



Adapting Mindfulness-Based Interventions for Residents of Long-Term Care Facilities

Gerontology & Geriatric Medicine
Volume 7: 1–10
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/23337214211057703
journals.sagepub.com/home/ggm


Christian Terry, MA¹, Michael Penland, PhD¹, Devon Garland, BS¹, Wendy Wang, BS¹, Taylor Burton, BA¹, and Alissa Dark-Freudeman, PhD¹ 

Abstract

Mindfulness-based interventions (MBIs) have received increased clinical attention in recent years. While some MBI research has focused on healthy older adults, research with more emotionally and physically vulnerable populations, such as residents of long-term care facilities (LTCFs), is lacking. The current paper presents quantitative and qualitative results from a pilot study of an individual MBI designed for residents of LTCFs. Participants included 8 residents from two skilled nursing facilities in the southeastern United States. Data were collected between October 2016 through June 2017. A modified MBI is proposed with specific adaptations for LTCF residents. Recommended adaptations for LTCFs include a shift from a group to an individual format, individual weekly instructor–participant meetings, removal of the yoga and full-day silent retreat and shortening the duration of the formal practices. The current study found that these adaptations result in an individual MBI that is accessible to most LTCF residents while still providing the associated benefits of traditional group MBIs.

Keywords

mindfulness, mindfulness-based intervention, mindfulness-based stress reduction, skilled nursing facilities, long-term care facilities, adaptation

Manuscript received: June 18, 2021; **final revision received:** October 7, 2021; **accepted:** October 8, 2021.

Introduction

The study of mindfulness-based interventions (MBIs) has exploded recently. Generally designed to increase present-focused awareness, MBIs induce positive physical and emotional effects in a wide range of populations. Though MBIs include several therapeutic modalities, mindfulness-based stress reduction (MBSR; Kabat-Zinn, 2013) is the most widely studied and disseminated MBI. Though MBSR seems effective in independent-living older adults (Geiger et al., 2016), its efficacy in residents of long-term care facilities (LTCFs) remains unclear.

LTCF populations are often overlooked or excluded in research examining the effectiveness of psychotherapeutic interventions. The reasons for excluding LTCF residents are multifaceted. Lam et al. (2018) reviewed 39 articles which conducted studies in LTCFs and identified eight themes related to difficulty in conducting research. At the administration level, management is often hesitant to allow research

in their facilities. Family caregivers are also hesitant to consent to their loved one's participation. When research is allowed, resident factors contribute to difficulty conducting the research (e.g., recruitment and retainment difficulties). Further, LTCF research often involves assistance from staff, including social workers and activity directors, who already have time constraints and may be unable to assist with interventions. Methodological limitations often hinder LTCF research as well, like the inability to fully randomize participants into conditions. Last, budgetary factors like travel to facilities impact the ability to conduct LTCF research (Lam et al., 2018). Thus, many factors contribute to the low level of

¹Department of Psychology, University of North Carolina Wilmington, USA

Corresponding Author:

Alissa Dark-Freudeman, UNCW, Teaching Laboratory Building, 3032, 601 South College Road, Wilmington, NC 28403, USA.
Email: freudemana@uncw.edu



MBI research being performed with this population. This oversight is unfortunate as LTCF residents have higher rates of physical and emotional concerns such as pain (Centers for Medicare & Medicaid Services, 2015) and depression (Ell, 2006; Mulsant & Ganguli, 1999). Further, LTCF residents are more likely to be prescribed high-risk medications to alleviate these concerns (Stevenson et al., 2014), including barbiturates, benzodiazepines, and anticholinergics (Campanelli, 2012). Taken together, these difficulties highlight the need for evidence-based nonpharmacologic interventions designed to improve well-being in residents of LTCFs.

Mindfulness-Based Stress Reduction

The most widely researched MBI is the MBSR program developed by Jon Kabat-Zinn at the University of Massachusetts Medical Center (Kabat-Zinn, 2013). The traditional MBSR curriculum occurs over 8 weeks in a group-based format. Classes meet once a week for approximately 2.5 hours and contain an additional 7.5 hour “silent retreat.” Each week, mindfulness is discussed in different contexts and new meditation techniques are presented. The primary techniques participants learn are the body scan, breathing meditation, mindful yoga, and loving-kindness meditation. The body scan is a 45-minute slow mental scan through each part of the body typically performed lying down on a bed or mat. The breathing meditation ranges in duration and is usually performed sitting in a chair with an erect posture, during which the participant focuses their attention on breathing. When a distracting thought has removed attention from the breath, participants acknowledge the thought and re-direct their attention back to breathing. Mindful yoga entails slowly moving through several simple yoga postures while focusing on how the body feels as it navigates these postures. Last, loving-kindness meditation involves internally sending messages of well-being to several people, beginning with oneself and then to a teacher or role model, a friend or family member, a neutral acquaintance, a difficult person/enemy, and finally to all living persons. In addition to the weekly classes, participants complete a formal (i.e., meditation) and informal (e.g., mindful eating) practice throughout each week. Since the implementation of MBSR, countless studies have assessed the benefits of MBSR using both traditional and adapted curricula. Of most relevance here are MBIs which have been implemented with older adults based on the MBSR curriculum.

Adaptations to Mindfulness-Based Interventions for Older Adults. Hazlett-Stevens et al. (2019) identified nine studies of MBSR interventions conducted with older adults using a randomized controlled design. They found that MBSR offered numerous benefits to older adults, including improved self-reported symptoms of insomnia (Zhang et al., 2015), improved anxious and depressive symptoms (Wetherell et al., 2017), improved chronic lower back pain (Morone et al.,

2008, 2016), reduced worry and improved memory and verbal fluency (Lenze et al., 2014).

Overall MBI research shows promising outcomes for improving physical and psychological symptoms in older adults. Unfortunately, this research is plagued with diverse methodologies and inconsistent adaptations/modifications of traditional MBIs. For instance, though most MBIs with older adults span the typical (i.e., 8 week) length of treatment, others range from 2 weeks (Black et al., 2015) to 8 months (Keller et al., 2014). Although modified MBIs for older adults appear to be adaptations founded upon the MBSR curriculum (see Chouinard et al., 2019; Colgan et al., 2019; Elliot et al., 2019; Isbel et al., 2019; Morone et al., 2008), some MBIs are completely new attempts to disseminate mindfulness (see Franco et al., 2017; Keller et al., 2014; Turner, 2014; Whitmoyer et al., 2020) that are not grounded in traditional methodology.

Despite these different approaches, a consistent recommendation across MBI research is that the time commitment required to participate in weekly sessions, formal and informal assignments, and activities should be reduced when working with older adults. Specific evidence-based adjustments for older participants include decreasing the length of formal practice assignments (i.e., meditations), reducing the length of the weekly meetings, and removing the full-day silent retreat. For instance, Moss et al. (2015) found increased acceptance and psychological flexibility in participants after implementing an MBI in which they shortened the weekly meeting length from two and a half to 2 hours, removed the full day retreat, and shortened home practice sessions from 45 to 25–30 minutes a day. Paller et al. (2015) found improvements in quality of life after implementing an MBI which reduced the length of home practice assignments and removed the full-day retreat. Last, Mallya and Fiocco (2016) shortened the daily practice length of their MBI by 15 minutes and eliminated the full-day silent retreat for independent-living healthy older adults; however, they found no clinically significant improvements following the intervention.

Mindfulness-Based Interventions in Long-Term Care Facilities. The present literature examining the impact of MBIs among LTCF residents suggests that teaching mindfulness practices to LTCF residents is also feasible and effective in group settings with reduced time commitments (Chen et al., 2020; Ernst et al., 2008; Lindberg, 2005; Tsai et al., 2020). For example, MBI participants in a Wellness Group developed by Lantz and colleagues (1997) reported lower levels of agitation post-intervention. Further, participants of the Wellness Program reported feeling more at peace (McBee et al., 2004) and less sad (McBee, 2008) post-intervention. Participants in an MBSR-based intervention developed by Ernst and colleagues (2008) reported improvements in health, depressive symptoms, and quality of life post-intervention. Last, participants in an MBI adapted

from a program developed by Huang and colleagues (2015) reported decreases in relocation anxiety (Tsai et al., 2020) and decreases in depressive symptoms (Chen, et al., 2020). Although all these MBIs reported positive results among residents of LTCFs, the authors noted several challenges specific to working in LTCFs, including recruitment of small sample sizes, low attendance rates among participants, and challenges completing formal practices due to lack of personal resources (e.g., lack of CD players or phones).

Though these results are promising, many individuals in LTCFs often have difficulty attending regular group meetings due to health concerns, hospitalizations, doctor appointments, and family visits, contributing to small sample sizes and low attendance rates of MBI research with this population. Further, some residents may be unwilling or unable to attend a group intervention due to limited mobility or lack of interest in group meetings. For instance, LTCFs typically have daily activities scheduled in a recreation area or cafeteria. If a resident generally does not attend these events, they are unlikely to attend a group-based MBI. Given that the primary benefits of MBIs have involved improvements in well-being, depression, and pain, researchers and medical providers should aim to provide these interventions to residents who may be in greatest need of them. We suggest that the development of an individual MBI curriculum for residents of LTCFs would allow greater access to the benefits of mindfulness for residents who cannot or will not attend regular group sessions. While this would remove the benefits of group discussion and social interaction, and potentially add new challenges to an already overburdened staff, findings suggest there are alternative benefits to individual mindfulness programs (Cavanagh et al., 2014) such as increased control and autonomy on behalf of the participant.

Current Study

The current study examines the impact of an individual MBI, based on a traditional MBSR curriculum, and developed specifically for LTCF residents. Two main changes to the MBSR curriculum have been implemented. First, we have adapted the traditional group-based MBSR curriculum to be administered one-on-one between an instructor and participant. Second, we have incorporated the recommendations from previous research on MBIs among older adults regarding reducing the time commitment required for weekly sessions, formal practice, and informal practice. Our aims are as follows:

Aim 1: Examine the impact of an individual MBI on psychological well-being, including adaptive development, depressive symptoms, rumination, emotion regulation, and trait mindfulness among residents of LTCFs.

Aim 2: Examine the subjective experiences, both positive and negative, of participants in our individual MBI via qualitative responses to a post-intervention survey.

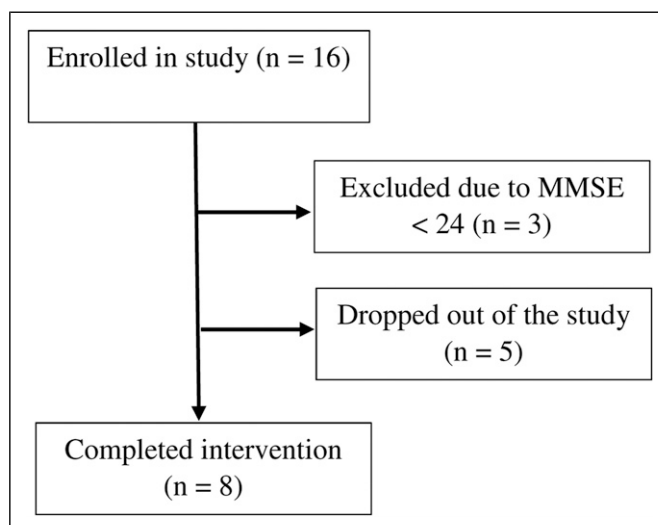


Figure 1. Flow of Participant Attrition.

Method

Participants

To test the feasibility of an individual approach to mindfulness, an MBI for LTCF residents was designed and piloted. For the purpose of the current study, an LTCF resident is defined as an individual residing in a skilled nursing facility. Our final sample included 8 LTCF residents, ages 40–82 ($M = 65.86$, $SD = 15.02$) from two LTCFs in the southeastern United States. Participants were recruited via fliers and screened for eligibility using a cutoff score of 24/30 on the Mini Mental State Examination (MMSE; Cockrell & Folstein, 2002). Sixteen participants were originally recruited for the study; three were excluded for not meeting the MMSE cutoff, and five dropped out throughout the course of the program, resulting in a 61.5% retention rate (see Figure 1). The three participants who did not meet the MMSE cutoff were still provided the MBI, but their data was not used in analyses. The most common reasons for dropping out included feeling too busy to participate and leaving the facility for an extended period (e.g., hospitalizations and staying with family). The majority of the sample were Caucasian (87.5%) and female (87.5%).

Procedure

After completing the MMSE, eligible participants were provided an informed consent form. The research assistant read through the consent form with the participant and answered any questions. Once the consent form was signed, the pre-test measures were administered including adaptive development, depressive symptoms, rumination, emotional regulation, and trait mindfulness. The investigator then met with the participants once a week for 8 weeks during the intervention. During each week of the 8-week intervention,

the investigator presented a mindfulness practice to each participant individually (e.g., body scan, sitting meditation, loving kindness meditation). Participants were then given a CD and a workbook with their formal and informal practices for each week. The formal and informal practices provided opportunities to reinforce what participants had learned that week. For example, during the week that body scan was presented, the CD included a formal practice of the body scan that participants could listen to and complete each day. The workbook included informal practice activities that complimented the formal practices, for example, intentionally eating one meal mindfully. In addition to this, participants completed a log in their weekly workbook, tracking how many days they completed their assignments, how long they spent on their formal practice each week, and any questions or concerns they wanted to discuss (for a detailed description of the MBI, please see the [Appendix](#)). Once the MBI was complete, a research assistant met with each participant to administer post-test measures as well as a qualitative survey about the participants' experiences regarding the MBI.

Measures

The following measures were administered 1 week prior to the start of the MBI and 1 week following completion of the MBI:

Adaptive Development. Adaptive development is the ability to respond to new and challenging circumstances with flexibility and was measured using the shortened Selection, Optimization, and Compensation scale (SOC; [Baltes et al., 1999](#)). Each item contains two examples of ways an individual may behave in a certain situation. One item is considered adaptive development and the other is not. Higher scores indicate higher adaptive development on each of the subscales ([Baltes et al., 1999](#)).

Depressive Symptoms. Depressive symptoms were measured using the Center for Epidemiological Studies Depression Scale- Revised (CESD-R; [Eaton et al., 2004](#)). The CESD-R is comprised of 20 statements. Participants report how often each statement (e.g., "Nothing made me happy") has applied to them within the past week ([Eaton et al., 2004](#)). Higher scores indicate higher levels of depressive symptoms.

Rumination. Rumination was measured using the 22-item Ruminative Response Scale (RRS; [Treyner et al., 2003](#)). Participants are asked to "Please indicate what you generally do, not what you think you should do," by responding on a 4-point Likert scale (0 = *Almost Never* to 3 = *Almost Always*). The RRS has demonstrated good psychometric properties ([Treyner et al., 2003](#)).

Emotion Regulation. The 10-item Emotion Regulation Questionnaire (ERQ; [Gross & John, 2003](#)) assesses the degree to

which the individual controls their emotions through cognitive reappraisal (i.e., re-thinking a circumstance that is eliciting a particular, usually negative, emotion to instead elicit an alternative, usually positive, one) and expressive suppression (i.e., sequestering the emotions that are being elicited by a particular circumstance). The Regulatory Emotional Self-Efficacy scale (RESE; [Caprara & Gerbino, 2001](#)) assesses the degree to which individuals feel capable of managing positive and negative emotions on three dimensions: managing anger/irritation (ANG), managing despondency (DES), and expressing positive affect (POS). Higher scores on each measure indicate greater perceived emotion regulation abilities.

Mindfulness. Mindfulness was measured using the Five Facet Mindfulness Questionnaire (FFMQ; [Baer et al., 2006](#)), which contains a total of 39 items representing five separate facets of mindfulness: observing (noticing sensations/stimuli as they emerge), describing (identifying feelings/emotions with words), acting with awareness (purposefully directing attention to present actions), non-judging of inner experience (directing attention to thoughts and feelings without assigning them positive or negative valence), and non-reactivity to inner experience (maintaining control over one's external response to internal stimuli; [Baer et al., 2006](#)). Participants rate each item as to how often they do the described behavior (0 = *Never or very rarely true*, 5 = *Very often or always true*). A total mindfulness score was computed by summing all 39 items, and higher scores represent higher levels of mindfulness.

Mindfulness-Based Interventions Post-Intervention Survey. At the end of the MBI, participants were asked what they learned from the MBI, what they liked about the program, and what they did not like about the program.

The current study used a mixed methods approach ([Levitt et al., 2018](#)). This approach included comparing pre-test and post-test quantitative data examining adaptive development, depressive symptoms, rumination, emotion regulation, and trait mindfulness. In addition to these quantitative outcome variables, we also elicited and analyzed open-ended qualitative data on participants' subjective experiences with and thoughts about the MBI after the post-test was completed. Quantitative and qualitative analyses are described below.

Results

Given the small (i.e., $N = 8$) sample size, quantitative analyses are underpowered. Interpretation of the results should be made with caution. Analysis of the workbook logs indicated that participants were actively engaged in the MBI and completing their formal and informal practices regularly throughout the week. The average number of days per week spent practicing the formal meditations was 4.89.

Paired sample *t*-tests were conducted to assess changes in our outcome variables from pre- to post-intervention. Missing

Table 1. Comparison of Psychological Factors Before and After an 8-Week MBI in LTCF Residents.

Measure	Baseline		Follow-Up		t-test
	M	SD	M	SD	
SOC	6.33	2.92	8.81	2.82	-1.88
CESDR	28.25	14.63	22.63	16.57	0.77
RRS	53.70	10.03	45.93	9.63	2.83*
ERQ-R	28.38	8.77	30.38	9.62	-0.99
ERQ-S	13.88	7.62	12.75	6.48	0.90
RESE	35.09	7.37	38.1	9.52	-1.34
FFMQ	123.91	20.96	128.23	18.70	-2.15

Note. $p < .05$ *. The SOC (Selective Optimization with Compensation scale) assessed adaptive development, the CESDR (Center for Epidemiological Studies Depressive scale Revised) assessed depressive symptoms, the RRS (Ruminative Response Scale) assessed rumination, the ERQ (Emotion Regulation Scale) assessed emotional regulation on two subscales, rethinking and sequestering, the RESE (Regulatory Emotional Self-Efficacy scale) assessed self-efficacy for emotion regulation, and the FFMQ (Five Factor Mindfulness Questionnaire) assessed trait mindfulness as a composite of the five subscales. T-tests were conducted comparing pre- and post-test scores for each outcome variable. $N = 8$. Due to a limited sample size, interpret results with caution.

data was addressed using mean-substituted single imputation. Only rumination showed a significant decrease from pre-test ($M = 53.70$, $SD = 10.03$) to post-test ($M = 45.93$, $SD = 9.63$), $t(7) = 2.83$, $p < .05$. Although not significant, adaptive development, the ability to respond to new and challenging circumstances with flexibility, increased from pre- to post-test. Depressive symptoms decreased from pre- to post-test. Emotion regulation—the degree to which participants felt capable of managing positive and negative emotions—improved from pre- to post-test on both measures. Last, trait mindfulness improved from pre- to post-test. Although these differences were not statistically significant, each outcome variable trended in the anticipated direction. Please see Table 1 for means and SDs.

Next, we examined qualitative feedback provided by our participants on the open-ended post-intervention survey. The first author read through all post-intervention surveys with each participant to identify reoccurring themes. In addition to this, the first author examined all notes from individual weekly meetings with participants for additional comments about the MBI. The first and last author then met and discussed the themes. They also examined the statements for valence (positive or negative). Participant feedback on the post-intervention survey was generally positive. Several participants stated that the meditation practices helped ease their pain (e.g., “I do the body scan every day after my physical therapy; it makes the pain go down.” “...my exercises...are helping me to try to get myself back into the flow of life.”). Participants also stated that the meditation practices helped reduce their anxiety. Several participants stated that they used the meditation practices to assist with falling asleep

both in the post-intervention survey and during their weekly meetings with the instructor (e.g., “The body scan really relaxed me to sleep”).

Major challenges reported by participants in the post-intervention survey included making time for their formal practice and distraction from roommates or other facility noises. Further, several participants stated that mindful eating was unenjoyable because of meal quality at the facility. Most participants clearly did not enjoy the mindful yoga exercise (e.g., “Did not enjoy yoga at all. Prefer body scan much more”). One person reported difficulty sitting for extended periods of time (e.g., “It is difficult to do sitting meditation in wheelchair – very uncomfortable.”) and preferred instead to complete their practices in bed lying down. Further, some participants did not log formal and informal practices in their weekly workbooks due to difficulty writing, but verbally reported listening to the guided meditations regularly at their weekly meetings with the instructor.

The results of this pilot study suggest that an individual MBI is feasible, had a positive impact on our outcome variables, and was well-received. Overall, residents reported that they enjoyed the program and felt that they benefitted from the skills they learned throughout the MBI. An individual MBI for LTCF populations could allow residents who may be unwilling or incapable of attending group sessions to experience the benefits of MBSR.

Discussion

Our pilot study represented the sixth investigation to date testing the efficacy of an MBI for LTCF populations and the first to our knowledge testing an MBI delivered to older adults in a one-on-one format. We set out to create an 8-week MBI based on an established and empirically supported intervention, grounded in Kabat-Zinn’s (2013) original MBSR curriculum. Results indicated that the MBI significantly reduced rumination in our sample and had a positive impact on adaptive development, depressive symptoms, emotion regulation, and trait mindfulness. Further, all participants reported positive qualitative statements about the program and indicated subjective improvements in pain, anxiety, sleep, and relaxation. Our results are consistent with previous research on group-based MBIs in both healthy community dwelling and LTCF older adult populations (Chen et al., 2020; Ernst et al., 2008; Lantz et al., 1997; McBee et al., 2004; Tsai et al., 2020). An individual MBI can be effective for and well-received by older adults in LTCFs. Thus, we offer several recommendations for implementing our intervention below.

An Individual Mindfulness-Based Intervention for Long-Term Care Facility Residents

The first recommendation is to shift from a group-focused to an individual MBI program. We believe this change is

effective for distributing the MBI to participants who may not desire or be able to attend a group intervention. Rather than rely on group instruction, we recommend 10–20-minute individual instructor–participant interactions once each week to provide guidance throughout the MBI. We believe this is a realistic and reasonable amount of time to meet with each participant. During these meetings, the instructor and participant review the past week’s material, discuss the upcoming week’s material, and address any questions the participant has about the program.

The second recommendation includes the use of CDs (or some form of streaming audio platform) to administer course content for the weekly formal practices. To facilitate an individual MBI, we gave each participant a CD player, weekly workbooks, and weekly CDs. In the weekly CD, the principal researcher of this study guided participants through the workbook and discussed that week’s formal and informal practice. Participants could listen to the content as many times as they wished or stop and replay content as needed.

The third recommendation involves removal or reduction of several core practices that are included in the traditional MBSR curriculum. The mindful yoga component is not included in our recommended intervention. The removal is due to feedback we received in the pilot study. This negative feedback was reported even though the exercises were not considered strenuous and could be done lying in bed (e.g., raising a leg or arm and noticing the sensations of doing so). We also removed the full-day silent retreat. With LTCF populations, this event is not considered feasible, as residents usually have full schedules including physical therapy, appointments, medication administration, and family visits. These adaptations are also consistent with previous research in community-dwelling older adults (e.g., [Lenze et al., 2014](#)) highlighting that participants found yoga and an all-day retreat to be overly strenuous. Last, the daily formal practice meditations have been reduced to 20 minutes rather than the standard 45 minutes, as feedback from the pilot study indicated longer periods of meditation often ended in participants falling asleep.

Although the individual MBI we propose is feasible, we recognize that several barriers currently exist that may inhibit widespread adoption of an individual MBI in LTCFs. First, LTCFs would need to determine which staff would be trained in MBSR and trained to deliver our individual MBI curriculum. Through our experiences with facilities in our community, we would recommend that an activity director or social worker take on this role. We are aware that many facilities are already understaffed and struggle to meet the current demands placed upon them. Although formal training through the University of Massachusetts Memorial Center for Mindfulness is quite costly and time consuming, Palouse Mindfulness offers an 8-week MBSR training course online at no cost, <https://palousemindfulness.com/index.html>. This training would be sufficient to familiarize staff with the basic principles and practices of mindfulness. Once familiar with

the principles and practices, a staff member would be able to adequately deliver our curriculum and train support staff as needed.

Next, LTCFs would need to determine which staff would be assigned to identify potential participants who could benefit from and participate in the individual MBI program. Again, through our experiences with facilities in our local community, we would recommend that the staff psychologist or nurse (RN) take on this role as they would be in the best position to identify those most in need of such an intervention. In our experience, after conferring with staff psychologists and social workers across several LTCFs in our local community, good candidates for the program include residents who typically do not engage in group activities, new residents who are having difficulty adjusting to their new home, residents who are experiencing increased anxiety, stress, or agitation, and residents who are struggling to manage chronic pain. Although the current study used an MMSE cut-off to ensure each participant’s ability to provide informed consent, there is currently some debate in the literature regarding implementing MBIs with individuals diagnosed with mild cognitive impairment (MCI) or dementia. What little research has been done with cognitively impaired residents indicates that many of these individuals can participate in and potentially benefit from MBIs. However, we must recognize that not every resident will be able or want to participate in an MBI. Please see [Chan et al. \(2020\)](#) for a review.

Last, the time required to implement an 8-week individual MBI could potentially be more demanding on the instructor than implementing an 8-week group-based MBI. This ultimately depends on how many residents are currently progressing through the curriculum at any given time. Previous research has indicated that most group sessions run for 1.5–2 hours each week. If no more than 10 residents are progressing through the individual MBI at any given time, this would be roughly an equivalent time commitment on the part of the staff implementing the program.

Despite these challenges, we believe that the benefits of this individual MBI training are worth the investment of time and resources. Relationships between staff and residents can be strengthened during weekly one-on-one sessions, psychological well-being can improve for both staff and residents as a result of the skills being learned and practiced, and personal control and autonomy can be fostered among residents who often report feeling as though their independence and autonomy are non-existent.

Limitations

The primary limitation in our pilot study is sample size. Any quantitative results that we obtained were underpowered. Despite low power, valuable quantitative and qualitative data were obtained. That rumination was significantly reduced is promising, as previous research has shown meditation increases mindfulness by reducing rumination ([Jury & Jose, 2019](#)). Second, the lack of a comparison group limits our

ability to detect whether the positive trends from pre- to post-intervention were attributable simply to participants' expectations (engaging in a program that they believed would be effective) or interactions (social interaction with the instructor). Third, as mentioned above, we must seriously consider the time and resource requirements of providing such a program at LTCFs. Time would have to be spent training staff, first in the practice of MBSR, and second in delivering the content of the weekly one-on-one sessions to individual residents in a clear and consistent manner. We understand that many facilities are already understaffed, and that time is a precious resource. Despite these challenges, MBSR can be beneficial for both staff and residents alike in managing stress and increasing psychological well-being. Further, engaging directly with residents who are hesitant to participate in group activities creates new opportunities to build connections between care providers and care recipients. Fourth, we do recognize that not all residents will be able to participate in an MBI, even in an individual format. Many residents may be in mid to late stages of dementia or have other impairments that make participation impossible. Last, we noted that several modifications of MBSR and other MBIs are being developed; hence, our MBI could arguably further muddy the waters. However, our approach to developing this program began by grounding it in an empirically supported MBI (MBSR), modifying it based on prior literature (Ernst et al., 2008; Mallya & Fiocco, 2016; Moss et al., 2015; Paller et al., 2015; Turner, 2014), and piloting the program. We are currently testing this MBI in a larger sample of LTCF residents and comparing it against an active control condition.

Appendix

Mindfulness-Based Intervention for Long-Term Care Facilities

Week 1. The first weekly meeting begins with an introduction and brief 5-minute sitting meditation with discussion. Following a discussion of the definition of mindfulness, the participant is given the week 1 workbook and the instructor describes each page and how to use the workbook. Each workbook begins with a description of a study or studies that describe a related aspect for that week. Next, the formal definition of mindfulness is presented and explained using Kabat-Zinn's definition and the water droplet symbol of mindfulness. Then, the participant is introduced to the first formal practice, the body scan, and instructions are given for when and how often to complete it. The body scan for this intervention is from www.palousemindfulness.com and is a 20-minute recording.

The next page contains a formal practice log, in which the participant fills out if and how much they performed the body scan each day for the next week. The informal practice is then presented to the participant, and entails eating at least one

Conclusion

By keeping the major formal and informal practices of the empirically supported MBSR program (Kabat-Zinn, 2013), while modifying components less effective for older adult populations, we have developed an appropriate individual MBI for residents of LTCFs. Preliminary findings indicate the program may be an effective method of introducing participants to mindfulness, allowing them to engage in practices resulting in positive outcomes in other similarly aged community-dwelling populations (Geiger et al., 2016). The CD-based curriculum provides flexibility needed to administer the intervention to this population and would allow facilities to internally administer the intervention. In the age of COVID-19, when access to LTCFs is limited, such autonomy on behalf of the facility would be highly beneficial.

Clinical Implications

1. The current results present an evidence-based non-pharmacologic intervention designed to improve well-being in residents of LTCFs.
2. An individual MBI curriculum designed specifically for residents of LTCFs is feasible to implement, well-received, and beneficial for this population.
3. Last, an individual MBI curriculum for residents of LTCFs may increase control and autonomy among residents of LTCFs.

mindful meal, completing the Nine Dots Exercise, and recording their thoughts on these exercises. Next are two voluntary reflection pages included in each workbook. Participants are asked to record how many days they completed the formal and informal practice, as well as to write any questions, comments, or concerns that need to be addressed. The final page includes a mindfulness-related poem for the participant to reflect upon if they choose. Each weekly workbook follows this general format.

Week 2. The second week begins with a discussion of the formal and informal practices from the first week. Then, the week two formal practice, sitting meditation, is introduced, and the home practice guidelines are discussed. The sitting meditation is from www.palousemindfulness.com. The home practice for week two includes alternating the body scan with the sitting meditation each day for at least 20 minutes. The informal practice is called the Pleasant Events Calendar, and entails identifying an experience each day that the participant would describe as pleasant, and answering questions about the experience. The second informal practice assignment is to begin to apply mindfulness to a daily activity, such as

brushing one's teeth or bathing, and to pay attention to the various sensations that arise during this activity.

Week 3. The third meeting begins by discussing the formal and informal practices from the second week. Discussion is especially encouraged on the pleasant events calendar. The participant is then introduced to the third core meditation, loving kindness, from www.paloumindfulness.com. The weekly formal practice is then explained, which entails alternating the body scan with the loving-kindness meditation, and doing the sitting meditation for 5–15 minutes each day without the use of the CD. The informal practice is completing an Unpleasant Events Calendar, which asks the participant to reflect on questions regarding an unpleasant event.

Week 4. The fourth weekly meeting begins by discussing the formal and informal practice for the past week, with emphasis on the unpleasant events calendar. The week four workbook and lesson CD discuss applying mindfulness to pain and stress. In the lesson CD, the primary researcher guides the listener through a 15-minute pain-focused meditation. Next, the formal and informal practice for the week is explained. The formal practice entails continuing to alternate the body scan with the loving-kindness meditation each day and to practice the sitting meditation on one's own for 15–20 minutes each day. For the informal practice, participants are asked to take some time each day to become aware of automatic, habitual stress reactions and behaviors that they engage in, without changing them.

Week 5. The fifth weekly meeting begins with a discussion on being halfway through the program. The participant is encouraged to discuss their thoughts on the program so far and to resolve any issues that have arisen, what is working well and what is not. Next, a discussion is led on the formal and informal practice for the past week, with emphasis on reacting to stressful events. The instructor then discusses the formal and informal practices for the week. The formal practice is to continue alternating the body scan with the loving-kindness meditation, as well as to perform the sitting meditation on their own for about 20 minutes each day. The informal practice entails bringing awareness to a difficult or stressful communication.

Week 6. The sixth weekly meeting begins with a discussion of the formal and informal practice, with emphasis on the stressful communication calendar. Last, the instructor discusses the formal and informal practice for the next week. The formal practice is to alternate the techniques to their choosing, and to try and perform the sitting meditation on their own for 20–30 minutes each day. The informal practice involves continuing to incorporate mindfulness into their daily routine.

Week 7. The seventh weekly meeting begins by discussing the formal and informal practice, and the MBI program as a whole. Emphasis is placed on encouraging the participant to develop a plan for themselves on how they will continue to use mindfulness beyond the program. Positive benefits that have been found to occur from mindfulness are discussed to encourage this process. The formal practice is then discussed, which is to practice the meditations without the CDs for 30–45 minutes a day. The week seven workbook concludes with the voluntary reflection activities.

Week 8. The eighth and final weekly meeting emphasizes discussions of the independent practice of mindfulness, the program, and the participant's plan to continue using mindfulness. The participants were given a final workbook, which they keep, that outlines the techniques and practices that they have learned throughout the program. Any final questions/thoughts are discussed, and the final survey administration is planned for a week or so following the meeting.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

This study was approved by the Institutional Review Board at the University of North Carolina Wilmington, protocol number 17–0142.

ORCID iD

Alissa Dark-Freudeman  <https://orcid.org/0000-0001-8175-2893>

References

- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. <https://doi.org/10.1177/1073191105283504>.
- Baltes, P. B., Baltes, M. M., Freund, A. M., & Lang, F. R. (1999). *The measurement of selection, optimization, and compensation (SOC) by self report*. Technical report 1999. Max-Planck-Institut für Bildungsforschung.
- Black, D. S., O'Reilly, G. A., Olmstead, R., Breen, E. C., & Irwin, M. R. (2015). Mindfulness meditation and improvement in sleep quality and daytime impairment among older adults with sleep disturbances. *JAMA Internal Medicine, 175*(4), 494–501. <https://doi.org/10.1001/jamainternmed.2014.8081>.

- Campanelli, C. M. (2012). American geriatrics society updated beers criteria for potentially inappropriate medication use in older adults. *Journal of the American Geriatrics Society*, *60*(4), 616–631.
- Caprara, G., & Gerbino, M. (2001). Affective perceived self-efficacy: The capacity to regulate negative affect and to express positive affect. *Self-efficacy Assessment*, *1*(1), 35–50.
- Cavanagh, K., Strauss, C., Forder, L., & Jones, F. (2014). Can mindfulness and acceptance be learnt by self-help?: A systematic review and meta-analysis of mindfulness and acceptance-based self-help interventions. *Clinical Psychology Review*, *34*(2), 118–129. <https://doi.org/10.1016/j.cpr.2014.01.001>.
- Centers for Medicare and Medicaid Services (2015). *Nursing home data compendium 2015 edition*. Centers for Medicare and Medicaid Services.
- Chan, J., Leung, D. K. Y., Walton, H., Wong, G. H. Y., & Spector, A. (2020). Can mindfulness-based interventions benefit people with dementia? Drawing on the evidence from a systematic review in populations with cognitive impairments. *Expert Review of Neurotherapeutics*, *20*(11), 1143–1156. <https://doi.org/10.1080/14737175.2020.1810571>.
- Chen, S. M., Lin, H. S., Atherton, J. J., MacIsaac, R. J., & Wu, C. J. (2020). Effect of a mindfulness programme for long-term care residents with type 2 diabetes: A cluster randomised controlled trial measuring outcomes of glycaemic control, relocation stress and depression. *International Journal of Older People Nursing*, *15*(3), e12312. <https://doi.org/10.1111/opn.12312>.
- Chouinard, A.-M., Larouche, E., Audet, M.-C., Hudon, C., & Goulet, S. (2019). Mindfulness and psychoeducation to manage stress in amnesic mild cognitive impairment: A pilot study. *Aging & Mental Health*, *23*(9), 1246–1254. <https://doi.org/10.1080/13607863.2018.1484890>.
- Cockrell, J. R., & Folstein, M. F. (2002). Mini-mental state examination. *Principles and Practice of Geriatric Psychiatry*, 140–141.
- Colgan, D. D., Klee, D., Memmott, T., Proulx, J., & Oken, B. (2019). Perceived stress mediates the relationship between mindfulness and negative affect variability: A randomized controlled trial among middle-aged to older adults. *Stress and Health: Journal of the International Society for the Investigation of Stress*, *35*(1), 89–97. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6534144/pdf/nihms-1029070.pdf>.
- Eaton, W. W., Smith, C., Ybarra, M., Muntaner, C., & Tien, A. (2004). *Center for epidemiologic studies depression scale: Review and revision*. CESD and CESD-R.
- Ell, K. (2006). Depression care for the elderly: Reducing barriers to evidence-based practice. *Home Health Care Services Quarterly*, *25*(1–2), 115–148. https://dx.doi.org/10.1300%2FJ027v25n01_07.
- Elliot, A. J., Gallegos, A. M., Moynihan, J. A., & Chapman, B. P. (2019). Associations of mindfulness with depressive symptoms and well-being in older adults: The moderating role of neuroticism. *Aging & Mental Health*, *23*(4), 455–460. <https://doi.org/10.1080/13607863.2017.1423027>.
- Ernst, S., Welke, J., Heintze, C., Gabriel, R., Zöllner, A., Kiehne, S., Schwantes, U., & Esch, T. (2008). Effects of mindfulness-based stress reduction on quality of life in nursing home residents: A feasibility study. *Forschende Komplementärmedizin/Research in Complementary Medicine*, *15*(2), 74–81. <https://doi.org/10.1159/000121479>.
- Franco, C., Amutio, A., Mañas, I., Gázquez, J. J., & Pérez-Fuentes, M. d. C. (2017). Reducing anxiety, geriatric depression and worry in a sample of older adults through a mindfulness training program. *Terapia Psicológica*, *35*(1), 71–79. <http://dx.doi.org/10.4067/S0718-48082017000100007>.
- Geiger, P. J., Boggero, I. A., Brake, C. A., Caldera, C. A., Combs, H. L., Peters, J. R., & Baer, R. A. (2016). Mindfulness-based interventions for older adults: A review of the effects on physical and emotional well-being. *Mindfulness*, *7*(2), 296–307. <https://dx.doi.org/10.1007%2Fs12671-015-0444-1>.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, *85*(2), 348–362. <https://doi.org/10.1037/0022-3514.85.2.348>.
- Hazlett-Stevens, H., Singer, J., & Chong, A. (2019). Mindfulness-based stress reduction and mindfulness-based cognitive therapy with older adults: A qualitative review of randomized controlled outcome research. *Clinical Gerontologist*, *42*(4), 347–358. <https://doi.org/10.1080/07317115.2018.1518282>.
- Huang, S.-L., Li, R.-H., Huang, F.-Y., & Tang, F.-C. (2015). The potential for mindfulness-based intervention in workplace mental health promotion: Results of a randomized controlled trial. *Plos One*, *10*(9), e0138089. <https://doi.org/10.1371/journal.pone.0138089>.
- Isbel, B. D., Lagopoulos, J., Hermens, D. F., & Summers, M. J. (2019). Mental training affects electrophysiological markers of attention resource allocation in healthy older adults. *Neuroscience Letters*, *698*(1), 186–191. <https://doi.org/10.1016/j.neulet.2019.01.029>.
- Jury, T. K., & Jose, P. E. (2019). Does rumination function as a longitudinal mediator between mindfulness and depression? *Mindfulness*, *10*(6), 1091–1104.
- Kabat-Zinn, J. (2013). *Full catastrophe living: How to cope with stress. Pain and illness using mindfulness meditation*. Goodreads.
- Lam, H. R., Chow, S., Taylor, K., Chow, R., Lam, H., Bonin, K., Rowbottom, L., & Herrmann, N. (2018). Challenges of conducting research in long-term care facilities: A systematic review. *BMC Geriatrics*, *18*(1), 242. <https://doi.org/10.1186/s12877-018-0934-9>.
- Lantz, MS, Buchalter, EN, & McBee, L (1997). The Wellness Group: a novel intervention for coping with disruptive behavior among [corrected] elderly nursing home residents. *The Gerontologist*, *37*(4), 551–556. <https://doi.org/10.1093/geront/37.4.551>.
- Lenze, E. J., Hickman, S., Hershey, T., Wendleton, L., Ly, K., Dixon, D., Doré, P., & Wetherell, J. L. (2014). Mindfulness-based stress reduction for older adults with worry symptoms and co-

- occurring cognitive dysfunction. *International Journal of Geriatric Psychiatry*, 29(10), 991–1000. <https://doi.org/10.1002/gps.4086>.
- Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. *American Psychologist*, 73(1), 26–46. <http://dx.doi.org/10.1037/amp0000151>.
- Lindberg, D. A. (2005). Integrative review of research related to meditation, spirituality, and the elderly. *Geriatric Nursing*, 26(6), 372–377. <https://doi.org/10.1016/j.gerinurse.2005.09.013>.
- Mallya, S., & Fiocco, A. J. (2016). Effects of mindfulness training on cognition and well-being in healthy older adults. *Mindfulness*, 7(2), 453–465. <https://link.springer.com/article/10.1007/s12671-015-0468-6>.
- McBee, L. (2008). *Mindfulness-based elder care*. Springer Pub.
- McBee, L., Westreich, L., & Likourezos, A. (2004). A psycho-educational relaxation group for pain and stress management in the nursing home. *Journal of Social Work in Long-Term Care*, 3(1), 15–28. https://doi.org/10.1300/J181v03n01_03.
- Morone, N. E., Greco, C. M., Moore, C. G., Rollman, B. L., Lane, B., Morrow, L. A., Glynn, N. W., & Weiner, D. K. (2016). A mind-body program for older adults with chronic low back pain. *JAMA Internal Medicine*, 176(3), 329–337. <https://doi.org/10.1001/jamainternmed.2015.8033>.
- Morone, N. E., Greco, C. M., & Weiner, D. K. (2008). Mindfulness meditation for the treatment of chronic low back pain in older adults: A randomized controlled pilot study ☆. *Pain*, 134(3), 310–319. <https://doi.org/10.1016/j.pain.2007.04.038>.
- Moss, A. S., Reibel, D. K., Greeson, J. M., Thapar, A., Bubbs, R., Salmon, J., & Newberg, A. B. (2015). An adapted mindfulness-based stress reduction program for elders in a continuing care retirement community. *Journal of Applied Gerontology*, 34(4), 518–538. <https://doi.org/10.1177/0733464814559411>.
- Mulsant, B. H., & Ganguli, M. (1999). Epidemiology and diagnosis of depression in late life. *The Journal of Clinical Psychiatry*, 60(20), 9–15.
- Paller, K. A., Creery, J. D., Florczak, S. M., Weintraub, S., Mesulam, M.-M., Reber, P. J., Kiragu, J., Rooks, J., Safron, A., Morhardt, D., O'Hara, M., Gigler, K. L., Molony, J. M., & Maslar, M. (2015). Benefits of mindfulness training for patients with progressive cognitive decline and their caregivers. *American Journal of Alzheimer's Disease & Other Dementias*, 30(3), 257–267. <https://doi.org/10.1177/1533317514545377>.
- Stevenson, D. G., Dusetzina, S. B., James O'Malley, A., Mitchell, S. L., Zarowitz, B. J., Chermew, M. E., Newhouse, J. P., & Huskamp, H. A. (2014). High-risk medication use by nursing home residents before and after hospitalization. *Medical Care*, 52(10), 884–890. <https://doi.org/10.1097/mlr.0000000000000214>.
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27(3), 247–259. <https://doi.org/10.1023/A:1023910315561>.
- Tsai, P. C., Chen, S. M., Lin, H. S., & Chen, Y. J. (2020). [The effectiveness of a mindfulness-based intervention in reducing relocation anxiety and promoting adaptation in older people with diabetes]. *Hu Li Za Zhi The Journal of Nursing*, 67(2), 45–57. [https://doi.org/10.6224/jn.202004_67\(2\).07](https://doi.org/10.6224/jn.202004_67(2).07).
- Turner, K. (2014). Mindfulness skills training: a pilot study of changes in mindfulness, emotion regulation, and self-perception of aging in older participants. *Activities, Adaptation & Aging*, 38(2), 156–167. <https://doi.org/10.1080/01924788.2014.901074>.
- Wetherell, J. L., Hershey, T., Hickman, S., Tate, S. R., Dixon, D., Bower, E. S., & Lenze, E. J. (2017). Mindfulness-based stress reduction for older adults with stress disorders and neurocognitive difficulties: a randomized controlled trial. *The Journal of Clinical Psychiatry*, 78(7), 734–743. <https://doi.org/10.4088/jcp.16m10947>.
- Whitmoyer, P., Fountain-Zaragoza, S., Andridge, R., Bredemeier, K., Londeree, A., Kaye, L., & Prakash, R. S. (2020). Mindfulness training and attentional control in older adults: A randomized controlled trial. *Mindfulness*, 11(1), 203–218. <https://doi.org/10.1007/s12671-019-01218-3>.
- Zellner Keller, B., Singh, N. N., & Winton, A. S. W. (2014). Mindfulness-based cognitive approach for seniors (MBCAS): Program development and implementation. *Mindfulness*, 5(4), 453–459. <https://doi.org/10.1007/s12671-013-0262-2>.
- Zhang, J.-x., Liu, X.-h., Xie, X.-h., Zhao, D., Shan, M.-s., Zhang, X.-l., Kong, X.-m., & Cui, H. (2015). Mindfulness-based stress reduction for chronic insomnia in adults older than 75 years: A randomized, controlled, single-blind clinical trial. *Explore*, 11(3), 180–185. <https://doi.org/10.1016/j.explore.2015.02.005>.