

Feasibility and Acceptability of a Community-Based Modified Mindfulness-Based Stress Reduction Program for the Under- and Unemployed

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Abstract

Background: Mindfulness-Based Stress Reduction (MBSR) often improves health outcomes, though literature primarily focuses on middle-class, employed individuals. With an estimated average of six million unemployed over the past year, and the recent uptick in unemployment due to the COVID-19 pandemic, it is important to identify methods to mitigate and reduce the negative health outcomes often associated with under- and unemployment.

Objectives: We aimed to 1) outline the process of partnering with a community organization to implement a modified MBSR program for under- and unemployed individuals, and 2) present pilot data on preliminary results.

Methods: The modified MBSR program was implemented in two phases within a job training program for under- and unemployed individuals. In Phase I, group one received an eight-week program. Based on feedback, the MBSR program was reduced to six weeks and implemented for groups two and three (Phase II). Feasibility and acceptability were evaluated utilizing a mixed-methods approach. Changes in mindfulness, perceived stress, pain interference, anxiety, depression, and sleep disturbance were assessed pre-post the modified MBSR program.

Results: Thirty-three participants completed the program with twenty-nine post-survey responses. The modified MBSR program was feasible and acceptable as evidenced by the enrollment rate (96%), retention rate (72%), and qualitative feedback. Fifty-percent of participants self-reported weekly home practice compliance. Perceived stress and mindfulness demonstrated significant moderate improvements ($d = .69, p = .005$; $d = .46, p = .001$). Depression, anxiety, and pain interference results suggested small non-significant effect size improvements ($d = .27, p = .19$; $d = .23, p = .31$; $d = .25, p = .07$). Effects on fatigue and sleep disturbance were negligible.

Conclusion: The modified MBSR program was feasible and acceptable to the organization and participants. Small to moderate improvements in mental health and pain interference outcomes were observed. Research using larger sample sizes and randomized designs is warranted.

Keywords

mindfulness, MBSR, unemployment, underemployed, under-resourced

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Over the past year, about six million adults in the United States were unemployed and another six million underemployed.¹ The rates of unemployment have drastically increased to 23.1 million as of April 2020 due to the coronavirus (COVID-19) pandemic. The negative health effects of under- and unemployment, or insufficient employment, are well known,² including increased anxiety and depressive symptoms, and higher rates of mental health hospitalization, pain, alcohol abuse, and suicide.³⁻⁶ Furthermore, compared to employed adults, unemployed individuals are more likely to have serious psychological distress and poor mental health, and are less likely to receive needed medical care and prescriptions.^{7,8} While employed individuals with low-income have similar health disparities, insufficient employment is particularly damaging to maintaining health behaviors due to unhealthy coping.⁹ Physical and mental health symptoms are both a consequence of insufficient employment and a barrier to obtaining employment,¹⁰ creating a vicious cycle and highlighting a critical need to develop accessible interventions to improve mental health outcomes in these individuals.

Stress reduction programs grounded in mindfulness practices may be one promising evidence-based approach to increasing health care access and improving health outcomes in this at-risk population. Mindfulness involves paying attention to present moment experiences as they unfold with an attitude of non-judgment and curiosity, and may be practiced formally during mindfulness meditation practices or informally by bringing mindful awareness to everyday activities.^{11,12} Mindfulness is cultivated through formal and informal practices to help individuals improve cognitive and affective regulation, self-compassion, stress management, and a present moment orientation to prevent suffering and improve adaptive functioning.¹³⁻¹⁵ The first contemporary mindfulness-based intervention, Mindfulness-Based Stress Reduction (MBSR), was developed by Jon Kabat-Zinn to aid in reducing stress and stress-related health conditions.¹² MBSR is a manualized, experiential 8-week program that focuses on cultivating mindfulness in everyday life through meditation practices, such as the body scan and yoga. Results of several meta-analyses and systematic reviews of randomized controlled trials (RCTs) support the efficacy of MBSR for improving stress, anxiety, depression, quality of life, physical functioning, chronic pain, sleep disturbance, and other health problems in a variety of populations.¹⁶⁻²¹ While these are common issues for under- and unemployed individuals, there remains a lack of research on MBSR for this at-risk population, leaving questions about the potential positive impact of such programs.

A systematic review of the demographics of RCTs of mindfulness-based interventions for adults found that,

of the studies that reported employment rate, the majority had more than half of participants employed and most had over half of participants earning at least \$40,000 USD annually.²² There have only been a handful of preliminary studies related to MBSR for the under- and unemployed. Studies that piloted an adapted MBSR program for comparable under-resourced populations (e.g., urban populations) have shown high levels of acceptability, feasibility, and improvements in anxiety, quality of life, perceived stress, and self-compassion; however, these studies either did not specifically target the under- and unemployed²³⁻²⁵ or collect quantitative pre-post outcome data.²⁶ Abercrombie et al. conducted a pilot trial of MBSR for low-income multiethnic women and reported a significant reduction in anxiety; however, results only included eight participants due to high attrition.²⁷ These authors suggested recruiting from sites where participants have established positive relationships with staff and where staff would endorse recruitment, given this population's mistrust of researchers and desire for honest and respectful communication from research personnel.²⁸

Therefore, the purpose of this study was two-fold. The first was to describe the process of implementing a modified MBSR program (Phase I: 8 weeks; Phase II: 6 weeks) for individuals with insufficient employment and low-income in an existing community-based program. The second was to explore feasibility, acceptability, and preliminary changes in health outcomes of participants who participated in the program. We hypothesized that the intervention would be feasible and acceptable as supported by enrollment, attendance rates, home practice engagement, and qualitative feedback, and that participants would report improvements in stress, anxiety, depression, pain interference, fatigue, mindfulness, and sleep disturbance following participation in the program.

Methods

Program Initiative and Community Collaboration

A family foundation supported the implementation of a modified MBSR program into a local community organization that focused on serving the under-resourced. Based on the structure of MBSR and the selected population, the community program partner needed to be 1) an established and trusted local community program that worked with an under-resourced population; 2) able to accommodate an 8-week MBSR program; and 3) open to a long-term partnership. Two researchers conducted an iterative search process by contacting community organizations, discussing shared goals, and identifying the needs of each community partner. This process included researching community programs,

emails, phone calls, interviews, educating potential partners on MBSR, and receiving referrals to other organizations. Most community-based programs were unable to accommodate an 8-week program, which left two options for the partnership. The research team decided to partner with Cincinnati COOKS! because they met the necessary criteria for partnership and expressed a shared interest in providing support for an under-resourced population. They were also able to provide a physical space for the MBSR groups to be held. The Cincinnati COOKS! program is operated by the larger local food bank organization, Freestore Foodbank, as a free culinary job training program for low-income individuals who are currently under- or unemployed (<https://freestorefoodbank.org/cincinnati-cooks/>). Cincinnati COOKS! provides education on professional skills to help individuals start and maintain a successful career in the food service industry, while also providing life skills to help cultivate greater success in the participants' personal lives. The life skills topics include financial planning, communication, team building, conflict resolution, Building Successful Mindsets (program addressing how stress and trauma affect everyday life), job readiness, interviewing, business coaching and entrepreneurship, and ServSafe (food safety training).

Recruitment and Enrollment

The Cincinnati COOKS! program had predetermined enrollment criteria, which stated that participants had to be (1) above the age of 18 years old, (2) come from a low-income household, as defined by the U.S. Federal Poverty Guidelines, and (3) be drug- and alcohol-free during the program. Study researchers and culinary job training program staff collaborated to conduct in-person, on-site recruitment for the modified MBSR program. The incoming cohort of students was informed of the opportunity to partake in a "Mindful Stress Reduction Program" through a one-hour orientation presentation within their first week of the culinary job training program. The modified MBSR program was described as a mind-body training to learn self-care and relaxation skills to increase awareness and effectively cope with stress. Potential participants were informed that they would learn mindfulness meditation, body scan meditation, body stretches (e.g., easy movement, gentle yoga), and engage in group work and social connection. Participants were also informed of the benefits (e.g., improved relaxation and coping skills) and potential risks (e.g., minor physical risk for participating in yoga) of participating in the program. Program guidelines were also addressed, such as confidentiality within the group, mutual respect, permission to skip any activity, punctuality and attendance, and understanding that this group was for learning, rather than for advice-giving

or group therapy. All interested individuals completed a standard MBSR screener survey and signed an informed consent document in-person. The screener survey elicits information to determine appropriateness for an MBSR group, such as substance use, mental health history, family structure, and risk. After the orientation and screener survey, all interested and eligible participants in the MBSR program were asked if they were interested in completing a pre and post survey as part of evaluation. An alternate life skills session was offered at the site for individuals who were not interested in participating in the MBSR program during the class time. This evaluation study was approved by the University of Cincinnati Institutional Review Board.

MBSR Program and Modifications

Program Delivery. The MBSR program was delivered mid-day, on-site, in the same group activity room each week at the Freestore Foodbank. The sessions were two-hours in duration. The program was led by an MBSR-qualified instructor with 10 years of mindfulness and meditation experience, who is also a licensed clinical psychologist (co-author, MM). The instructor had individual meetings with all interested participants prior to the start of the program to discuss confidentiality, clarify program intentions, validate and address any questions, and begin to build rapport and trust. The research team helped with set-up as needed, attended the orientation, and managed data collection from the program participants. The modified MBSR program was offered three times over a twenty-month period. The same instructor taught all three groups. After the conclusion of the first group, the program was modified further to better meet the needs of the population. Therefore, we describe the implementation of the program in two phases, which are detailed below.

Phase I: 8-Week Program. Phase I included group one only (March 2018 to May 2018). The 8-week modified MBSR program closely followed the content and structure of the standard MBSR program with some adaptations. Adaptation decisions were informed by the program instructor's clinical and teaching expertise and current literature to best fit the population and accommodate factors including access barriers, comprehension level, mental health status, and time constraints. See Appendix A for details on the modified program. Regarding structure, each two-hour, weekly session began with a brief check-in period with the participants. Participants received a binder to keep the weekly course handouts and home practice materials. They were invited to spend about 45 minutes each day on home practice exercises. The instructor encouraged that participants practice formal practices when possible (e.g., body

scan, awareness of breath meditation), and informal practices during other parts of their day (e.g., waiting at bus stop, serving tables, cleaning, feeding children). Two retreats lasting two hours each were offered in-between weeks 6 and 7 of the program (only offered for Phase I participants). The retreat structure was modified from the original MBSR program because neither the facility nor the participants could commit to the standard all-day immersion retreat.

The original MBSR retreat typically includes a variety of meditation practices that aid in cultivating present-moment focus, self-compassion, awareness, and connecting with one's inner strength and peace (e.g., mountain meditation, lake meditation, loving kindness meditation, and eating meditation). However, as the modified MBSR retreat was condensed, some of these meditation practices were not offered. In addition, yoga and sustained sitting meditations were offered only in-class and not as home practice to ensure participant safety and active instructor support given participants' vulnerabilities, trauma histories, and various health conditions. All informal home practices drawn from MBSR (e.g., mindful meals, mindful daily activities, body scans, breathing practices) were emphasized in the course. The instructor remained available after class to check-in with any participants who needed additional support and to ensure that mindfulness practices were trauma sensitive. One staff member from the culinary job training program regularly attended sessions as a participant in Phase I.

Phase II: 6-Week Program. Phase II included group two (October 2018 to November 2018) and group three (August 2019 to October 2019). The modified MBSR program from Phase I was further adapted based on feedback from the program partners at Cincinnati COOKS! who requested a shorter program without the two additional retreats due to time constraints. Thus, the Phase II program was shortened into a modified 6-week program with two-hour weekly sessions (and no retreats). The essential structure and content of the groups remained the same as Phase I. The only content differences were shorter in-class practices and discussions (see Appendix A).

Screening and Assessments

For both phases, participants were asked to complete validated self-report surveys of health-related outcomes in-person before and after the program, which included quantitative and qualitative assessments (further described below). This evaluation was approved by the University of Cincinnati Institutional Review Board. Given that this was an exploratory pilot study for a community-based program, we did not have

pre-determined criteria cut-off scores for feasibility. Instead, we explored collected data on enrollment rates, retention rates, session attendance, home practice adherence, and qualitative assessments. Weekly attendance was recorded by the instructor for groups one and two, and by a research assistant for group three. Research assistants collected all paper survey forms and were available on-site to assist with completing measures as needed (e.g., accommodate varying reading levels). Care coordination with the Cincinnati COOKS! case manager and mental health referrals were provided if necessary.

Demographics. Participants were asked to report their age, gender identity, and race/ethnicity in the pre-program survey. Participants also completed a standard MBSR pre-screener questionnaire which included family information (i.e., household structure, number of children), substance use, and mental health. These subsequent data were used for assessing appropriateness of the MBSR program and not for research purposes.

Quantitative Measures

Perceived Stress Scale (PSS-4). The PSS-4 assesses self-reported stress over the past month on a 5-point scale (0 = never to 4 = very often).²⁹ Higher scores indicate greater perceived stress. It has been well-validated with good psychometric properties including internal consistency, reliability, and convergent validity correlations with the original 10-item measure.³⁰ The current study had adequate internal consistency ($\alpha = .63$).

PEG scale (PEG). The PEG scale is an ultra-brief version of the Brief Pain Inventory.³¹ The PEG includes three items that assess pain intensity and interference: average pain intensity (P); interference with enjoyment of life (E); and interference with general activity (G). Each item is rated on an 11-point scale (e.g., 0 = no pain/does not interfere to 10 = pain as bad as you can imagine/completely interferes). A total score is calculated by averaging the responses on the three items, with a higher score indicating greater pain intensity and interference. The PEG has shown strong reliability ($\alpha = 0.73$ to $\alpha = 0.89$) and construct validity.³¹ The current study demonstrated strong internal consistency ($\alpha = .92$).

Five Facet Mindfulness Questionnaire—15 (FFMQ-15). The FFMQ-15 is a 15-item version of the original FFMQ (39-item) that assesses use of specific mindfulness skills. The FFMQ-15 includes the top three highest loading items on each of the five FFMQ subscales: (1) observing (e.g., "When I take a shower or a bath, I stay alert to the sensations of water on my body."), (2) describing (e.g., "I'm good at finding words to describe my feelings."), (3)

acting with awareness (e.g., “I find myself doing things without paying attention.”; reverse coded), (4) non-judging of inner experience (e.g., “I think some of my emotions are bad or inappropriate.”; reverse coded), and (5) non-reactivity to inner experience (e.g., “When I have distressing thoughts or images, I just notice them and let them go.”). Participants respond on a 5-point scale (1 = never or very rarely true to 5 = very often or always true).^{32,33} Per recommendations from Gu and colleagues (2016), the total score was calculated by summing responses in all subscales, excluding the observing subscale.³³ Higher scores represent greater levels of mindfulness. The current study had good internal consistency for the overall scale, without the observing subscale ($\alpha = .78$).

Patient-Reported Outcomes Measurement Information System (PROMIS) short forms (anxiety, depression, fatigue, sleep disturbance). Anxiety, depression, fatigue, and sleep disturbance over the past week were assessed in the current study using the corresponding PROMIS four-item short-forms (Anxiety Short Form 4a; Depression Short Form 4a; Fatigue Short Form 4a; Sleep Disturbance Short Form 4a).^{34–36} For each measure, all items are scored on a 5-point scale, with higher scores reflecting greater levels of the outcome being measured. Raw scores are calculated by summing each item, then subsequently converted to *T*-scores using established PROMIS scoring manuals. *T*-scores are standardized for the general population mean of 50 with a standard deviation of 10.³⁷ The current study demonstrated good to strong internal consistency for anxiety, depression, fatigue, and sleep disturbance (respectively, $\alpha = .85$; $\alpha = .90$; $\alpha = .90$; $\alpha = .78$).

Qualitative Items

Participants were invited to answer open-ended questions after the modified MBSR program to assess program impact. Questions items included: 1) “*What was your overall experience of the Stress Reduction course?*”; 2) “*What did you learn from the body scan practice? What was difficult?*”; 3) “*What did you learn from the yoga practice? What was difficult?*”; 4) “*What did you learn from the meditation practice? What was difficult?*”; 5) “*What did you learn about yourself and how you handle stress?*”; 6) “*Were you able to make the time to practice daily or weekly? If yes, how much? If no, why not?*”; 7) “*What feedback do you have for the teacher instructor? What did she do well? What could she have done to improve the course for you personally?*”; and 8) “*Do you have any additional comments or suggestions?*”.

Data Analysis

Quantitative data. Frequencies and proportions were used to explore feasibility outcomes (i.e., enrollment rates, retention rates, session attendance). Enrollment rate was defined as the total number of participants enrolled divided by the number of individuals invited to participate during an introductory class. Retention rate was defined as the number of participants who completed five or more sessions for Phase I and four or more sessions for Phase II, divided by the total number of participants enrolled. For outcome variables, we present the results for each of the three groups individually as well as all groups combined. Frequency distributions were explored to assess normality for each outcome variable. All variables were normally distributed except for one variable with high kurtosis (sleep disturbance at baseline for group one). Non-parametric tests were explored and the results of non-parametric and parametric test results were comparable; as such, parametric tests are presented. Paired-samples *t*-tests were used to explore pre-post scores for perceived stress, pain interference, mindfulness, anxiety, depression, fatigue, and sleep disturbance. A one-way ANOVA was utilized to assess baseline group differences for all main outcome and demographic variables. Given the exploratory nature of this pilot program, we focus our interpretation of the analyses on exploratory effect sizes rather than statistical significance but report *p*-values for completeness. Cohen’s *d* for dependent data was utilized to estimate effect size of change for each variable.³⁰ The following formula was used to calculate effect sizes in Excel: $d = t_{obs}[2(1-r)/n]^{1/2}$, where t_{obs} is the correlated observations (calculated from the difference scores between match pairs), *r* is the correlation across pairs of measures, and *n* is sample size.³⁸ Effect sizes were interpreted as small ($d = .2$), moderate ($d = .5$), or large ($d = .8$). Only individuals with data from both before and after the program were included in the analyses ($N = 29$). All analyses were conducted using Statistical Package for Social Sciences Version 24.0.³⁹

Qualitative data. To assess acceptability and impact of the program, post-program open-ended questions were explored using thematic analysis.⁴⁰ The responses to each open-ended question were reviewed by multiple authors (RSW, CML, BKN) to identify key themes and illustrative responses for each item (see Table 1).

Results

Participant Characteristics

See Figure 1 for the flow chart of participant enrollment and retention. Participants enrolled in the modified

Table 1. Qualitative Post-Program Representative Quotes (n = 26).

Topic	Theme	Representative Quote
Overall experience	Reduced stress	<i>"A great experience. I learned a lot about myself, my peers, and stress reduction."</i>
	Learned helpful skills	<i>"Enlightening. I was meditating for 5 minutes minimum and at most 10. Now not only can I meditate longer, but I can meditate more mindfully and peacefully."</i>
	Great experience	<i>"It was a great experience. I would like to see it passed on to other classes."</i>
Body scan	Challenging/difficult	<i>"This was challenging. I found it difficult to be aware or feel my calves, thighs, chest, neck, etc. This is something I will continue to practice."</i>
	Physical relaxation and body awareness	<i>"This is my favorite part of the course. I was able to relax my body and experience a new feeling of comfort."</i>
	Focused and calmed the mind	<i>"It was a great exercise. It taught us how to really relax our mind body and soul."</i>
Yoga practice	Physical improvements (e.g., more mobility, decreased pain)	<i>"To properly stretch."</i>
	Challenges with physical ability	<i>"I enjoyed this part, even though I had some difficulties with the poses because many of them I could not do due to my own physical restrictions."</i>
	Inner strength and peace	<i>"Gave me a sense of strength I didn't know I had."</i>
Meditation	Physical and emotional sense of calm	<i>"Made me feel patient and calm."</i>
	Improved peace of mind and mental health	<i>"Gave me peace of mind. Because of meditation, I am no longer as depressed or angry as I used to be."</i>
	Improved meditation skills (e.g., focused, centered, still)	<i>"I learned by focusing and tune out my surroundings takes me into deeper meditation."</i>
Learned about self	Improved stress management skills	<i>"I recognize I handle stress by fighting myself or ignoring it. I better understand I must recognize these habits and acknowledge my stressors and not beat myself up over them."</i>
	Increased patience	<i>"I learned I can have patience."</i>
	Awareness of importance of self-care	<i>"I learned that I need to take more time out for myself, body spirit, and mind more often and scan it as much as possible."</i>
Home practice adherence	Yes, almost or everyday	<i>"Once a day."</i>
	No (e.g., forgot, other obligations)	<i>"No, work and school."</i>
	Once or a few times a week	<i>"I was not able to practice daily. I have too much going on with myself that I often forgot to pause and breathe."</i>
Instructor feedback	Patient and non-judgmental instructor	<i>"[Instructor is] the awesomeness needed for this course. Through [her] dedication and great patience it has truly blessed me to go forward. I've seen and [she has] shown me the importance of others space and feelings and that it's ok."</i>
	Pleasant and calm instructor (even in distressing situations)	<i>"The instructor was very pleasant and did not lose her cool when many others were being rude and disruptive in class. And asking the disruptive and rude people to leave nicely was good enough for me."</i>
	Attentive and responsive instructor	<i>"I feel that she was very patient with our class. What one did well was be very attentive to us and how we felt. The only thing I think she could have done differently was have a longer course."</i>
Additional comments	Perceived helpfulness and should continue to offer service to others	<i>"This helped with my anxiety. I would suggest everyone take a part of this class."</i>
	Gratitude and appreciation	<i>"Thank you for helping me. Your good at what you do. It's all love and respect - big up's."</i>
	Change time and/or duration	<i>"Change the timing of class, at the end of the day we are tired and this class gets us in a relaxed mood so I'm fighting my sleep everyday."</i>

Note. Seven participants who completed the program did not complete the qualitative questionnaire.

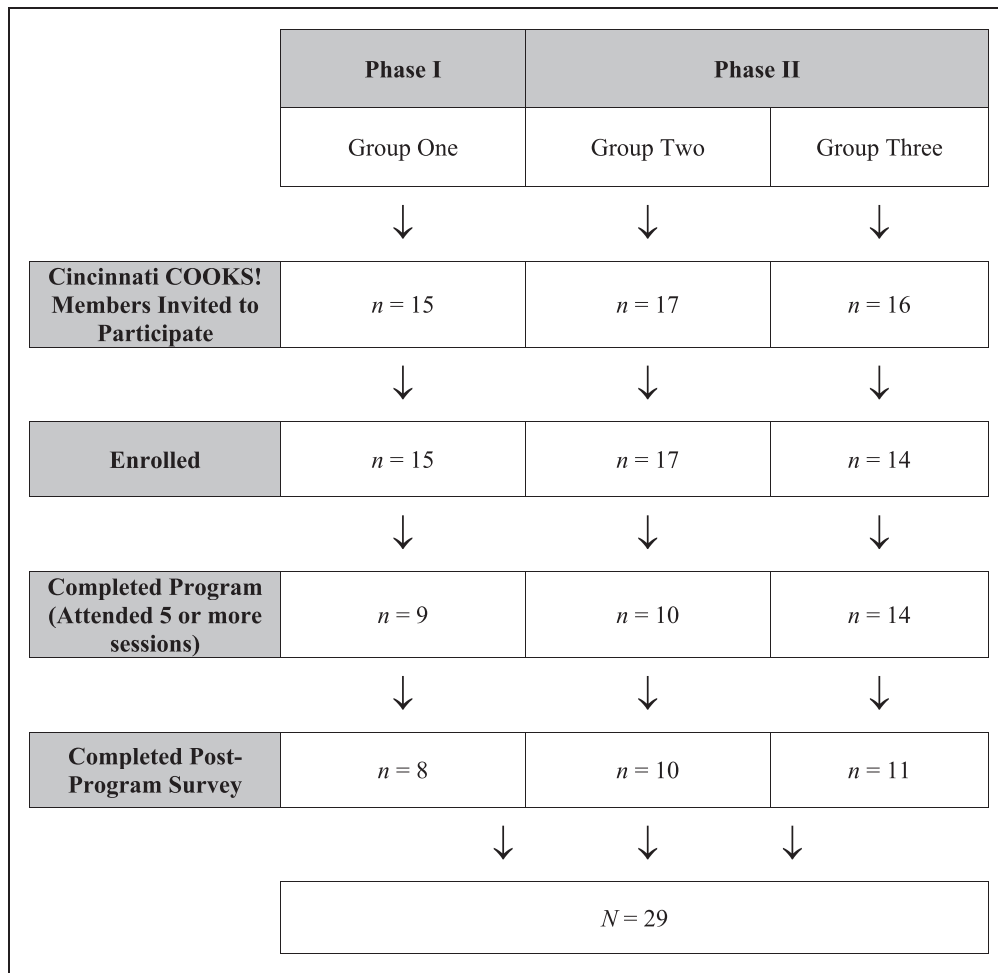


Figure 1. Flow Chart of Enrollment and Retention. Note. Thirty-three participants completed the program. However, four participants who completed the program (attended 5 or more sessions) did not complete the post-surveys because they were absent for the final session when the surveys were administered.

MBSR program (N = 46) were mostly single or not married living with a partner and the majority of participants had at least one child. They mostly relied on public transportation, worked multiple jobs in different locations, and had little or no prior mindfulness practice experiences (e.g., meditation, yoga). Many participants verbally reported to the instructor histories of racial discrimination and trauma (e.g., gun violence, sexual violence, homelessness). Twenty-nine participants completed the program and had pre- and post-data available for quantitative analysis. Out of the 29 participants utilized in quantitative analyses, the average age was 32.59 (SD = 11.27, range = 18-63). Twenty participants identified as female (69%), eight identified as male (27.6%), and one participant did not specify. Twenty-three participants identified as African American (79.3%), four as biracial/multiracial (13.8%), one as White (3.4%), and one identified as “other” (3.4%). An independent sample *t*-test demonstrated that there were no significant

demographic differences between participants who completed the program compared to those who withdrew.

Feasibility

Enrollment and retention. The enrollment rate was 96%, with nearly all of the 48 participants in the Cincinnati COOKS! program who attended the MBSR Introductory Orientation chose to enroll in the modified MBSR program (n = 46). Thirty-three participants (72%) completed the program (attended five or more sessions for Phase I and four or more sessions for Phase II). Fifteen participants attended two classes or less prior to dropping out. Reasons for drop-out included lack of time, disinterest, trauma issues, significant attention issues, and death in family. Twenty-nine participants (63%) completed the post-program survey and twenty-six (57%) completed the post-program qualitative questions (Figure 1).

Attendance. A majority of participants had consistent class attendance, except for a few excused absences and some unplanned absences (e.g., mental health concerns, childcare issues, sickness, shelter issues, job interviews). For Phase I (group one only), all participants completed one of the 2-hour long retreats due to weather and other barriers (e.g., childcare, transportation, homelessness) that prevented participation in the second retreat. Throughout the program, four participants were requested to leave the class by the instructor when they exhibited disruptive behaviors (e.g., walking in and out of room, turning on electronic devices, interrupting other participants, inappropriate verbal or non-verbal gestures). A follow-up meeting was scheduled with each of those participants to process the event, assess their needs, make necessary referrals, or invite them back to the program if appropriate. Three of the four participants resumed participation in the program. In Phase II (groups two and three), most participants who completed the MBSR program attended all sessions. Those that did miss sessions only were absent for no more than two sessions. Participants who dropped out of the program attended two or less sessions prior to drop-out. For group three, nine participants attended all sessions and two participants missed no more than two sessions. Three participants missed no more than two sessions, but did not complete the post-survey because they were absent at the final session.

Home practice. In qualitative post-program feedback ($n = 26$), thirteen (50%) participants endorsed daily or weekly home practice, while seven (27%) reported that they practiced, but were not satisfied with the amount of time spent on their home practice and admitted that they could have practiced more. Four (15%) participants explicitly stated that they did not practice due to lack of time. Two participants stated that they did not practice at home (8%), with one explaining that they forgot. Participants verbally reported to the instructor during sessions that informal mindfulness practices were more feasible compared to formal practices, and the group discussed barriers to home practice, including single parenting, working long hours and/or multiple jobs, physical exhaustion, and fatigue. See Table 1 for representative quotes.

Acceptability

Answers from the qualitative post-program survey were utilized to assess acceptability of multiple aspects of the program. Table 1 provides illustrative quotes for all questions in the post-program survey.

Mindfulness practices. In the post-program survey, twenty-two participants (85%) reported benefits from the

meditation practices such as relaxation, present moment awareness, breathing, peacefulness, focus, and feeling calm. Three participants who enjoyed the meditation also noted difficulty with the practice (12%). The yoga practice received positive remarks about present moment awareness, stretching, finding personal strength, and physical benefits. Twenty-two participants (85%) noted learning something helpful from the yoga practice. For the body scan practice, twenty participants (77%) described benefits such as increased internal awareness and relaxation. However, five participants (19%) noted difficulties either staying awake or paying attention to their body. Despite these difficulties, two of those participants noted that they still enjoyed the practice.

Session leader and logistics. All participants except one responded positively when asked to provide feedback regarding the session leader, stating that the patience, kindness, and attention given by the instructor was beneficial to their learning experience. When asked about any additional comments or suggestions, most stated that they believe more people should take this program. Three participants made suggestions for improving the timing of sessions (e.g., “Do not conduct groups in the morning.”). Two participants commented on disruptive participants stating, “I suggest asking who was going to come to the course to actually participate and gain from the course first so that we don’t have so many problems in the group and it can be just all people who want to participate and learn” and “. . . I’d like to have this experience in a smaller or private group section.”

Overall program experience. All participants, except one, responded positively when asked about the overall program. Stress and anxiety reduction, and increased introspection and relaxation were commonly reported reasons for program satisfaction (see Table 1). Of note, the negative comments regarding session logistics and the overall program were from the same participant, who indicated that the program was “not [their] cup of tea” and it did not impact them because they had “too much stress.”

Quantitative Outcome Measures

Descriptive statistics and pre-post effect sizes for each variable are presented in Table 2. A one-way ANOVA for all main outcomes demonstrated that there were no significant group differences at baseline between the three groups. An additional one-way ANOVA for all main outcomes demonstrated that there were no significant differences between participants who completed the program compared to those who withdrew from the program, except for depression scores. Participants who withdrew from the program had significantly worse

Table 2. Descriptive Statistics for Each Group and Variable Before and After the Program.

Measure	Group	N	Pre-Intervention, M (SD)	Post-Intervention, M (SD)	t-Score	p-Value	Cohen's d
Perceived Stress	One	8	7.75 (2.71)	5.88 (3.27)	.82	.44	.46
	Two	9	9.22 (2.49)	8.22 (1.99)	1.28	.24	.44
	Three	11	9.45 (3.33)	6.36 (2.20)	3.96	.003	1.03***
	Combined	28	8.75 (2.96)	6.82 (2.60)	3.09	.005	.69**
Pain Interference	One	8	2.04 (1.29)	1.5 (1.75)	1.3	.24	.33
	Two	10	4.5 (2.6)	4.07 (3.22)	.74	.48	.14
	Three	10	3.1 (2.29)	2.27 (1.79)	1.35	.21	.40
	Combined	28	3.3 (2.33)	2.7 (2.55)	1.92	.07	.25⁺
Mindfulness	One	7	40.57 (9.00)	42.71 (9.30)	-1.1	.32	-.24
	Two	10	36.7 (6.72)	39.5 (7.12)	-2.61	.03	-.40*
	Three	10	35.7 (7.02)	40.4 (5.76)	-2.57	.03	-.72*
	Combined	27	37.33 (7.44)	40.67 (7.12)	-3.61	.001	-.46**
Anxiety	One	8	59.35 (10.19)	53.79 (9.83)	1.36	.22	.56
	Two	10	57.29 (11.51)	60.86 (7.53)	-.88	.40	-.36
	Three	10	62.3 (6.7)	57.19 (9.17)	2.52	.03	.60*
	Combined	28	59.67 (9.52)	57.53 (8.97)	1.03	.31	.23
Depression	One	8	53.24 (11.31)	53.58 (8.88)	.14	.89	.07
	Two	10	58.03 (5.95)	56.57 (11.06)	.45	.67	.16
	Three	10	56.85 (10.48)	51.5 (11.09)	2.36	.04	.50*
	Combined	28	56.24 (9.25)	53.62 (10.37)	1.36	.19	.27
Fatigue	One	8	48.79 (9.51)	48.65 (10.85)	.05	.96	.01
	Two	9	54.86 (8.23)	53.82 (13.32)	.30	.77	.08
	Three	10	58.03 (11.55)	57.84 (7.56)	.06	.95	.02
	Combined	27	54.23 (10.31)	53.78 (10.98)	.26	.80	.04
Sleep Disturbance	One	8	49.58 (10.29)	47.45 (7.49)	.90	.40	.34
	Two	9	52.19 (9.84)	51.77 (8.67)	.19	.85	.04
	Three	11	55.37 (6.54)	55.94 (6.63)	-.27	.79	-.09
	Combined	28	52.69 (8.82)	52.18 (8.10)	.41	.68	.06

Note. Thirty-three participants completed the program. Twenty-nine participants completed the post-survey. Due to missing and incomplete data the *n* varies for each outcome. There were no significant baseline differences between groups. *** = $p < .01$; * = $p < .05$; ⁺ = $p < .08$ and trending toward significance.

depression scores at baseline compared to participants who completed the program ($p = .04$). The PROMIS measures (anxiety, depression, fatigue, and sleep disturbance) utilize a T-score to compare to a standardized general U.S. sample ($M = 50, SD = 10$). At baseline, anxiety scores for participants in the current study were almost a full standard deviation worse than the average ($M_{pre} = 59.67, SD = 9.52$). Depression, fatigue, and sleep disturbance scores at baseline were slightly worse than the average of the standardize sample, but within one standard deviation.³⁷ Perceived stress, pain interference, depression, and mindfulness scores demonstrated an improvement across the three groups participants (combined $d = .69, p = .005$; $d = .25, p = .07$; $d = .27, p = .19$; $d = -.46, p = .001$, respectively). However, these effects were generally small in groups one and two, while moderate-large in group three. Anxiety showed moderate improvements in group one ($d = .56, p = .22$) and group three ($d = .60, p = .03$) but a slight worsening in group two ($d = -.36, p = .40$). Sleep disturbance showed

minimal to small improvements in group one ($d = .34, p = .40$) and group two ($d = .04, p = .85$), and minimal worsening in group three ($d = -.09, p = .68$). Fatigue showed negligible effects across all groups (combined $d = .04, p = .67$).

Discussion

The results of the current study demonstrate the feasibility of implementing a modified MBSR program for the under- and unemployed into a previously established community-based culinary teaching program. The program was of interest to participants, with nearly all participants in the culinary program initially choosing to enroll in MBSR. This finding is noteworthy given that previous MBSR research on individuals with insufficient employment have reported difficulties with recruitment “buy-in”, particularly due to financial strains, time constraints, and issues with stigma and distrust.^{26,27} Our strategy of recruiting from a site where participants

have established positive relationships with staff who endorse participating in the program, as suggested by Abercrombie and colleagues (2007), may have made enrolling in the program more approachable.²⁷ The session attendance and retention rates also support the feasibility of this program, as the rates observed in the current study are similar to those observed in other studies of MBSR for low-income participants (e.g., 61%–70%).^{26,41,42} Previous studies also reported similar barriers to session attendance (e.g., illness, work conflicts, other obligations), suggesting that providing logistical support to participants (e.g., childcare, transportation reimbursement) may be one way to further improve retention in future studies.²⁶

This modified MBSR program also demonstrated acceptability, as suggested both by the continued collaboration with the culinary teaching program and from the qualitative post-program feedback from participants. Nearly all participants favorably reported on each of the mindfulness practices (e.g., meditation, yoga, body scan) and the support and guidance of the MBSR instructor. Many endorsed the continuation of the program to help others. With the increased prevalence of mindfulness-based practices, there is a need to modify programs to better target vulnerable populations while maintaining the core principles that define mindfulness-based practices.⁴³ This modified program included the essential elements of MBSR, such as contemplative mindfulness practices and an expert teacher,^{43,44} while tailoring intervention components in an acceptable way.

The current results also support the potential utility of modified MBSR to improve some health outcomes for this population. Results demonstrated small improvements in perceived stress, pain interference, mindfulness, and depression following participation in the modified MBSR program. The different pattern of results for anxiety (i.e., group one and group three demonstrating a moderate improvement and group two demonstrating a moderate worsening) may be related to group two participants' informal reports of trauma and serious mental illness to the instructor and more disruptions from a few group members. Waldron and colleagues (2018) argued that self-compassion, non-judgement, and acceptance, core components of MBSR, could be especially beneficial to groups who have faced trauma and discrimination, such as individuals from low-socioeconomic backgrounds.²² These results highlight the importance of further exploring how these variables may relate to trauma and psychological outcomes in MBSR. However, given the trend of increased anxiety in group two, a group including several participants with a history of significant trauma may not be the most optimal format for treatment delivery. Additionally, there were significant baseline differences in depression scores between participants who completed the program

compared to those who withdrew. This may suggest that a group MBSR program may not be as acceptable to individuals with severe depression, and instead, may be more suitable for those with lower levels of depression symptoms.

Several challenges encountered while implementing this project may provide insights for future efforts. First, these under- and unemployed participants disclosed significant traumas, distrust, serious mental health issues, and chronic discrimination. Given the high prevalence of trauma within the under- and unemployed population, it is important for future teams to consider trauma-sensitive mindfulness practices, as some research has demonstrated that mindfulness practices could exacerbate symptoms of traumatic stress and elicit dissociation.⁴⁵ Modifications in mindfulness scripts and emphasizing practicing in ways that feel safe and tolerable are suggested (e.g., eyes open, shifting body posture, taking breaks). Second, it was important for this program and the participants that the groups were led by a licensed clinical psychologist, who was able to appropriately manage disruptive group members with complex mental health and social histories. Additionally, results from the qualitative survey highlighted that nearly all participants trusted and respected the group leader, and noted gratitude for her patient and mindful presence. We suggest that future programs are led by skilled professionals who can effectively manage disruptive and crisis situations to ensure the safety of all group members, as well as embody mindfulness skills and engender trust among participants. Third, the issue of participant commitment and engagement is an important consideration. Typically, it is recommended that participants only join a MBSR group if they would like to work in a group and are willing to participate in the full course. In our case, while participants were informed of the voluntary nature of the group, the level of participant engagement varied, and some participants either dropped out or were disruptive to the group. This likely occurred because we embedded the modified MBSR into an existing community-based culinary teaching program and participants may have been more likely to participate because of accessibility. While this implementation design may indicate that not all participants are able to complete the full course at that time, we suggest that this limitation is offset by the benefits of exposing at-risk individuals to ideas and skills that they may decide to revisit in the future when they are able. To encourage trauma-sensitive mindfulness practice, empower participants, and reduce group disruptions, instructors may choose to conduct brief individual check-ins during the first couple of weeks of the program. It is important to encourage choice and self-care, especially for participants with trauma histories. One way to emphasize

personal choice and control is to provide reminders to participants throughout the program that they may withdraw their participation at any time.

As with any study, there are limitations worth noting. First, this study did not include a control or comparison group and we were unable to collect data on the alternate life skills session offered to non-MBSR culinary kitchen participants. Given that the modified MBSR program was embedded into an existing culinary teaching program, it was not possible to isolate the effects of MBSR on improved outcomes as compared to the culinary program. It is possible that the combination of both Cincinnati COOKS! and MBSR contributed to the benefits observed. Additionally, due to small sample sizes, we were not powered to detect statistical significance in our analyses, though these results are beyond the scope of an exploratory pilot study. Furthermore, we did not systematically collect data on home practice engagement, which limits our ability to interpret the feasibility and adherence to the program. We also did not have specific attendance data for groups one and two due to difficulties with community-based research. Finally, the three groups were conducted over an extended period of time (spring 2018 – fall 2019). It is possible that external conditions may have influenced the groups differently. The only known effect was the winter weather conditions, which impacted groups 2 and 3.

Nevertheless, important conclusions can still be drawn. Implementing mindfulness-based interventions, such as this modified MBSR program, has potential health benefits for under- and unemployed individuals, particularly when collaborating closely with existing community-based programs. Further benefits may be demonstrated with a larger sample size, longitudinal design, or exploration of additional outcomes, such as physiological effects related to health (e.g., heart rate), employment-related variables (e.g., employment status, presenteeism, interpersonal effectiveness), and other psychopathology variables (e.g., PTSD symptom severity). Future research should continue to investigate feasible methods to provide access to under-resourced populations, such as individuals with insufficient employment, with modified MBSR programs, as well as examining the relative effectiveness of such programs for maximal health improvement.

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Supplemental material

Supplemental material for this article is available online.

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