in six weekly sessions of 90 minutes each. It consisted of three parts: didactic instruction and discussion on stress, relaxation, meditation, and the mind-body connection; instruction and practice in meditation and other mindfulness exercises, both during the session and daily at home; and discussion in groups about successes and difficulties in putting the principles into practice in daily life. Each MBCT session included all three parts. Every day, subjects were aggressively urged to practice at home. Taking care of a mentally ill family member also necessitated talking about alternative methods of acquiring and practicing mindfulness skills. Students learned how to meditate in a sitting position by focusing on their breathing first, then broadening their concentration to encompass their physical sensations, as well as their thoughts and feelings. Attentive movement and mindful involvement in daily activities were among the informal exercises used to help people practice mindfulness outside of formal meditation sessions. Practicing mindfulness while doing everyday tasks like cleaning dishes was

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promoted The 3-Minute Breathing Space from MBCT was modified for use as a coping method by participants (Kabat-Zinn et al., n.d.)

2.4 Education

The education programme consisted of six lectures each week co-taught by PTC-trained instructors who modified the PTC programme for this six-week intervention. The first week of this 6-week curriculum was the same as the combined MBCT class mentioned above. During the sessions, carers learned a variety of self-care techniques for reducing stress, changing negative self-talk, communicating their needs to family members and health care and support providers, and making difficult caring decisions (e.g., when a family member cannot longer live alone, drive safely, or manage money).

2.5 Respite-only

Respite care for 3 hours was offered to the third group of carers once per week for 7 weeks. To make sure it was a genuine pragmatic control, this non-class group didn't attend the first class. This also helped to make sure there wasn't too much continued dissatisfaction due to the lack of social contact. It was up to the caregiver to pick a day of the week for the 3-hour respite care period. This group was also qualified for the next session's modified MBCT or PTC class.

2.6 Assessments

The screening visit was used to gather information on inclusion/exclusion criteria, such as the caregiver's medical history, a daily living/independent daily living questionnaire for the PWD, and the Modified Telephone Interview for Cognitive Status to test for caregiver cognitive impairment. Within three weeks after the commencement of class and three weeks after the conclusion of the last class, the complete outcome evaluations werecompleted (Teri et al., 1992)

3. Analysis

Analyzing covariance was used to compare the study's finishers among the three groups (ANCOVA). Shortly after the intervention was completed, the RMBPC Reaction score was used as the major outcome measure (visit 2). The outcomes of the other experiments were examined in the same way. The outcome measure from the first baseline visit was the most important covariate (just prior to the intervention). The cognitive tests took into account the participant's age as a covariate. The natural logarithm, square root, or rank transformations (in that order) were utilised if the dependent-side measures from the ANCOVA models were not normally distributed, especially if there was considerable skewness. There were no adjustments made for exploratory multiple comparisons for the secondary variables in this pilot research.

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4. Results

Four individuals dropped out of the study out of a total of 31 (Table 1, demographics). We were able to conduct evaluations, randomization, and class scheduling while preserving blindness throughout the process. There were no significant differences between the two active treatments in terms of subjects' expectations or believability. Classes had similar participation percentages (education 0.85±0.08; meditation 0.88±0.05). After the intervention, there were differences in the RMBPC response scores across the three groups (p=0.030) (Table 2). Using paired comparisons, it was discovered that individuals in the respite-only group had higher post-intervention average RMBPC response ratings than those in the meditation group (p=0.041) and education groups (p=0.027). After the intervention, there were no differences in the RMBPC response scores between the meditation and education groups, p=0.839 (Table 2). There was no connection between the individuals' progress in the RMBPC and the group they were assigned to (ps>0.40).

4.1 Secondary outcome measures (Table 2)

This intervention had a significant effect on caregiver self-efficacy as measured by the RMBPC confidence score (p=0.026). There were no differences between the meditation and education groups in post-intervention RMBPC confidence ratings, however there was a difference between the respite-only group and the meditation group in terms of post-intervention RMBPC confidence scores, p=0.010. The groups differed in terms of stroop interference scores (p=0.038). For cue congruent trials, there were group differences in the ANT median RTs (p=0.032). Median RTs for cue-congruent trials were higher among individuals in the respite-only group following intervention, compared to those of the education group (p=0.010), but not of the meditation group (p=0.109), in pairwise comparisons. There was also a significant difference in the alerting score (p=0.045) between the groups. After the intervention, the ANT alerting score for participants in the respite-only group was lower than the score for subjects in the education group, p=140.019, and the meditation group, p=0.053, simple contrasts revealed. Any other self-report, cognitive performance, or cytokine measure did not change across the intervention conditions (ps>0.05).

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	Meditation		*Education*		*Respite*		
	Visit 1	*Visit 2*	*Visit 1*	*Visit 2*	*Visit 1*	*Visit 2*	*p value*
Primary outcome							
RMBPC reaction*	27.1 ± 12.9	24.8 ± 12.9	28.1 ± 11.1	21.6 ± 5.8	24.8 ± 23.6	26.4 ± 23.7	0.030
Secondary outcomes							
RMBPC confidence*	28.8 ± 17.6	34.1 ± 17.4	36.7 ± 23.2	30.1 ± 14.3	30.3 ± 18.9	26.6 ± 22.3	0.026
PSS	18.5 ± 8.5	17.8 ± 6.0	18.6 ± 7.5	20.5 ± 5.7	17.33 ± 4.9	17.8 ± 4.7	0.332
CESD	15.8 ± 7.7	12.5 ± 10.9	16.9 ± 10.0	15.2 ± 7.8	14.5 ± 7.7	15.3 ± 7.4	0.705
SF-36 Fatigue	11.4 ± 3.2	9.3 ± 3.9	10.1 ± 5.2	9.5 ± 4.6	9.4 ± 3.8	9.8 ± 3.3	0.287
Mindfulness MAAS	4.4 ± 0.7	4.1 ± 0.7	4.2 ± 0.9	4.2 ± 1.0	4.0 ± 0.5	3.7 ± 0.8	0.950
Mindfulness FFNJ	21.2 ± 6.5	21.7 ± 7.2	22.1 ± 4.4	22.4 ± 7.0	22.1 ± 3.7	23.1 ± 3.1	0.286
GPSE	30.6 ± 4.4	31.4 ± 4.6	30.7 ± 5.4	30.9 ± 4.6	30.2 ± 5.1	31.4 ± 5.1	0.761
PSQI	8.7 ± 3.4	9.0 ± 2.7	8.0 ± 2.7	8.0 ± 4.1	9.5 ± 3.7	9.3 ± 4.0	0.711
ESS	4.7 ± 2.8	4.8 ± 1.6	6.6 ± 4.8	6.1 ± 4.4	7.1 ± 4.7	8.0 ± 5.0	0.859
NPI total	15.4 ± 5.2	19.3 ± 6.3	14.6 ± 8.2	14.0 ± 6.2	12.9 ± 5.8	11.0 ± 6.2	0.848
Caregiver appraisal^{T}	89.1 ± 14.7	88.5 ± 15.0	91.2 ± 17.2	88.7 ± 12.0	89.7 ± 11.2	90.4 ± 14.2	0.086
CRI approach	49.9 ± 11.3	51.2 ± 12.9	38.7 ± 10.1	45.2 ± 9.6	43.6 ± 16.5	43.3 ± 15.1	0.200
CRI avoidance	27.5 ± 13.8	28.9 ± 10.3	27.0 ± 6.0	25.6 ± 5.4	30.2 ± 13.0	25.6 ± 9.4	0.710
Cortisol bedtime	3.4 ± 5.1	2.1 ± 4.4	0.2 ± 0.3	0.1 ± 0.0	0.4 ± 0.6	0.2 ± 0.2	0.209
Cortisol awake	3.6 ± 4.0	3.0 ± 3.9	1.5 ± 0.4	0.8 ± 0.4	0.8 ± 0.4	0.8 ± 0.4	0.615
Cortisol 30 min	4.0 ± 4.6	2.7 ± 4.1	1.0 ± 0.6	0.8 ± 0.6	1.2 ± 0.9	0.7 ± 0.4	0.175
IL-6	2.2 ± 1.2	2.0 ± 1.2	3.0 ± 1.9	3.3 ± 3.0	1.5 ± 1.3	2.8 ± 4.0	0.922
TNF-α	1.1 ± 0.4	1.0 ± 0.5	1.2 ± 0.5	1.3 ± 0.7	1.2 ± 0.9	1.1 ± 0.6	0.880
hsCRP	4.3 ± 4.0	2.4 ± 2.6	4.6 ± 5.3	4.7 ± 4.2	3.1 ± 4.1	2.0 ± 1.9	0.891
Stroop interference*	124.9 ± 71.9	105.7 ± 56.3	152.6 ± 35.1	121.8 ± 31.6	121.4 ± 49.7	126.0 ± 81.4	0.038
ANT conflict	144.1 ± 84.1	163.5 ± 70.2	127.4 ± 70.7	124.8 ± 58.9	159.9 ± 62.9	111.8 ± 42.3	0.141
ANT alerting*	28.1 ± 46.3	60.5 ± 18.2	54.5 ± 63.2	64.1 ± 36.8	33.8 ± 27.3	39.6 ± 31.0	0.045
Word List immediate	7.2 ± 1.0	7.1 ± 1.4	6.8 ± 1.3	7.4 ± 1.5	7.7 ± 1.2	8.2 ± 1.0	0.489
Word List delayed	6.6 ± 1.7	7.6 ± 1.9	6.4 ± 1.9	7.6 ± 2.0	7.7 ± 2.1	7.9 ± 1.8	0.988
Expectancy	66.5 ± 19.6	-	66.4 ± 22.7	-	51.8 ± 25.3	-	0.988
Credibility	7.3 ± 1.5	-	7.3 ± 1.6	-	6.5 ± 1.8	-	0.902

Table 2: Visits 1 and 2 Primary and Secondary Outcome Measures(Oken et al., 2010b)

4.2 Mindfulness

In terms of mindfulness tests, there was no effect of the intervention (ps>0.05). PSS scores were inversely linked to Mindfulness MAAS and Mind fullness FFNJ ratings at baseline and at the end of the study (Table 3). Additionally, CESD scores were associated with mind fullness MAAS and FFNJ

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ratings at both time periods (both ps<0.05). At both time periods the correlation between PSS and CESD scores was strong (both ps<0.01).

Measure	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. RMBPC reaction V1	–	0.669**	0.381*	0.440*	0.358*	0.360^{T}	−0.262	−0.238	−0.112	−0.368^{T}	0.195	0.180
2. RMBPC reaction V2	–	–	0.233	0.251	0.206	0.232^{T}	−0.042	−0.159	−0.148	−0.210	0.059	0.334
3. PSS V1	–	–	–	0.496**	0.817**	0.519**	−0.583**	−0.391*	−0.637**	−0.745**	0.267	0.388
4. PSS V2	–	–	–	–	0.554**	0.712**	−0.384*	−0.326	−0.216	−0.364^{T}	0.139	0.168
5. CESD V1	–	–	–	–	–	0.590**	−0.688**	−0.530**	−0.421*	−0.739**	0.036	0.172
6. CESD V2	–	–	–	–	–	–	−0.481*	−0.469*	0.011	−0.502*	−0.219	−0.517*
7. Mindfulness MAAS V1	–	–	–	–	–	–	–	0.769**	0.368^{T}	0.647**	0.208	0.026
8. Mindfulness MAAS V2	–	–	–	–	–	–	–	–	0.027	0.529*	0.435^{T}	0.201
9. Mindfulness FFNJ V1	–	–	–	–	–	–	–	–	–	0.438*	−0.183	−0.284
10. Mindfulness FFNJ V2	–	–	–	–	–	–	–	–	–	–	−0.331	−0.315
11. Cortisol V1 (mean)	–	–	–	–	–	–	–	–	–	–	–	−0.187
12. Cortisol V2 (mean)	–	–	–	–	–	–	–	–	–	–	–	–

Table 3: Correlations among Variables at Baseline Visit (V1) and Outcome Visit (V2) (Oken et al., 2010b)

5. Discussion

We developed the mindfulness meditation pilot study with two control arms based on our previous mind–body research. Some crucial features of the intervention were monitored using an active intervention arm (e.g., socialization, home practice, and nonspecific benefits of education). Health care professionals recommend respite care since it is less time consuming and less expensive than mindfulness meditation or education classes. Participants in this pragmatic control group got respite care. Additionally, both active interventions need a period of respite once the intervention was complete. There would have been no apparent advantage to mindfulness meditation if it had not been for the respite-only control. This is because the beneficially active education arm was just as successful as the mindfulness meditation one. It's possible that future studies with two identical control groups may save costs while maintaining power in contrast to the active control by randomizing in a 2:1:1 ratio such that the pragmatic control group only receives a fifth of the total subjects instead of a third. Efficacy studies should heavily include two control arms, but future mind–

body intervention studies will need to add suitable control arms to the issue being answered. Certain treatments will likely have a greater impact on certain participants than others. A helpful research direction will be found even if this study didn't have enough power to examine individual predictor and effect modifiers for the intervention response. Social contact and support provided by the class structure make it more probable that the intervention will be helpful, but it also complicates the interpretation of outcomes. Variables like age and whether the caregiver was a spouse or an adult child in our study had an influence on the dynamics of the class. Additionally, because classes must have a set timetable, participants cannot be admitted on a rotating basis. (Whitebird et al., 2013)

6. Conclusion

As with other studies, this and other results will need to be confirmed and extended by future research. Generalizing the results will also require recruitment of more underrepresented minorities that, in the case of caregivers, includes men. A more flexible training session schedule as described above helps with recruitment because of the severe time constraints of the caregivers. Although it is extremely difficult to compare home practice between the meditation and education arms, better measures of adherence to the mindfulness meditation home practice would be useful also.

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