

MINDFULNESS FOR SUBSTANCE USE DISORDERS

by

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Practice.

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ABSTRACT

Background: With almost 22 million clients diagnosed with a substance use disorder (SUD), an effective, low cost, low resource treatment option, such as mindfulness, becomes a valuable resource. *Purpose:* The objective of this project was to implement mindfulness into an existing relapse prevention medication assisted treatment (MAT) recovery group to decrease symptom severity in adults with a SUD. *Methods:* Short guided mindfulness exercises and homework activities were implemented in a weekly SUD MAT recovery group. Data was collected in the form of a demographic questionnaire, the Timeline Follow-back survey, Penn Alcohol Craving Scale, Perceived Stress Scale, and Five Facet Mindfulness Questionnaire at weeks one, four, and eight. *Results:* The data did not show a statistically significant change from baseline after incorporating mindfulness into the weekly group. Change was noted in the decrease in drug use days from 12 drug/alcohol use days to 10, despite an overall increase in craving scores. *Conclusion:* Incorporating mindfulness-based interventions into treatment protocols for clients with SUD to help decrease SUD symptoms severity without interfering in other treatment modalities, did not have a statistically significant change in this project. Further investigation into the use of short guided mindfulness interventions is needed.

Keywords: Substance use disorder, medication assisted treatment, mindfulness

Chapter 1

INTRODUCTION

1.1 Background

The global burden of disease related to drug and alcohol use is estimated to be 5.4 percent worldwide (American Addiction Centers, 2018). Substance use costs the United States more than \$740 billion each year in crime, lost work productivity, and healthcare costs (National Institute on Drug Abuse, 2017). In 2014, 21.5 million Americans aged 12 and older were diagnosed with a substance use disorder (SUD) (American Addiction Centers, 2018). Roughly eight million people have both a mental health disorder and a SUD, adding to the burden of the disease (National Alliance on Mental Illness, 2017).

The combination of the psychological problems that are comorbid with substance use, such as depression and anxiety, along with the stigma of mental health care makes treating SUDs a challenge. These problems do not solely affect the client, they also affect the client's family in relation to increased chance of divorce, financial problems, safety of the children, and academic, emotional, and conduct problems in the children (Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury, 2016). The use of substances not only affects family members, but can affect others as well, such as accidents while operating a vehicle under the influence. In 2016, 20.7 million people drove under the influence of alcohol and 11.8 million under the influence of illicit drugs (National Institute on Drug Abuse, 2016). SUDs also affect employment, as double the number of people who are unemployed have a SUD compared to those

who work full time (American Addiction Centers, 2018). SUDs can also lead to legal problems, such as in the case of driving while under the influence, possession of illegal substances, theft, etc. The high-risk behaviors associated with substance use, sharing used needles or drug equipment, or unprotected sex, can put the client at a higher risk for being exposed to and exposing others to HIV/AIDS or hepatitis (National Institute on Drug Abuse, 2018). If left untreated, SUDs can have a negative impact on every aspect of a person's life.

Current treatment options for substance use disorders include both pharmaceutical options as well as behavioral and cognitive treatments. Medication assisted treatments (MAT) such as methadone and buprenorphine/naloxone have shown to help sustain recovery, especially when used in conjunction with counseling and behavioral therapies (Substance Abuse and Mental Health Services Administration, 2015). Other treatment options include behavioral therapies such as cognitive behavioral therapy, motivational enhancement therapy, and contingency management. Twelve-step based programs, and peer support such as Alcoholics and Narcotics Anonymous though widely used as a support system, are not a formal treatment (Substance Abuse and Mental Health Services Administration, 2018). Treatment occurs in both inpatient and outpatient settings as residential programs, intensive outpatient programs, group therapy, and individual therapy.

Mindfulness-based relapse prevention targets three facets of mindfulness, acting with awareness, non-judgement, and non-reactivity, which are the basis for the maintenance of many SUD related behaviors (Karyadi, VanderVeen, &

Cyders, 2014). Mindfulness is nonjudgmental awareness of changes in internal experiences with roots in Tibetan Buddhism (Steinberg & Eisner, 2015). It is comprised of two key elements: being aware of the present moment and paying attention to it and accepting your thoughts and feelings without judgment (U.S. Department of Veterans Affairs, 2015c). During mindfulness, clients will intentionally put their attention on the current moment, making it possible to enhance their awareness, which in turn helps develop kindness and compassion towards themselves (Steinberg & Eisner, 2015). This technique teaches the clients to focus on the present moment and accept it without judgement, which can lead to a decrease in depression and anxiety related symptoms (Polusny et al., 2015). In the research, little attention has been given to the parallel implementation of complementary and alternative medicine, despite the attention that evidence-based practices for SUDs has received recently (Aletraris, Paino, Edmond, Roman, & Bride, 2014).

1.2 Theoretical Framework

Kurt Lewin's Change Theory is based on the foundation that behavior is a balance of driving and restraining forces (Lewin, 1947). Driving forces enable change as they push the person in the required direction (Lewin, 1947). Restraining forces deter change because they push the person in the conflicting direction (Lewin, 1947). Lewin's Change Theory is a model to help shift these forces into the planned direction to enable change.

This model is a three-step process, unfreeze, movement, and refreeze. Unfreezing is overcoming the individual and internal resistance to change and

overcoming the state of equilibrium, while reducing the restraining forces that are preventing change (Kritsonis, 2005). Movement is changing to get to a new state of equilibrium, which includes understanding that the current status quo is no longer beneficial (Kritsonis, 2005). Refreezing occurs after the change has occurred and is the phase where the change becomes the new status quo where the new equilibrium stabilizes (Kritsonis, 2005). The force of the driving force must be greater than the strength of the restraining forces in order for change to occur (Kritsonis, 2005). With SUDs this is easily applied during the recovery process. The desire to stop using drugs must be present, the person goes through steps to change their behaviors, such as enrolling in a MAT program, and then the person has to embrace and accept their drug free life as their new normal.

1.3 Project Purpose

The objective of this practice change project is to implement mindfulness into an existing substance use disorder group to decrease craving severity and the number of relapses in a community-based MAT program. Mindfulness has been shown to decrease relapse risk to drug use and heavy drinking and delay time to first drug use after treatment (Bowen et al., 2014). Mindfulness helps clients cope with cravings or negative effects and these benefits can be seen 12-months post-substance use treatment (Roos, Bowen, & Witkiewitz, 2017). Mindfulness skills help to increase awareness of triggers for relapse, internal processes, and help the client tolerate challenging experiences in day to day activities (Esmaeili, Khodadadi, Norozi, & Miri, 2017). Implementing mindfulness into a substance use disorder group adds another treatment modality that can help reduce cravings

and relapse without interfering with current pharmacological and therapeutic treatment plans.

1.4 Project Question

A PICOT question summarizes the research question in an organized manner. The P stands for population or the sample of subjects; I is the intervention; C is the comparison group; O represents the outcome that is intended on being measured; and T is the time or duration of data collection (Riva, Malik, Burnie, Endicott, & Busse, 2012).

The PICOT question being addressed is: In adults with a substance use disorder currently enrolled in a medication assisted treatment program (P), does the addition of mindfulness exercises incorporated in a substance use disorder group (I) decrease cravings and incidents of relapse (O) during an eight-week period (T)?

Chapter 2

REVIEW OF LITERATURE

The literature search utilized three databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), U.S. National Library of Medicine at the National Institutes of Health (PUBMED), and U.S. National Library of Medicine (MEDLINE). Limits applied to the search included a date range from 2013 to 2018, English language, and adult human subjects. Quantitative and qualitative studies or meta-analyses met the inclusion criteria if there was a comparison of mindfulness interventions with a current standard of treatment for SUDs. Studies were excluded if they included research on comorbid diagnoses (posttraumatic stress disorder, eating disorders, bipolar disorder, etc.), residential treatment programs, adolescents, or telehealth/web-based studies. Search terms included mindfulness and substance use. The exclusion process of the literature search can be found in Appendix A. A summary table of the articles can be found in Appendix B and article appraisals can be found in Appendix C.

2.1 Summary of Findings

After completing a literature search, nine articles met inclusion criteria for review. Bowen et al. (2014) recruited clients from a private chemical dependency treatment agency and randomly assigned participants to one of three groups (mindfulness-based relapse prevention, cognitive behavioral relapse prevention, and treatment as usual) over approximately a three-year period. The mindfulness-based relapse prevention and cognitive behavioral relapse prevention groups were removed from the treatment as usual protocols and placed into the eight-week study intervention groups, and then were returned to the treatment as usual

protocols at the completion of the eight-week study. The intervention groups received two-hour weekly group sessions, while the treatment as usual received one to two 1.5-hour group sessions per week. Clients were assessed using the calendar formatted Timeline Follow-back, urinalysis drug and alcohol screenings, Addiction Severity Index, and Severity of Dependence Scale at baseline, and three, six, and 12 months post-treatment. There were no significant differences at baseline between the intervention groups and the treatment as usual group. At the three-month follow-up there was no significant differences between any of the groups (Bowen, et al. 2014). Significantly, at the six-month follow up, there was a higher probability of abstinence from drug use and heavy drinking in the treatment groups, compared to the treatment as usual group (Bowen, et al. 2014). At the 12-month follow up, the mindfulness-based relapse prevention group reported 31 percent fewer drug use days and less likelihood of engaging in heavy drinking compared to the cognitive behavior relapse prevention group (Bowen, et al. 2014). These results suggest that mindfulness-based relapse prevention might be a more sustainable long-term solution for SUDs (Bowen, et al. 2014).

Enkema and Bowen (2017) performed a secondary analysis of a randomized clinical trial, using a portion of the participants. The mindfulness-based relapse prevention was organized in an eight-week group-based format, while the treatment as usual group participated in 12 step-based groups and psychoeducation. The average number of sessions attended was 4.96 sessions ($SD = 2.68$). Substance use, cravings and mindfulness were measured using the Timeline Follow-back survey, the Penn Alcohol Craving Scale, and the

Mindfulness-Based Relapse Prevention Practice Questionnaire at baseline, one week, two, four, and six months post-intervention. Formal mindfulness practice was associated with a decrease in both cravings and substance use, however this was not significant for informal mindfulness practice (Enkema & Bowen, 2017). Increased duration and frequency of formal mindfulness practice may be shown to decrease the craving-use relationship, enabling the client to be able to alter their response to a craving (Enkema & Bowen, 2017).

A secondary analysis of a randomized clinical trial completed by Witkiewitz, Bowne, Douglas, & Hsu (2013) divided clients into an eight-week mindfulness-based relapse prevention group and a treatment as usual group. Clients were assessed using the Penn Alcohol Craving Scale, two subscales of the Five Factor Mindfulness Questionnaire, and the Acceptance and Action Questionnaire at baseline, immediately following completion of the eight-weeks, and at two and four-month follow-ups. Participants in the mindfulness-based relapse prevention group had a decrease in craving scores compared to the treatment as usual group, which showed an increase in craving scores during treatment (Witkiewitz, Bowne, Douglas, & Hsu, 2013). Self-reported cravings had a significant decrease both during and after treatment for the mindfulness-based relapse prevention group (Witkiewitz, Bowne, Douglas, & Hsu, 2013).

Esmaeili, Khodadadi, Norozi, & Miri (2017) completed a quasi-experimental 8-week study at an outpatient methadone clinic with 60 participants. The mindfulness-based cognitive therapy group participated in eight weeks of 1.5-hour long sessions, and a weekly training for home practice was presented

between treatment sessions. The control group received no mindfulness training and continued their treatment as usual. Cognitive emotion regulation was assessed using a culturally adapted version of the Cognitive Emotion Regulation Questionnaire. Positive cognitive emotion regulation is an increase in positive refocusing, positive reappraisal, and putting into perspective, while negative cognitive emotion regulation is self-blame, rumination, and catastrophizing (Esmaeili, Khodadadi, Norozi, & Miri, 2017). This study found that mindfulness-based group therapy increased positive and decreased negative cognitive emotional regulation in the participants (Esmaeili, Khodadadi, Norozi, & Miri, 2017).

Bowen, Somohano, Rutkie, Manuel, & Rehder (2017) recruited 15 participants from a methadone maintenance therapy clinic. A focus group was held prior to any intervention and the themes regarding barriers to goals, motivation for treatment, daily life challenges, and acceptability of mindfulness-based treatment were addressed. The focus group decided they would prefer longer sessions over a shorter period of time, so the mindfulness-based relapse prevention group met two hours every week for six weeks. The Beck Depression Inventory-II, Beck Anxiety Inventory, Penn Alcohol Craving Scale, Post-Traumatic Stress Disorder Checklist-Civilian, Acceptance and Action Questionnaire, and Overall Course Satisfaction Survey were used at the baseline, post-intervention, and six-week postintervention assessment periods. The Overall Course Satisfaction Survey has a free text section, where the following themes emerged: awareness of internal cue and ability to reorient attention, ability to

regulation emotions, self-care practices, and quality of life (Bowen, Somohano, Rutkie, Manuel, & Rehder, 2017). Despite the small sample size, there were statistically significant changes in depression, craving, and trauma symptoms, which are primary risk factors for relapse (Bowen, Somohano, Rutkie, Manuel, & Rehder, 2017).

Roos, Bowen, & Witkiewitz (2017) completed a secondary analysis of two randomized clinical trials, with a total sample size of 454 participants recruited from three SUD treatment facilities. The mindfulness-based relapse prevention and cognitive based relapse prevention groups met weekly for two hours, while the treatment as usual group met one or two times per week for 1.5-hours. The Timeline Follow-back survey, Severity of Dependence Scale, Short Inventory of Problems, Beck Depression Inventory-II, and Beck Anxiety Inventory were used at baseline and 12-month follow-up to assess for substance use, depression, anxiety, and how the participants' substance use was affecting other aspects of their life. The study showed that mindfulness-based relapse prevention may be beneficial for clients with severe SUD symptoms alone or with severe depression and anxiety symptoms (Roos, Bowen, & Witkiewitz, 2017).

A pilot randomized control trial was completed by Imani, Vahid, Gharraee, Noroozi, Habibi, & Bowen (2015) with 30 participants enrolled in a maintenance treatment program with an opioid agonist medication. The mindfulness-based group therapy group met for eight weekly two-hour sessions, while the treatment as usual group received medical management, weekly individual sessions for psychoeducation, and weekly drug screen results. There

was a larger, more significant decrease in opioid use in the mindfulness group compared to the treatment as usual group (Imani, Vahid, Gharraee, Noroozi, Habibi, & Bowen, 2015). This study provides preliminary evidence that mindfulness-based relapse prevention is a feasible and efficacious adjunctive treatment option for current opioid dependent clients (Imani, Vahid, Gharraee, Noroozi, Habibi, & Bowen, 2015).

Chiesa and Serretti (2014) completed a systematic review of 24 studies that included 1,938 participants and many different types of substances used. The studies had different control groups, but all were compared to a mindfulness-based intervention. After consolidation of the studies, it was found that mindfulness can significantly reduce the consumption of alcohol, cocaine, amphetamines, marijuana, cigarettes, and opiates compared to non-specific educational support groups and some specific control groups (Chiesa & Serretti, 2014). This systematic review also found that within the first three months the mindfulness-based intervention group had a greater decrease in total stress levels compared to the control group (Chiesa & Serretti, 2014).

A meta-analysis by Karyadi, VanderVeen, and Cyders (2014) included 39 articles and many different substances. Three of the five facets of mindfulness, acting with awareness, non-judgement, and non-reactivity were significantly inversely related to substance use behaviors (Karyadi, VanderVeen, & Cyders, 2014). The mindfulness intervention was more strongly associated with alcohol use and tobacco use behaviors than marijuana use behaviors, when prescription medication, sedative, or stimulate use behaviors were removed from analysis

(Karyadi, VanderVeen, & Cyders, 2014). Overall, this study found that trait mindfulness has a negative relationship with substance use behaviors, which supports the idea that trait mindfulness grants some protection against substance use behaviors (Karyadi, VanderVeen, & Cyders, 2014).

2.2 Literature Gaps

Based on this literature review, the quantitative data support the use of mindfulness-based strategies as a method to decrease SUD symptoms. To fill the gaps in the literature, research should be completed on the long-term effects of mindfulness on substance use symptoms, greater than six to 12 months post-intervention. Following these clients for an extended period of time and tracking their SUD symptoms and continued use of mindfulness, will give a better understanding of how effective mindfulness training can be as a long-term treatment option for SUD, as SUDs are chronic life-long conditions. In addition, many of studies implemented 2-hour weekly sessions, but there was no literature found on short sessions completed by the clients a few times a week. These short sessions could be five to ten minutes of mindfulness at the client's house. Filling this gap would both add to the literature and if the data supported it, could provide many clients with a more convenient treatment or adjunct treatment option.

2.3 Implications

The implications of this project include exposing both the group facilitator and clients to mindfulness exercises and the benefits of mindfulness. Clients will be able to use the mindfulness techniques both within the structured environment of the community-based MAT program and in their daily lives. Mindfulness is

another tool that the MAT program can provide for clients to use to help them cope with difficult and stressful situations, as well as to decrease relapse rates and cravings for drugs and alcohol. Mindfulness exercises are easy to implement, essentially at no cost, and require minimal resources. This treatment option can be incorporated into group and individual therapies. Incorporating mindfulness exercises into a weekly SUD group can aid in decreasing relapse rates and severity and give clients skills that can be used in everyday life, such as being present in the moment and not judging their own thoughts.

2.4 Project Rationale

SUD is a chronic relapsing disorder characterized by compulsive drug seeking, use despite harmful consequences, tolerance, and withdrawal. Improved aftercare interventions are needed due to the high relapse rates following substance use disorder treatment programs, as roughly half of those who complete a treatment program will relapse back to substances within six months (Bowen et al., 2017). Mindfulness interventions have been shown to have benefits on cravings, the urge or desire to use substances, which is the primary predictor of relapse (Enkema & Bowen, 2017). The literature review supports the need for mindfulness-based interventions to be utilized and incorporated within mental healthcare treatment protocols for SUDs.

Mindfulness-based interventions were more effective at decreasing cravings and substance use behaviors than other interventions, such as psychoeducation and 12-step programs. In the literature mindfulness-based interventions ranged from one hour to two hours over the course of six to eight

weeks. No matter the length of the mindfulness-based intervention or course of the intervention, the studies showed a decrease in SUD symptom severity from pre- to post- intervention compared to treatment as usual. The goal of this project is to incorporate mindfulness exercises into a weekly SUD MAT recovery group to reduce the client's SUD symptoms, such as cravings. This goal was clearly supported by the research findings presented in this literature review and is noted in Appendix B and C.

Chapter 3

METHODOLOGY

3.1 Setting and Participants

This project took place within one of the largest nonprofit organizations in Delaware, serving the state's most vulnerable citizens, including veterans, prisoners, and those with mental illness. The organization includes over 100 facilities where services are provided, including correctional facilities, small inpatient units for detoxification, and outpatient offices for mental health services. Throughout these locations, there are many services including outpatient psychiatric services, individual and group counseling, family therapy, medically monitored detoxification, intensive outpatient treatment, MAT, case management, driving under the influence treatment services, primary medical care (for those receiving mental health treatment), supportive services for veteran families, skills center for those with intellectual disabilities, short-term support and financial aid for families in crisis, independent living for people with disabilities and a program to teach adolescents how to manage life without alcohol and drugs.

There are approximately 1,500 clients enrolled in the MAT program within the organization. The location where this project took place has approximately 800 clients enrolled in the MAT program. Within the program there are individual counselors at each location assigned to each client and numerous groups that the clients can attend. Any client enrolled in the MAT program is eligible to attend any of the groups. It is required that a certain number of groups are attended by each client depending on their length of time in the

program and their urinalysis drug and alcohol screening results. Clients could be required to attend one group per week or one group per month but are able to attend more groups if desired. Clients do not have to go to the same group, but consistency is encouraged.

The relapse prevention MAT group, where this project was implemented in, is a once weekly group with an attendance of approximately 20 clients. It is a drop-in group, meaning the clients do not need an appointment to attend. Currently, there is some consistency in attendance to this particular group, as well as with other groups within the facility.

The participants for this project were over the age of 18 and enrolled in the MAT program services to be included, and in the relapse prevention MAT group. There were no limitations on drug of choice, length of treatment, or length of sobriety. Any client who did not want to participate was not penalized in any way.

3.2 Plan and Procedures

A guided mindfulness exercise was implemented into an outpatient relapse prevention MAT group. The mindfulness exercise was from the free *Insight Timer*® smartphone application, which was chosen due to the large number of free, large variety, easy access, and short guided mindfulness exercises offered. The exercise was broadcast via a tablet as the group sat in a seated circle format. The room was located next to the main lobby where all clients check-in, wait, and receive their maintenance medication. Free print versions of guided mindfulness exercises were available to be read by the group facilitator in case of technological issues. The print version of guided mindfulness exercises was

obtained from the Department of Veterans Affairs research study led by Amy Drapalski. This writer spoke with the primary investigator for the study, who obtained the guided mindfulness from free sources and no permissions were needed to use the exercises. These mindfulness exercises were approximately five minutes in length and focused on different areas such as breathing, self-compassion, thoughts/emotions, and forgiveness. A mindfulness-based homework exercise was given to all participants at each session. Homework activities were optional, but they were highly recommended and encouraged. Homework activities were from palousemindfulness.com (Appendix D). All of the mindfulness exercises were analyzed with the Smog Evaluation and had a Smog Index of 7.5 or an 8th grade reading level (Readability Formulas, 2018).

Self-report scales including the Timeline Follow-Back survey, Penn Alcohol Craving Scale, Perceived Stress Scale, and Five-Facet Mindfulness Questionnaire-short form, were used to measure relapse, cravings, and mindfulness for this project at week one, four, and eight. The Timeline Follow-Back survey was used to assess the use of drugs and/or alcohol. The Timeline Follow-Back assessed only the previous one-month of self-reported drug and/or alcohol use, see Appendix E. This survey has good reliability and validity with a Cronbach's alpha of .99 (Bowen et al., 2014). There is a copyright on the scale, however the pencil and paper version can be used freely and is available to the public as a free download.

The Penn Alcohol Craving Scale is a five-question scale used to assess craving severity in the past week, see Appendix F. Many studies adapted the Penn

Alcohol Craving Scale to include both drugs and alcohol, which was also done for this project. This questionnaire has good reliability and validity with internal consistency of .91 (Enkema & Bowen, 2017) and .87 (Witkiewitz, Bowen, Douglas, & Hsu, 2013). The Penn Alcohol Craving Scale is copyrighted but is available to be used free of charge without permissions. The Perceived Stress Scale is a ten-question questionnaire used to assess the amount of stress the client is perceiving in their life, see Appendix G. In 12 studies, the Cronbach's alpha was greater than .70 (Lee, 2012). This scale is available online for download without permissions.

The Five Facet Mindfulness Questionnaire short form contains 24 questions to assess for each of the five facets of mindfulness: non-judging, non-reactivity, acting with awareness, describing, and observing, see Appendix H. The Five Facet Mindfulness Questionnaire was developed after an analytic study of five independently developed mindfulness questionnaires (Baer, Hopkins, Krietmeyer, & Toney, 2006). The Cronbach's alpha for each of the five facets in the Five Facet Mindfulness Questionnaire ranged from .73 to .91 (Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011). Bohlmeijer et al. (2011) developed a short form of the Five Facet Mindfulness Questionnaire. The Cronbach's alphas for the Five Facet Mindfulness Questionnaire short form remained greater than .70, ranging from .75 to .87 (Bohlmeijer et al., 2011). This scale is available for free download online and does not require permissions to use.

A demographic questionnaire was utilized to gather data regarding the client's age, ethnicity, gender, marital status, employment status, highest level of

completed education, length of time in treatment, longest period of sobriety, drug of choice, and mental health diagnoses; see Appendix I and J.

Individual questionnaire responses were not shared with the program or the treatment team. The facility did not want these results reported on an individual basis as clients have to undergo regular random urine drug screens. The facility understands that substance use disorders are relapsing, recurring chronic disorders and there is no value in reporting the questionnaire results on an individual basis, given the procedures currently in place. There were no negative consequences for the information that was provided in any of the questionnaires.

Each client who completed the questionnaires was assigned a deidentified number to protect his or her identity. The list of numbers associated with the identifiable information was kept in a restricted access area in a locked cabinet in a locked room. Consent forms will be stored for three years in the DNP's Committee Chair's locked office in McDowell Hall, in a locked cabinet. The identifying key was shredded and disposed of after the data collection portion of the project was complete per the organization's policy.

As an incentive to encourage consistent participation in this relapse prevention MAT group, the clients who attended the group were entered into a drawing that took place at the end of each group. The drawing was completed by one of the group participants. Originally, there were four \$10 Wawa gift cards, but the participants wanted there to be more drawing winners. This was amended after week one based on participant feedback. This amended procedure was submitted immediately after week one and was approved by the University of

Delaware Institutional Review Board before week two of the project (Appendix K). For subsequent groups, there were eight names drawn and those clients received a \$5 Wawa gift card.

3.4 Management of Ethical Implications

Mindfulness has been shown to create benefits regarding emotional regulation, fear modulation, and memory processing, while not interfering with current pharmacological and psychotherapeutic treatments (Steinberg & Eisner, 2015). Therefore, the risk to the participants was minimal. If the scores for cravings increased, therefore potentially increasing their risk for relapse, the client was made aware of the change and they were advised to follow up with their provider.

This quality improvement project was assessed for ethical concerns. The identity of participants could be linked to a number, however the list linking the participants to a number was protected. The key was kept in a secure location and was disposed of per the facility's policy at the end of the project. University of Delaware Institutional Review Board approval was obtained before the initiation of this project and amended after week one, to permit the change in number and dollar amount of the gift cards. The MAT program facility does not have an Institutional Review Board and agreed to accept the approval of the University of Delaware's Institutional Review Board (Appendix L). Approval was obtained prior to initiation from the organization's CEO and the facility's Regional Director. (Appendix M).

3.5 Data Collection, Apparatus, and Materials

Data was collected at sessions one, four, and eight in the form of paper-based participant questionnaires (see Appendix D thru H). All clients who attended the group were eligible for participation. The questionnaires were distributed to the clients while they waited for the group to begin. Baseline questionnaires were completed prior to the first mindfulness exercise. Data collection and mindfulness implementation occurred during the fall and early winter of 2018 for eight weeks. The participants were handed questionnaires as they entered the group. When the questionnaire was handed back to the project leader, the project leader used the participant key to place participant numbers on the top of the set of questionnaires.

3.6 Data Evaluation Strategies

The pre-, mid-, and post-questionnaire results were analyzed and compared. After the participant key was disposed at the end of the project per organization policy, the questionnaires data were input into an Excel spreadsheet by participant number. The forms were assessed to determine how many clients completed all three of the questionnaires. The questionnaires from clients who completed all of the questionnaires were analyzed. A paired t-test was utilized to determine if there were statistically significant ($p < 0.05$) differences in the pre- and post-questionnaire results for each of the questionnaires.

3.7 Project Budget

Previously purchased technology that would allow the mindfulness exercises to be played through the application *Insight Timer*® was used for

implementation of this project, no new technology was required. If a tablet was not available, the cost of a new tablet is minimally \$200. The questionnaires were printed outside of the facility with a total of approximately 540 pages. This cost was \$10.80 at \$0.02 per page. The questionnaires were put into individual folders so that the clients felt like they had more privacy when completing the survey and had a surface to complete the questionnaires on, as the group room only had chairs for the clients to sit in. The total of the folders and pens was \$33.55. The clients were not directly compensated. When the clients attended a group, they were entered into a drawing to possibly win one of eight \$5 Wawa gift cards, totaling \$320. The gift cards were approved by the facility. The total project cost came to \$364.35. There were no other financial costs associated with this project.

3.8 Products

The results of this project will be made available to the providers and other staff at the facility. This product will also be considered for submission for publication in evidence-based journals such as the *Journal of Addictions Nursing*, *Journal of Evidence-Based Complementary and Alternative Medicine*, the *Journal of Clinical Psychology*, *Substance Use and Misuse*, *Drug and Alcohol Dependence*, *Journal of Substance Use*, and *Frontiers in Psychiatry*. Finally, this project will be submitted for presentation at the Christiana Care Research Conference.

Chapter 4

RESULTS

The PICOT question addressed was: In adults with a substance use disorder currently enrolled in a medication assisted treatment program (P), does the addition of mindfulness exercises incorporated in a substance use disorder group (I) decrease cravings and incidents of relapse (O) during an eight-week period (T)? Self-report scales including the Timeline Follow-Back survey, Penn Alcohol Craving Scale, Perceived Stress Scale, and Five-Facet Mindfulness Questionnaire-short form, were used to measure relapse, cravings, and mindfulness for this project at week one, four, and eight.

A total of 23 participants completed the questionnaires, with six participants completing all three sets of questionnaires. The gender of the participants that completed all three questionnaires was four males and two females, with three African American and three Caucasian. Half of the participants were single, and half were married. Ages ranged from 26 to older than 56, with time in treatment from less than one year to up to 10 years. Despite it being a small sample size, there was equal distribution in gender, race, employment and marital status, and a wide range of age and time in treatment.

Table 4.1

Participant Demographic Information

Question	Frequency	Percent
Gender		
Female	2	33.3
Male	4	66.7
Total	6	100.0
Age		
26-35	2	33.3

	36-45	1	16.7
	46-55	2	33.3
	Older than 56	1	16.7
	Total	6	100.0
Ethnicity			
	Hispanic	1	16.7
	Non-Hispanic	4	66.7
	No Answer	1	16.7
	Total	6	100.1
Race			
	Black	3	50.0
	White	3	50.0
	Total	6	100.0
Marital Status			
	Married	3	50.0
	Single	3	50.0
	Total	6	100.0
Employment Status			
	Employed	4	66.7
	Unemployed	2	33.3
	Total	6	100.0
Length of Time in Current Treatment			
	< 1 year	1	16.7
	1-2 years	3	50.0
	3-5 years	1	16.7
	6-10 years	1	16.7
	Total	6	100.0
Preferred Substance(s)			
	Alcohol	1	7.14
	Cocaine	3	21.4
	Opioids	6	42.9
	Benzodiazepines	1	7.14
	Nicotine	2	14.28
	Bath Salts	1	7.14
Mental Health Diagnoses			
	Anxiety	4	33.3
	Depression	3	25.0
	Bipolar	2	16.7
	PTSD	1	8.3
	None	2	16.7

The demographic data questionnaire showed that by week eight half of the participants who completed all three sets of questionnaires were practicing mindfulness

outside of group and participated in the mindfulness homework exercise. All six participants selected opioids as their drug(s) of choice, but also selected cocaine (3), alcohol (1), benzodiazepines (1), nicotine (2), and bath salts (1). Mental health diagnoses, other than substance use disorders, that were endorsed included, depression (3), anxiety (4), bipolar (2), PTSD (1), and non (2). Two of the participants that selected depression also selected bipolar disorder. It is unclear from the questionnaire what their true diagnosis would be.

Four repeated measures ANOVAS were run to see if there were statistically significant differences on weeks 1, 4 and 8 on the Timeline Follow Back Survey, Perceived Stress Scale, Penn Alcohol Cravings Scale, and Five Facet Mindfulness Questionnaire-short form, for the six of 23 participants that completed all three sets of questionnaires, see Appendix O. The results revealed that there were no statistically significant differences between weeks 1, 4 and 8 on TFBS ($F(2, 10) = .388, p = 0.688$), PSSS ($F(2, 10) = .073, p = 0.930$), PACS ($F(2, 10) = 3.462, p = 0.072$) and FFMQ-SF ($F(2, 10) = .224, p = 0.804$).

The Timeline Follow Back survey showed an overall decrease in drug use days from 12 to 10 in the six participants that completed all three sets of questionnaires. One of the six participants had 10 drug/alcohol use days on the Timeline Follow Back survey on week one, nine at week four, and zero drug/alcohol use days at week eight. Perception of stress and severity of cravings remained stable for the participant that had the decrease in drug/alcohol use days, while the mindfulness score increased. One participant reported two drug/alcohol use days at week one, and 10 at both weeks four and eight. For this participant the perceived stress and cravings scores both increased steadily for the three

survey periods and the mindfulness score decreased. The other four participants did not have any change in their drug/alcohol use days, all remaining at zero throughout the project period.

One participant had no change in drug/alcohol use days, no change in perceived stress, and no change in cravings, but did have an increase in mindfulness from week one to week eight. For another participant, the perceived stress, craving, and mindfulness scores did not change throughout the course of this project – this person did not have any drug/alcohol use days. Finally, another participant’s perceived stress score remained the same, the cravings score increased, and the mindfulness score decreased.

Chapter 5

DISCUSSION

The purpose of this quality improvement project was to implement a low-cost adjunct treatment option into a MAT program to decrease the number of drug/alcohol use days, decrease cravings and perception of stress, and increase mindfulness by implementing a short-guided mindfulness exercise into a weekly SUD MAT recovery group. This project demonstrated that the addition of guided mindfulness helped to decrease the number of drug and/or alcohol use days over an eight-week period, despite an increase in cravings. Utilization of mindfulness can be inexpensive and teaches skills for emotional regulation and distress tolerance (Possemato, et al., 2016). Mindfulness is another tool that can be used to help clients cope with difficult and stressful situations, as well as decrease relapse rates and cravings for drugs and alcohol. Clients can use mindfulness techniques both within the structured environment of the relapse prevention MAT recovery group and in their daily lives. This project supported that mindfulness incorporated into a substance use disorder group had a clinically significant impact on relapse during an eight-week period.

Guided mindfulness exercises are easy to implement, low to no cost, require minimal resources, and require minimal to no training to implement. This treatment option can be easily incorporated into group and individual therapies. By incorporating mindfulness exercises into a weekly relapse prevention group, it can aid in decreasing relapse rates and severity and give clients skills that can be used in everyday life, such as being present in the moment and not judging their own thoughts. The results of this project showed a decrease in drug use days despite an increase in cravings and perceived

stress. A total of 23 people completed at least one questionnaire. Six participants completed all three sets of questionnaires.

While more research would need to be completed with a larger sample size, the general trends in the scores for these six participants over eight weeks, shows what the literature already supported. When there is an increase in mindfulness there is a decrease in perceived stress, cravings, and drug/alcohol use days.

Informal feedback from the participants included having the mindfulness exercise after introductions so that people would realize that the group started and they need to be quite and respectful. Due to the location of the room, many participants expressed that it was not quite enough in the room to focus and concentrate during the mindfulness exercise. Despite the feedback of how to improve the exercises, participants also stated they really enjoyed the exercise and were able to relate to it and connect it to their lives in some way. From observation, it appeared the women in the group were initially more open to trying mindfulness than the men, however as the project continued, more of the men began to express their satisfaction with the exercises.

5.1 Limitations

Limitations of this project included small uncontrolled group size, physical environment of the group, and time of the year. The holiday season, especially Thanksgiving and Christmas present many challenges: high stress, family conflict, increased exposure to alcohol use, decreased daylight, etc. These challenges can present as triggers to someone with a SUD, therefore making the holiday season a hard time of year. The group was a drop-in group and the participants were not required to attend, making attendance inconsistent. Another

limitation was that the group room was located just off the main lobby where the clients would wait in line to receive their daily medication. Whenever someone would enter the group room and open the door, the group room became filled with noise from the main lobby.

5.2 Implications for Nursing Practice

While the results of this project were not statistically significant, there was clinical improvement. Guided mindfulness exercises are an easy, low-cost adjunct treatment option that does not interfere with other pharmacological and therapeutic treatment plans. Over an eight-week period, drug use days decreased from 12 to 10 days, despite this project taking place during a high-stress, high-temptation time of year. For nursing practice this means that short-guided mindfulness exercises can easily be implemented into the group setting with positive results. Nurses can obtain training and certification in mindfulness to be more effective teachers with this technique. Mindfulness skills can easily be incorporated into current practice. Guided mindfulness exercises can also be utilized by clients at home or other settings outside of a group with an aim of similar benefits, decreased drug/alcohol use days. Hopefully, over time the addition of guided mindfulness into a client's daily life will help the client develop more positive coping skills, for stressful situations and drug related triggers/cues, enabling the client to be able to be weaned from MAT.

5.3 Further Research

Further research is needed to determine if a short-guided mindfulness exercises will be beneficial in both the short and long-term as an adjunct

treatment option for SUD. Current research has evaluated the effectiveness for longer mindfulness exercises and the sustained effects for up to 12 months, however continued follow up regarding mindfulness benefits would be beneficial. Short-guided mindfulness exercises are a low-cost adjunct treatment option that do not interfere with current pharmacological and therapeutic treatment plans, however further research to determine the immediate and long-term effectiveness is needed.

5.4 Conclusion

Mindfulness is a low-cost adjunct treatment option that can be beneficial for many conditions; anxiety, depression, substance use and trauma symptoms. While this project overall did not have statistically significant results. One of the six participants had 10 drug/alcohol use days on the Timeline Follow Back survey on week one, nine at week four, and zero drug/alcohol use days at week eight. This is clinically significant because 30 days of sobriety is a milestone in the recovery process, as it is the first sobriety chip generally received in the room of Alcoholics/Narcotics Anonymous. Helping one person accomplish 30 days of sobriety makes this project worth doing, repeating, and sustaining. To make this quality improvement project sustainable, there would need to be a culture change within the group and training for the group facilitator. The group facilitator is instrumental in continuing this change and to reach full effectiveness, the facilitator should have some training in mindfulness. To make this easily transferable from facilitator to facilitator and group to group, a folder within the *Insight Timer* application would make the short-guided mindfulness exercises

easily accessible. A folder with instructions on how and when to introduce mindfulness, as well as the ideal conditions for the room could help make a facilitator with minimal mindfulness experience feel more comfortable in using it. Overall, participants appeared to enjoy the mindfulness exercises and provided feedback that they felt calmer after the exercise. Some participants even reported having a clearer mind and being better able to express themselves during the group. Further research needs to be completed on the benefits of a short-guided mindfulness exercise on SUD symptoms, but if it helped one person gain 30 days of sobriety and helped others feel like they could better express themselves during group, then this project was a success.

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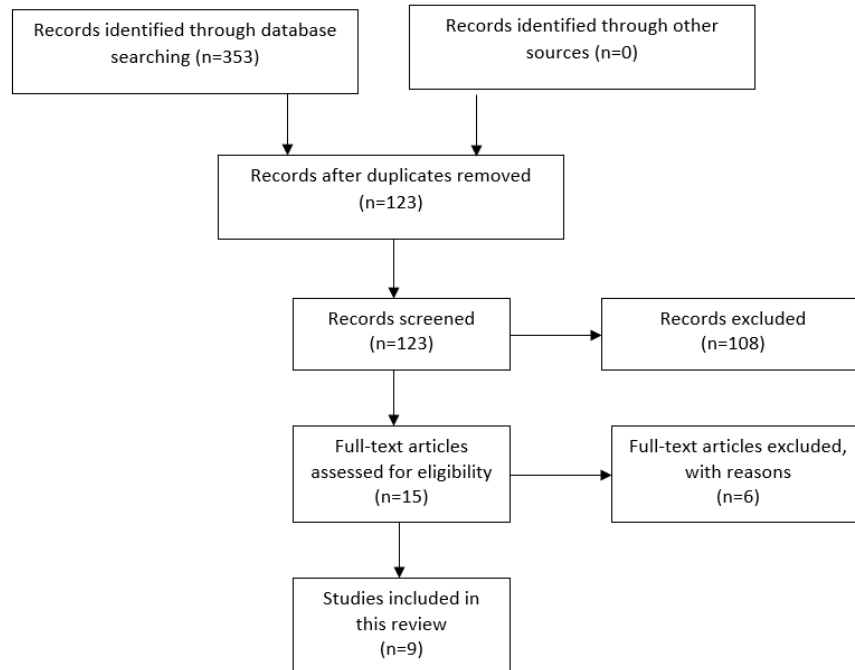
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Appendix A

PRISMA FLOW CHART



Appendix B

LITERATURE REVIEW SUMMARY

Citation	Conceptual Framework	Design/Method	Sample/Setting	Variables
1. Bowen et al. (2014)	N/A	Randomized clinical trial, eight-week study, assessed at baseline, three, six, and 12 months post-treatment	N= 286 two-site private, nonprofit chemical dependency treatment agency	Independent: mindfulness-based relapse prevention and cognitive behavior relapse prevention (two-hour groups) Dependent: treatment as usual (one or two times per week 1.5-hour group)
2. Enkema & Bowen (2017)	N/A	Secondary analysis of randomized control trial, eight-week study, baseline, one week and six months post-treatment	N= 57 two-site private, nonprofit chemical dependency treatment agency	Independent: mindfulness-based relapse prevention Dependent: treatment as usual
3. Witkiewitz, Bowen, Douglas, & Hsu (2013)	N/A	Secondary analysis of randomized clinical trial, eight-week study, assessments at baseline, immediately following eight-week treatment, two and four months post treatment	N= 168 Private, nonprofit agency	Independent: mindfulness-based relapse prevention (two-hour groups) Dependent: treatment as usual
4. Esmaeili, Khodadadi, Norozi, & Miri (2017)	N/A	Quasi-experimental, eight-week study, baseline and post-	N= 60 Two outpatient methadone clinics in Mashhad	Independent: mindfulness-based cognitive therapy (1.5-hour sessions) Dependent:

		treatment assessment		treatment as usual
5. Bowen, Somohano, Rutkie, Manuel, & Rehder (2017)	N/A	Mixed methods study with focus group, six-week study, assessment at baseline, post-intervention, and six-week post-intervention	N= 15 Community based methadone maintenance treatment	Independent: mindfulness-based relapse prevention (two-hour sessions) Dependent: none
6. Roos, Bowen, & Witkiewitz (2017)	N/A	Secondary analysis of two randomized clinical trials, eight-week studies, assessed at baseline and 12-month follow-up	N= 454 Total of three substance use disorder treatment facilities	Independent: mindfulness-based relapse prevention and cognitive based relapse prevention (two-hour sessions) Dependent: treatment as usual (one to two times per week for 1.5-hours)
7. Imani, Vahid, Gharraee, Noroozi, Habibi, & Bowen (2015)	N/A	Pilot randomized parallel group one-to-one control trial, eight-week study, assessed at baseline and post-treatment	N= 30 Iranian National Center for Addiction Studies for assisted withdrawal and maintenance treatment with opioid agonist medications	Independent: mindfulness-based group therapy (two-hour session) Dependent: treatment as usual (including individual therapy)
8. Chiesa & Serretti (2014)	N/A	Systematic Review	N= 1938 Location Systematic review of consolidated results of studies	Independent: mindfulness-based interventions Dependent: waitlist/treatment as usual
9. Karyadi, VanderVeen, & Cyders (2014)	N/A	Meta-analysis	Mean N= 377.40 Meta-analysis of consolidated results of studies	Independent: trait mindfulness Dependent: substance use behaviors
	Measurement of Variables	Data Analysis	Study Findings	Strength of Evidence

1. Bowen et al. (2014)	Calendar formatted Timeline Follow-back, urinalysis drug and alcohol screenings, Addiction Severity Index, Severity of Dependence Scale	Cox proportional hazards regression models and negative binomial hurdle regression models	Mindfulness based relapse prevention group had significantly less drug use and decreased probability of heavy drinking at 12-month follow-up.	Limitations: differences between treatment as usual and active treatment groups therapist training and assignment of homework, self-report measures of main treatment options and limited urinalysis use
2. Enkema & Bowen (2017)	Timeline Follow-back, Penn Alcohol Craving Scale, Mindfulness-based Relapse Prevention Follow-up Practice Questionnaire	Negative binomial regression, model fit using Vuong test, zero-altered models	Formal mindfulness practice reduced post-intervention craving and frequency of substance use in during the follow-up six months	Limitations: patients remained in aftercare during follow-up period and might be less likely to report drug use, a moderate sample size, missing data occurred due to method assessment, substance used was reported retrospectively
3. Witkiewitz, Bowen, Douglas, & Hsu (2013)	Penn Alcohol Craving Scale, two subscales of Five Factor Mindfulness Questionnaire, Acceptance and Action Questionnaire	Latent variable growth models, mode of fit evaluated by X^2 values, Root Mean Square Error of Approximation and Comparative Fit Index	Mindfulness was associated with significant reductions in self-reported cravings.	Limitations: self-report measures of craving, acceptance, awareness, and nonjudgment; short follow-up window
4. Esmaeili, Khodadadi, Norozi, & Miri (2017)	Cognitive emotion regulation questionnaire	Independent student's t-test and one-way analysis of covariance using Bonferroni correction	Mindfulness increased emotional regulation, increasing positive and decreasing negative emotions.	Limitations: small sample size, lack of follow-up periods, sample was all male
5. Bowen,	Beck	Paired t-test, p-	Mindfulness had	Limitations: small

Somohano, Rutkie, Manuel, & Rehder (2017)	Depression Inventory-II, Beck Anxiety Inventory, Penn Alcohol Craving Scale, Posttraumatic Stress Disorder Checklist-Civilian, Acceptance and Action Questionnaire, Overall Course Satisfaction Survey	value ($p < 0.05$)	statistically significant changes in depression, craving, and trauma symptoms.	sample size, low attendance, self-report measures
6. Roos, Bowen, & Witkiewitz (2017)	Timeline Follow-back, Severity of Dependence Scale, Short Inventory of Problems, Beck Depression Inventory-II, Beck Anxiety Inventory	Latent class moderation approach, and moderation regression analyses	Mindfulness showed to improve depression and anxiety symptoms in those with severe substance use disorder. Significantly lower rates of heavy drinking and fewer drug use days at one-year follow-up.	Limitations: self-report measures, the latent classes had small sample sizes, and anxiety and depression being the only indicators of psychiatric symptoms
7. Imani, Vahid, Gharraee, Noroozi, Habibi, & Bowen (2015)	Addiction Severity Index, Five Factor Mindfulness Questionnaire	Missing values analysis using t test ($\alpha = 0.05$), univariate and multivariate normality, t test and chi-square	Significant decrease in opioid consumption in mindfulness group.	Limitations: small sample size
8. Chiesa & Serretti (2014)	Varied depending on study	Each study rated using the Jadad score	Mindfulness interventions significantly helped reduce the use of many substances, alcohol, cocaine, methamphetamines, marijuana, cigarettes, and	Limitations: limitations of each individual study, small sample size of many of the studies, multiple substance use and misuse categories, lack of

			opiates compared to active and inactive control groups.	randomization of some trials, lack of measures of treatment adherence, lack of objective measure of substance use and misuse, and lack of blind assessment of main outcomes.
9. Karyadi, VanderVeen, & Cyders (2014)	Varied depending on study	Correlation coefficient (r)	Negative relationship between trait mindfulness and substance use behaviors, greater for alcohol and tobacco compared to marijuana	Limitations: little effect of study bias, power was limited due to small study size, limitations of included studies, underrepresentation of other drugs of abuse, limited generalization to other populations.

Appendix C

ARTICLE APPRAISAL

Studies	Design	Level of Evidence (JHNEBP)	Quality of Evidence (JHNEBP)	Sample	Outcome
1. Bowen et al. (2014)	Randomized clinical trial	I	A	N= 286 Mean Age: 38 Ethnicity: mainly non-Hispanic white Substance: majority polysubstance use	Decreased heavy drinking and fewer drug use days
2. Enkema & Bowen (2017)	Secondary Analysis of Randomized control trial	I	B	N= 57 Mean Age: 38 Ethnicity: unknown Substance: majority polysubstance use	Decreased craving and frequency of substance use
3. Witkiewitz, Bowen, Douglas, & Hsu (2013)	Secondary Analysis of Randomized clinical trial	I	B	N= 168 Mean Age: 40.5 Ethnicity: half Caucasian Substance: almost half alcohol as primary substance	Decreased cravings
4. Esmaeili, Khodadadi, Norozi, & Miri (2017)	Quasi-experimental	II	C	N= 60 Mean Age: unknown Ethnicity: unknown Substance: opioids	Increased emotional regulation (increase positive and reduce negative)
5. Bowen, Somohano, Rutkie, Manuel, &	Mixed Design Study with focus groups	III	C	N= 15 Mean Age: 43.8 Ethnicity:	Decrease in depression, craving and trauma

Rehder (2017)				majority Caucasian Substance: opioid	symptoms
6. Roos, Bowen, & Witkiewitz (2017)	Secondary analysis of two randomized clinical trial	I	B	N= 454 Mean Age: 39 Ethnicity: majority white Substance: unknown	Decrease heavy drinking and fewer drug use days
7. Imani, Vahid, Gharraee, Noroozi, Habibi, & Bowen (2015)	Pilot randomized parallel group one-to-one control trial	II	C	N= 30 Mean Age: Ethnicity: Substance: opioid	Decrease in opioid consumption
8. Chiesa & Serretti (2014)	Systematic Review	I – 14 randomized control trials; 10 randomized control trials	B	N= 1938 Mean Age: 32.4 Ethnicity: unknown Substance: polysubstance	Mindfulness based interventions reduce substance use
9. Karyadi, VanderVeen, & Cyders (2014)	Meta-analysis			Mean N= 377.40 Mean Age: 26.51 Ethnicity: majority Caucasian Substance: polysubstance	Trait mindfulness has protection against substance use behaviors

Appendix D

EXAMPLE OF MINDFULNESS HOMEWORK ACTIVITY

palousemindfulness.com

Informal Practice Log (Simple Awareness) – Week 1

Each day this week, see if you can bring mindful awareness to some otherwise routine activity. For instance, washing the dishes, waiting in line, sitting in a boring meeting, walking from the car to your office. Remembering the raisin exercise, you could also use this as an opportunity to bring mindful awareness to eating, noting textures, smell, taste, touch, etc. Before you go to bed each night, see if you can recall at least one example of “simple awareness”.

What was the situation? Where were you, who were you with, what were you doing?	What feelings, thoughts, sensations did you notice before you decided to experience this mindfully?	What feelings, thoughts and sensations did you notice WHILE doing this mindfully?	What did you learn from doing this?	What feelings, thoughts and sensations are you noticing NOW as you write this?
EXAMPLE <i>Washing dishes after dinner.</i>	<i>I was feeling hurried, shoulders and stomach tense, thinking “I wish Chris hadn’t used so many dishes!”</i>	<i>I actually felt the warm water on my hands, enjoyed seeing the dishes sparkle, time seemed to stop for a moment.</i>	<i>Paying attention to physical sensations brings me into the here and now and a boring task becomes more interesting.</i>	<i>Feeling the support of the chair I’m sitting on, the feel of the pen, and feeling thankful that a long day is over.</i>

Appendix E

TIMELINE FOLLOW BACK SURVEY

O	7	8 Columbus Day	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31 Halloween	1	2	3
N	4	5	6 Election Day	7	8	9	10
	11	12 Veterans Day Obsv	13	14	15	16	17
	18	19	20	21	22 Thanksgiving	23	24
	25	26	27	28	29	30	1
D	2	3	4	5 Hanukkah	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
E	23	24	25 Christmas	26	27	28	29
	30	31 New Year's Eve					
C							

Appendix F

PENN ALCOHOL CRAVING SCLAE

Circle the number that best describes your craving during the past week.

1. During the past week how often have you thought about drugs or alcohol or about how drugs or alcohol would make you feel?
 - 0 Never (0 times during the past week)
 - 1 Rarely (1 to 2 times during the past week)
 - 2 Occasionally (3 to 4 times during the past week)
 - 3 Sometimes (5 to 10 times during the past week)
 - 4 Often (11 to 20 times during the past week or 2 to 3 times per day)
 - 5 Most of the time (20 to 40 times during the past week or 3 to 6 times per day)
 - 6 Nearly all of the time (more than 40 times during the past week or more than 6 times per day)
2. At its most severe point, how strong was your craving during the past week?
 - 0 None at all
 - 1 Slight, very mild urge
 - 2 Mild urge
 - 3 Moderate urge
 - 4 Strong urge, but easily controlled
 - 5 Strong urge and difficult to control
 - 6 Strong urge and would have used drugs or alcohol if it were available
3. During the past week how much time have you spent thinking about drugs or alcohol or about how drugs or alcohol would make you feel?
 - 0 None at all
 - 1 Less than 20 minutes
 - 2 21 to 45 minutes
 - 3 46 to 90 minutes
 - 4 90 minutes to 3 hours
 - 5 Between 3 and 6 hours
 - 6 More than 6 hours
4. During the past week how difficult would it have been to resist using drugs or alcohol if you had known it were in your house?
 - 0 None at all
 - 1 Very mildly difficult
 - 2 Mildly difficult
 - 3 Moderately difficult
 - 4 Very difficult
 - 5 Extremely difficult
 - 6 Would not be able to resist
5. Keeping in mind your response to the previous questions, please rate your overall average drug and alcohol craving for the past week.
 - 0 Never thought about drugs or alcohol and never had the urge to use
 - 1 Rarely thought about drugs or alcohol and rarely had the urge to use
 - 2 Occasionally thought about drugs or alcohol and occasionally had the urge to use
 - 3 Sometimes thought about drugs or alcohol and sometimes had the urge to use
 - 4 Often thought about drugs or alcohol and often had the urge to use
 - 5 Thought about drugs or alcohol most of the time and had the urge to use most of the time
 - 6 Thought about drugs or alcohol nearly all of the time and had the urge to use nearly all of the time

Appendix G

PERCEIVED STRESS SCALE

Perceived Stress Scale

For each question choose from the following alternatives:

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

- _____ 1. In the last month, how often have you been upset because of something that happened unexpectedly?
- _____ 2. In the last month, how often have you felt that you were unable to control the important things in your life?
- _____ 3. In the last month, how often have you felt nervous and stressed?
- _____ 4. In the last month, how often have you felt confident about your ability to handle your personal problems?
- _____ 5. In the last month, how often have you felt that things were going your way?
- _____ 6. In the last month, how often have you found that you could not cope with all the things that you had to do?
- _____ 7. In the last month, how often have you been able to control irritations in your life?
- _____ 8. In the last month, how often have you felt that you were on top of things?
- _____ 9. In the last month, how often have you been angered because of things that happened that were outside of your control?
- _____ 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix H

FIVE FACET MINDFULNESS QUESTIONNAIRE-SHORT FORM

5 facet questionnaire: short form (ffmq-sf)

Below is a collection of statements about your everyday experience. Using the 1–5 scale below, please indicate, in the box to the right of each statement, how frequently or infrequently you have had each experience in the last month (or other agreed time period). Please answer according to what really reflects your experience rather than what you think your experience should be.

	<i>never or very rarely true</i> 1	<i>not often true</i> 2	<i>sometimes true sometimes not true</i> 3	<i>often true</i> 4	<i>very often or always true</i> 5
1	I'm good at finding the words to describe my feelings				<i>DS</i>
2	I can easily put my beliefs, opinions, and expectations into words				<i>DS</i>
3	I watch my feelings without getting carried away by them				<i>NR</i>
4	I tell myself that I shouldn't be feeling the way I'm feeling				<i>/NJ</i>
5	it's hard for me to find the words to describe what I'm thinking				<i>/DS</i>
6	I pay attention to physical experiences, such as the wind in my hair or sun on my face				<i>OB</i>
7	I make judgments about whether my thoughts are good or bad.				<i>/NJ</i>
8	I find it difficult to stay focused on what's happening in the present moment				<i>/AA</i>
9	when I have distressing thoughts or images, I don't let myself be carried away by them				<i>NR</i>
10	generally, I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing				<i>OB</i>
11	when I feel something in my body, it's hard for me to find the right words to describe it				<i>/DS</i>
12	it seems I am "running on automatic" without much awareness of what I'm doing				<i>/AA</i>
13	when I have distressing thoughts or images, I feel calm soon after				<i>NR</i>
14	I tell myself I shouldn't be thinking the way I'm thinking				<i>/NJ</i>
15	I notice the smells and aromas of things				<i>OB</i>
16	even when I'm feeling terribly upset, I can find a way to put it into words				<i>DS</i>
17	I rush through activities without being really attentive to them				<i>/AA</i>
18	usually when I have distressing thoughts or images I can just notice them without reacting				<i>NR</i>

PTO.

never or very rarely true *not often true* *sometimes true sometimes not true* *often true* *very often or always true*
1 **2** **3** **4** **5**

19	I think some of my emotions are bad or inappropriate and I shouldn't feel them	/NJ	
20	I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow	OB	
21	when I have distressing thoughts or images, I just notice them and let them go	NR	
22	I do jobs or tasks automatically without being aware of what I'm doing	/AA	
23	I find myself doing things without paying attention	/AA	
24	I disapprove of myself when I have illogical ideas	/NJ	

correct scores for items preceded by a slash (/NJ, /AA, etc) by subtracting from 6

non react = ; *observe* = ; *act aware* = ; *describe* = ; *non judge* =

Appendix I

DEMOGRAPHIC DATA QUESTIONNAIRE - WEEK 1

Age:

- a) 18-25
- b) 25-35
- c) 35-45
- d) 45-55
- e) >55

Ethnicity:

- a) Hispanic or Latino
- b) Not Hispanic or Latino

Race:

- a) American Indian or Alaska Native
- b) Asian
- c) Black or African American
- d) Native Hawaiian or Other Pacific Islander
- e) White

Sex:

- a) Male
- b) Female
- c) Transgender Male
- d) Transgender Female
- e) Nonbinary
- f) _____
- g) Prefer not to answer

Marital Status:

- a) Married
- b) Single
- c) Divorced
- d) Widowed
- e) Partnered

Employment Status:

- a) Employed
- b) Unemployed
- c) Retired
- d) Disabled

Length of Time in Current Treatment:

- a) < 1 year
- b) 1-2 years
- c) 3-5 years
- d) 5-10 years
- e) > 10 years

Preferred Substance:

- a) Alcohol
- b) Cocaine
- c) Methamphetamine
- d) Marijuana
- e) Opioids
 - a. Heroin
 - b. Prescription pain meds
- f) Benzodiazepine (Xanax, Valium)
- g) PCP
- h) MDMA (Ecstasy/Molly)
- i) Nicotine
- j) _____

Mental Health Diagnoses:

- a) Depression
- b) Anxiety
- c) Bipolar
- d) Schizophrenia
- e) PTSD
- f) _____

Did you practice mindfulness outside of group?

- a) Yes
- b) No

Appendix J

DEMOGRAPHIC DATA QUESTIONNAIRE – WEEKS 4 & 8

Age:

- a) 18-25
- b) 25-35
- c) 35-45
- d) 45-55
- e) >55

Ethnicity:

- a) Hispanic or Latino
- b) Not Hispanic or Latino

Race:

- a) American Indian or Alaska Native
- b) Asian
- c) Black or African American
- d) Native Hawaiian or Other Pacific Islander
- e) White

Sex:

- a) Male
- b) Female
- c) Transgender Male
- d) Transgender Female
- e) Nonbinary
- f) _____
- g) Prefer not to answer

Marital Status:

- a) Married
- b) Single
- c) Divorced
- d) Widowed
- e) Partnered

Employment Status:

- a) Employed
- b) Unemployed
- c) Retired
- d) Disabled

Length of Time in Current Treatment:

- a) < 1 year
- b) 1-2 years
- c) 3-5 years
- d) 5-10 years
- e) > 10 years

Preferred Substance:

- a) Alcohol
- b) Cocaine
- c) Methamphetamine
- d) Marijuana
- e) Opioids
 - a. Heroin
 - b. Prescription pain meds
- f) Benzodiazepine (Xanax, Valium)
- g) PCP
- h) MDMA (Ecstasy/Molly)
- i) Nicotine
- j) _____

Mental Health Diagnoses:

- a) Depression
- b) Anxiety
- c) Bipolar
- d) Schizophrenia
- e) PTSD
- f) _____

How many groups with mindfulness have you attended?

- a) 1-2
- b) 3-4
- c) 5-6
- d) 7-8

Did you complete the mindfulness homework activities?

- a) Yes
- b) No

Did you practice mindfulness outside of group?

- a) Yes
- b) No

Appendix K

IRB APPROVAL OF MODIFICATION



RESEARCH OFFICE

210 Hulihan Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE: October 26, 2018

TO: Christine Renzulli
FROM: University of Delaware IRB

STUDY TITLE: [1303048-2] Mindfulness for Substance Use Disorders

SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED

APPROVAL DATE: October 26, 2018

EXPIRATION DATE: October 22, 2019

REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of Amendment/Modification materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

Appendix L

IRB APPROVAL



RESEARCH OFFICE

210 Hulihan Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE: October 23, 2018

TO: Christine Renzulli
FROM: University of Delaware IRB

STUDY TITLE: [1303048-1] Mindfulness for Substance Use Disorders

SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: October 23, 2018
EXPIRATION DATE: October 22, 2019
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # (7)

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

Appendix M
FACILITY APPROVAL LETTER



July 26, 2018

Institutional Review Board
University of Delaware
210 Hullahen Hall
Newark, DE 19716

To Whom It May Concern:

The Mindfulness for Substance Use Disorders project proposed by Christine Renzulli has been reviewed and approved. Cathy McKay, Connections CSP Inc. CEO, and Lamont Baker, Regional Director for Outpatient Substance Use Disorder Services, approve of the project and as we do not have our own Institutional Review Board no other review is necessary.

The implementation of mindfulness will become the standard of practice for the 7am Friday group in Newark. The use of measurement based tools (Timeline Follow-Back Survey, Penn Alcohol Craving Scale [adapted for drugs and alcohol], Perceived Stress Scale, and Five Facet Mindfulness Questionnaire- short form) are approved for use by Connections and repeat use of these measure will be the standard of care, at the group facilitator's discretion. We are even open to giving the measures to clients who volunteer to do so, but who do not receive the mindfulness intervention.

Very truly yours,



William F. Northey, Jr., PhD, LMFT
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Appendix N

JOHNS HOPKINS EVIDENCE BASED PRACTICE EVIDENCE RATING SCALE

JHNEBP EVIDENCE RATING SCALES

STRENGTH of the Evidence	
Level I	Experimental study/randomized controlled trial (RCT) or meta analysis of RCT
Level II	Quasi-experimental study
Level III	Non-experimental study, qualitative study, or meta-synthesis.
Level IV	Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)
Level V	Opinion of individual expert based on non-research evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience)

QUALITY of the Evidence		
A High	Research	consistent results with sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence.
	Summative reviews	well-defined, reproducible search strategies; consistent results with sufficient numbers of well defined studies; criteria-based evaluation of overall scientific strength and quality of included studies; definitive conclusions.
	Organizational	well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable and valid measures
	Expert Opinion	expertise is clearly evident
B Good	Research	reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence
	Summative reviews	reasonably thorough and appropriate search; reasonably consistent results with sufficient numbers of well defined studies; evaluation of strengths and limitations of included studies; fairly definitive conclusions.
	Organizational	Well-defined methods; reasonably consistent results with sufficient numbers; use of reliable and valid measures; reasonably consistent recommendations
	Expert Opinion	expertise appears to be credible.
C Low quality or major flaws	Research	little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn
	Summative reviews	undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results; conclusions cannot be drawn
	Organizational	Undefined, or poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack adequate reliability or validity
	Expert Opinion	expertise is not discernable or is dubious.

**A study rated an A would be of high quality, whereas, a study rated a C would have major flaws that raise serious questions about the believability of the findings and should be automatically eliminated from consideration.*

Newhouse R, Dearholt S, Poe S, Pugh LC, White K. The Johns Hopkins Nursing Evidence-based Practice Rating Scale. 2005. Baltimore, MD, The Johns Hopkins Hospital; Johns Hopkins University School of Nursing.

Appendix O

REPEATED MEASURES ANOVAS

TFBS Descriptive Statistics

	<i>M</i>	<i>SD</i>	<i>N</i>
Time Follow-Back Survey Week 1	2.00	4.000	6
Time Follow-Back Survey Week 4	3.16	4.915	6
Time Follow-Back Survey Week 8	1.66	4.082	6

TFBS Tests of Within-Subjects Effects

Source		Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
TFBS	Sphericity Assumed	7.444	2	3.722	.388	.688	.072	.776	.096

a. Computed using alpha = .05

PSS Descriptive Statistics

	<i>M</i>	<i>SD</i>	<i>N</i>
Perceived Stress Scale Week 1	19.33	3.983	6
Perceived Stress Scale Week 4	19.83	1.940	6
Perceived Stress Scale Week 8	19.33	3.076	6

PSS Tests of Within-Subjects Effects

Source		Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
PSS	Sphericity Assumed	1.000	2	.500	.073	.930	.014	.146	.058

a. Computed using alpha = .05

PACS Descriptive Statistics

	<i>M</i>	<i>SD</i>	<i>N</i>
Penn Alcohol Craving Scale Week1	6.50	9.711	6
Penn Alcohol Craving Scale Week 4	7.50	8.780	6
Penn Alcohol Craving Scale Week 8	8.50	9.181	6

PACS Tests of Within-Subjects Effects

Source		Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
PACS	Sphericity Assumed	12.000	2	6.000	3.462	.072	.409	6.923	.512

a. Computed using alpha = .05

FFMQ-SF Descriptive Statistics

	<i>M</i>	<i>SD</i>	<i>N</i>
Five Facet Mindfulness Questionnaire-sf Week 1	74.60	18.352	5
Five Facet Mindfulness Questionnaire-sf Week 4	70.60	14.758	5
Five Facet Mindfulness Questionnaire-sf Week 8	70.80	17.469	5

FFMQ-SF Tests of Within-Subjects Effects

Source		Type III Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	Partial Eta Squared	Noncent. Parameter	Observed Power ^a
FFMQ	Sphericity Assumed	50.800	2	25.400	.224	.804	.053	.449	.074

a. Computed using alpha = .05