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Mindfulness-based Intervention and Relapse Rates
in Adults with a History of Substance Use Disorder

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This Manuscript Partially Fulfills the Requirements for the Doctor of Nursing Practice Program and is Approved by:

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Abstract

**Practice Problem:** Substance abuse disorder (SUD) has become an increasingly prevalent community health problem worldwide, affecting individuals in all geographical regions regardless of age, race, sex, and socioeconomic status, despite decades of efforts to find a solution (Bowen et al., 2014). A lack of treatment engagement and substance-misuse crisis calls attention to the effectiveness of relapse-sensitive care and treatments.

**PICOT:** The question addressed in this evidence-based project was “In adults over 18 years of age with substance use disorder (P), how does the effect of mindfulness-based treatment (I), compared with no mindfulness-based treatment (C), reduce the risk of relapse (O), in 3 months (T)?”

**Evidence:** Evidence exists to support that Mindfulness-based intervention (MBI) significantly reduced the incidence of relapse in adult patients with a history of SUD by decreasing symptoms related to substance abuse craving or use.

**Intervention:** Mindfulness-based practice consisting of meditation and mindful breathing exercises, motivational interviewing and relapse prevention cognitive therapy was implemented to reduce incidence of relapse in adults with a history of SUD.

**Outcome:** Findings revealed a less than 15% reduction in incidence after three months of MBI implementation.

**Conclusion:** The results indicate that the reduction in the risk of relapse in adult patients with a history of SUD post implementation was not significantly significant. The reduction also indicated a clinically significant improvement in relapse outcomes two months after implementing MBI.
Mindfulness-based Intervention and Relapse Rates in Adults with a History of Substance Use Disorder

Substance abuse disorder (SUD) is a disease that spares no population and is characterized as a primary, chronic, and relapsing disease (American Society of Addiction Medicine [ASAM], 2016). As a country, we have a serious substance misuse problem with the use of alcohol, illegal drugs, and/or prescribed medications in ways that produce harms to ourselves and those around us (McLellan, 2017). SUD is a significant problem that can reasonably be considered a lifestyle problem, but there are effective prevention policies and practices that could significantly reduce the harms, risk of relapse and costs of these problems (McLellan, 2017). The purpose of this DNP project was to evaluate the effect of mindfulness-based interventions in reducing relapse rates in adults with a history of substance abuse disorder who are patients at a substance abuse treatment facility in Woodlawn, Maryland.

Substance use includes alcohol, tobacco, cannabis, stimulants, and opioids. With substance abuse disorder, relapse and noncompliance are challenges for both the healthcare provider and the patient. Therefore, prevention and management of substance use disorder is considered one of the top priorities and has become a major public health problem for healthcare systems. Effective treatment involves improved access to care, tailoring a program to the patients’ needs, and assessing and modifying treatment modalities based on patient assessment (National Institute of Drug Abuse [NIDA], 2016). Relapse is highly prevalent following substance abuse treatment, supporting the need for improved aftercare interventions (Bowen et al., 2014). Relapse is defined conceptually as either a transition to regression or a progression in the process of recovery, prompted by a return to the previous behavior of substance use, despite the intention to stay abstinent (Moon and Lee, 2020).
Relapse prevention therapy as a specific intervention is one of several evidence-based practices for substance use disorders. Non-pharmacological treatments such as “counseling”, “self-help”, and “behavioral therapies” have been proven as effective therapies that can reduce the risk of relapsing (Tran et al., 2019).

**Significance of the Practice Problem**

Substance use disorder (SUD) has become an increasingly prevalent community health problem worldwide, affecting individuals in all geographical regions regardless of age, race, sex, and socioeconomic status, despite decades of efforts to find a solution (Bowen et al., 2014). SUDs include substance dependence or abuse that can ultimately cause health problems, disability, and the failure to meet responsibilities at work, school, or home. In addition, intoxication, misuse, and overdose can be life-threatening and result in medical emergencies. Opioids are the main driver of drug overdose deaths, which frequently occur during the relapse phase because of the decreased level of tolerance after a period of abstinence. Substance use is often initiated in adolescence, but it is during adulthood that prevalence rates for SUDs peak (Schulte and Hser, 2014).

According to the 2018 National Survey on Drug Use and Mental Health, approximately 20.3 million people ages 12 or older suffer from a SUD (Korecki et al., 2020). Approximately 23 million Americans suffer from SUDs with only an estimated 10% receiving any treatment (Pating et al., 2012). And 40% to 60% will relapse within one year (Bowen et al., 2014). In the U.S., there were 67,367 drug overdose deaths reported in 2018, 4.1% fewer deaths than in 2017 (NIDA, 2020). In Maryland, nearly 90% of drug overdose deaths involved opioids in 2018; a total of 2,087 deaths (NIDA, 2020). A lack of treatment engagement and substance-misuse crisis calls attention to the effectiveness of relapse-sensitive care and treatments.
In 2017, the Governor of Maryland recognized this public health challenge and declared a State of Emergency in response to the substance abuse crisis ravaging communities in Maryland. The Governor developed efforts to combat Maryland’s opioid epidemic through a $10 million grant to combat the drug epidemic across the state. The money was dedicated to prevention, education, enforcement, public safety, and treatment and recovery.

Substance use disorder is a significant public health problem associated with considerable social and economic costs in the United States and throughout the world (Korecki et al., 2020). Substance abuse results in mortality, decreased quality of life, and heavy costs to society, both monetary and in terms of lost human potential. Recent reports estimated that annual costs in the United States are approximately USD $193 billion for illicit drug use, USD $223 billion for excessive alcohol use, and USD $193 billion for tobacco use (Schulte and Hser, 2014). The estimated cost associated with substance use in the U.S. as measured by crime, lost work productivity, and health care is nearly $740 billion annually (Korecki et al., 2020).

SUDs can result in general health deterioration and specific, ongoing conditions (Schulte and Hser, 2014). SUDs have been linked to increased risk for cardiovascular problems and heart disease. Substance use also increases risk for infectious disease. SUD can also have a wide range of short and long term, direct and indirect effects (NIDA, 2016). Short term effects include changes in appetite, labile changes in blood pressure and heart rate, overdose or even death. Long term effects can include heart or lung disease, cancer, mental illness, Hepatitis and HIV/AIDS. Not to mention, long term drug use can also lead to addiction. The indirect effects of SUD include not just the person using drugs but also those around them.

There is a recognized psychological and social need of patients with substance use disorders that presents as a challenge for healthcare providers, requiring a multidisciplinary
approach that includes medications, psychosocial treatment, and education to assist the patient with disease management.

**PICOT Question**

The question addressed in this evidence-based project is: In adults over 18 years of age with substance use disorder (P), how does the effect of mindfulness-based treatment (I), compared with no mindfulness-based treatment (C), reduce the risk of relapse (O), in 3 months (T)?

The population is adults over the age of 18 years old with a history of substance use disorder. The intervention is mindfulness-based treatment which includes modifying attitudes and behaviors related to drug abuse and increasing life skills to handle stressful circumstances and environmental cues that may trigger intense craving for drugs and prompt another cycle of compulsive abuse (NIDA, 2020). MBI incorporates mindfulness practice such as meditation and mindful breathing exercises, motivational interviewing and relapse prevention cognitive therapy that is administered by a trained healthcare professional (Bowen et al., 2014). Mindfulness training includes “maintaining a moment-by-moment awareness of one’s thoughts, feelings, bodily sensations, and surrounding environment” (Li et al., 2017). Out of the 11 studies reviewed, all 11 supported the use of MBI and its efficacy as measured by lowering the risk of relapse. The comparative intervention is no mindfulness-based treatment. The intended outcome was reduction in the risk of relapse by more than 15% from the baseline of 40% risk of relapse, with the implementation of MBI after 3 months. Relapse means to fall or slide back into a previous state. Relapse was measured as a change in the addictive behavior and recurrence of symptoms related to substance abuse craving or use after MBI. Lastly, the timeframe was within 3 months.
Evidence-Based Practice Framework & Change Theory

The John's Hopkins evidence-based practice framework guides the development and implementation of the project by establishing the goal of the model to ensure that all relevant and practical research findings and best practices are appropriately incorporated into patient care (Dang and Dearholt, 2017). This model seeks to identify interventions supported by empirical research to support implementation strategies which, includes the process of transferring treatment into a clinical setting. 11 articles reviewed provided support that MBI is effective in reducing the rate of relapse when used in patients with SUD.

Change Theory

The Transtheoretical Model (TTM) is a framework for understanding positive health-behavior changes (Prochaska et al., 1992). The TTM’s process of predicting a person’s success or failure in achieving a proposed behavioral change is relevant to the change project. TTM emphasize the difference between motivation for change and motivation for treatment. There are five leading measures associated with TTM: Precontemplation, contemplation, preparation, action, and maintenance.

In the precontemplation stage, individuals are not considering change and are not interested in getting help for the behavior. Precontemplators are often characterized as resistant or unmotivated and tend to avoid information, discussion, or thought with regard to the targeted health behavior (Prochaska et al., 1992). They typically don’t see the behavior as being a problem. They are not interested in being advised to quit their addiction. The behavior is usually leading to a negative outcome from their addiction or substance abuse that leads them to the contemplation stage.
In the contemplation stage, individuals are thinking about changing or quitting the addictive behavior usually within the next 6 months. They are more aware of the benefits of changing, but remain keenly aware of the costs (Prochaska, Redding, & Evers, 1997). They may be opened to learning about different strategies for controlling or quitting the addictive behavior, without committing or promising to make a change. Individuals may remain at this stage for months to years before either returning to the precontemplation stage or progressing to the next stage, the preparation stage.

In the preparation stage, individuals have moved forward to planning and preparing for carrying out changes they learned about in the contemplation stage. During this stage, an individual may plan the kind of change that may need to be made, for example, an inpatient or outpatient treatment program and ceasing the drug abuse behavior.

The action stage is the focus for many people attempting to overcome substance abuse. This is the stage where change of behavior starts happening. This includes physically enrolling in treatment where support is provided to help control the addiction or behavior. The action stage doesn’t necessarily happen all at once and can occur in small, gradual steps.

Lastly, the maintenance stage of TTM focuses on the continuation of any progress made in the action stage, including maintaining abstinence from alcohol or drugs. The goal was to prevent relapse and consolidate gains secured during the action phase. This is seen as the most challenging stage especially after a period of time has lapsed from when the initial goal was met, and now individuals are more complacent and start to think that a small or minor lapse will make no significant difference.

After the change has been implemented, it must be a part of the organization’s culture for it to be successful and sustained. The protocols developed with MBI becomes the standard
clinical practice for this project. This includes the process of using The Transtheoretical Model in the implementation of a behavior modification treatment plan, adopting a collaborative approach between providers and staff of the project site to develop a structural change that will fit into the workflow to ensure support and sustainability of the project. The intended outcome was for participants to possess an awareness of triggers and habitual responses and then make a mindful choice that decreases the likelihood of relapse, while also increasing self-efficacy so they are less likely to consume the previously desired substance. This is where the change is now their new habit and standard.

**Evidence Search Strategy**

Several databases were used to locate current literature on substance use disorder and relapse prevention and to support the use of behavioral modification. In searching databases located in the library at University of Saint Augustine, an extensive search was performed utilizing CINAHL, PubMed and Google Scholar. The combined search used keywords such as “substance abuse”, “relapse”, “mindfulness-based treatment”, and “substance use disorder”. The initial search criteria returned 786 articles related to the topics. Articles included were current articles, published from 2012-2020, and were related to the PICOT question. Additional filters used include adults, articles written in English and USA as the geographic area. Exclusion criteria included peer-reviewed journals published before 2012. Studies were then selected that addressed the role of behavioral management in recovery and prevention of relapse and duplicated articles were removed. After screening the titles and abstracts that did not relate to the PICOT question, 26 articles were excluded. A total of 11 articles were included.
Evidence Search Results

An extensive search was done using three databases: CINAHL, PubMed, and Google Scholar researching evidenced based articles between 2012-2020. Each search generated research articles with the following relevant results; CINAHL 49 articles, PubMed 136 articles, and Google Scholar 93 articles. A literature review was completed to determine the quality of each article. Citations were screened for duplication, and there were 73 non duplicated articles related to substance use disorder and relapse prevention to support the use of behavioral modification. After the inclusion and exclusion criteria were considered, 52 articles were excluded. After screening the titles and abstracts that did not relate to the PICOT question, 21 articles were retrieved. A PRISMA model search strategy is provided in Appendix A.

Literature grading was completed to determine the Evidence Level and Quality Guide of each body of work. Based on the level of evidence outlined by Johns Hopkins Evidence Based Practice Model (Dang and Dearholt, 2017), eight quantitative studies provided Level I evidence with a quality rating of high or good quality. Randomized controlled trials (RCT) were included in Level I evidence. The remaining three articles were Evidence Level II and III and included Quasi-experimental studies and with high to good quality grades. Among all of the articles, each mentioned using Mindfulness-Based Relapse Prevention as a therapeutic approach for reducing relapse in individuals with a history of substance use or misuse. In addition, 7 studies specifically targeted the outcome of reducing relapse rates and increasing the rate of abstinence.

Themes from the Literature

The synthesis of the literature offers evidence and support to address the components of the PICOT question. Following an in-depth evaluation of the literature utilizing evidence tables provided in Appendix B, the results consisted of 11 quality studies and are as follows: Eight
randomized control trials and three systematic reviews. The specific themes identified include efficacy of Mindless Based Interventions and relapse prevention.

**Treatment Setting**

Treatment setting was considered because the treatment environment and accessibility of support plays a major factor in SUD treatment and relapse prevention (Bautista et al., 2019). Out of 11 studies, 10 were conducted in a SUD specialty care setting and utilized MBI (Bowen et al., 2010; Bowen et al., 2014b; Chisea and Serretti, 2014; Witkiewitz et al., 2013b; Korecki et al., 2013; Roos et al., 2017; Davis et al., 2018; Witkiewitz and Bowen, 2010; Li et al., 2017; Bautista et al., 2019). These studies included an inpatient or outpatient treatment facility. One study focused more on a home practice approach to maintain more therapeutic benefits, as this approach was associated with significantly lower alcohol and other drug use and cravings (Grow et al., 2015). All RCTs included MBI in a group setting with the exception of the study by Grow et al., 2015.

**Participants**

No study had only females or only males. Roos et al., 2017; Bowen et al., 2014a; Witkiewitz and Bowen, 2010, included participants 18 years and older with an average age of 40 and had a history of various substance abuse of alcohol, drugs, and opiates. Out of 11 studies, no study restricted participants by race or primary substance abuse. All studies except one (Witkiewitz et al., 2013), excluded participants with a history of mental health disorders.

**Effects of MBI on substance abuse**

A critical appraisal of current evidence is crucial in determining the effects of MBI on substance abuse and how it’s been increasingly developed and evaluated for the treatment of SUD (Korecki et al., 2013). All 11 studies found that mindfulness-based treatment was
associated with reducing the level of craving for substance use, increasing abstinence rates, and
supporting the efficacy of SUD treatment (Bowen et al., 2010; Bowen et al., 2014b; Chisea and
Serretti, 2014; Witkiewitz et al., 2013b; Korecki et al., 2013; Roos et al., 2017; Davis et al.,
2018; Grant et al., 2017; Witkiewitz and Bowen, 2010; Li et al., 2017; Bautista et al., 2019).
Bowen et al., (2014) adds that mindfulness-based treatment teaches patients how to remain in
contact with and relate differently to challenging affective or physical states, using alternatives to
avoidant-based coping, recognizing maladaptive behaviors, and increasing contact with natural
contingencies. Furthermore, mindfulness promotes awareness and helps individuals gain
awareness of how substance cues trigger the experience of craving. The total length of MBI
ranged from 2 to 8-hour intervention sessions over 8 weeks (Bowen et al., 2010; Bowen et al.,
2014b; Witkiewitz et al., 2013b).

The use of MBI to decrease relapse prevention

Mindfulness based treatment is a promising intervention for substance misuse and relapse
prevention (Li et al., 2017). Mindfulness-based relapse prevention is a behavioral treatment for
SUD that shows promise in enhancing the long-term outcomes among individuals recovering
from SUDs (Bowen et al., 2011). Mindfulness treatment is more effective in reducing the
number of days of substance use, craving, and substance related problems, increasing the number
of days of abstinence (Bowen et al., 2010; Li et al., 2017). The benefit of relapse prevention
according to the reviewed studies include helping individuals identify situations that may trigger
relapse and being able to utilize cognitive and behavioral skills to cope with substance abuse
(Grant et al., 2017). Four studies explored the problem of preventing relapse and included data
that supports the benefit of MBI for relapse prevention (Bowen et al., 2010; Bowen et al., 2014b;
Li et al., 2017; Dingle and Bowen, 2012). This data included whether MBI is effective and safe
in reducing relapse, frequency, and quantity of substance use, craving symptoms as well as improving functional status, recovery outcomes, and health related quality of life (Bowen et al., 2010; Bowen et al., 2014b; Li et al., 2017; Dingle and Bowen, 2012). While 7 out of the 11 studies found significant effects to reduce cravings as well as increased mindfulness (Witkiewitz and Bowen, 2010; Witkiewitz et al., 2012; Davis et al., 2018; Chisea and Serretti, 2014; Korecki et al., 2013; Grow et al., 2015). This includes raising awareness of automatic processes associated with craving, substance seeking, and urges (Li et al., 2017).

**Practice Recommendations**

Based on the synthesis of the literature, a generalized consensus was established that Mindfulness-Based Interventions is an appropriate behavioral modification strategy for addressing behavioral health issues like SUD. The most common type of MBI for SUD is Mindfulness based relapse prevention, which posits that it is a “novel mindfulness-based aftercare approach, which integrates core aspects of relapse prevention with practices adapted from and [mindfulness based cognitive therapy]”, (Bowen et al., 2014b). Mindfulness-based relapse prevention is an optimal intervention and treatment for preventing relapse among individuals with substance use symptoms. Thus, the efficacy for mindfulness-based interventions is strong. Specifically, MBRP was developed to target negative thought processes such as rumination and craving which both play significant roles in substance use relapse (Witkiewitz et al., 2013). MBRP adds an element of traditional cognitive behavioral exercises that aid in identifying high risk situations while creating alternative responses and coping strategies to respond to those triggers (Witkiewitz and Bowen, 2010).

The components of MBRP includes 2-hour sessions for 8 weeks that focuses on practicing mindful awareness and integrating mindfulness practice into daily life. Midway
through the program, sessions focused on acceptance of present experience, and application of mindfulness practices to relapse prevention. Concluding with sessions that addressed self-care, support networks, and lifestyle balance (Bowen et al., 2010). Key implementation strategies included increasing staff awareness of mindfulness-based relapse prevention, along with weekly monitoring, auditing, and providing constructive feedback to the staff.

Setting, Stakeholders, and Systems Change

A drug rehabilitation facility in Woodlawn, Maryland served as the setting for the project. The substance abuse rehabilitation facility provides a 24 hour therapeutically planned living and rehabilitative intervention environment for the treatment of individuals with disorders in the abuse of drugs, alcohol, and other substances such as cannabis, stimulants, and opioids. Due to COVID 19 restrictions, the program was limited to 12 persons which consisted of adult male and female clients over the age of 18, with a history of substance use, and who successfully completed aftercare within the last 6 months.

Organizational need for the project stemmed from the recommendation of the Medical Director. The increasing incidence and prevalence of substance use disorders and returning to substance use (i.e., relapse) following treatment is common. Therefore, underscoring the need for effective treatments that will help individuals maintain long-term reductions in substance use (Korecki et al., 2020). Despite best efforts, relapse and noncompliance with treatment are issues that challenge healthcare professionals. Due to high relapse rates, substance use disorder (SUD) has become known as a chronic relapsing disorder (Tkacz et al., 2012). In addition, SUD has a negative impact on the individual, family unit, and the community.

Stakeholders for this evidence-based change project included the Medical Director, healthcare providers and mental health therapist, the participant, and family members.
Sustainability plans included taking a multidisciplinary team approach with continuous monitoring for long term recovery support. This included a structured recovery support system of professionals, family, and friends. Continuous monitoring included regular updates to the key stakeholders of the project’s progress, ongoing organizational and leadership support, auditing and providing constructive feedback.

An organizational strength, weakness, opportunities, and threats (SWOT) analysis was conducted to assess the organization. Strengths identified included relapse rate data that supports the need for the project, multidisciplinary team with open to feedback from stakeholders, and highly experienced clinical team. Weaknesses included public awareness of the services and lack of participation among participants. Some opportunities are the rehabilitation facility’s interest in providing support to participants at risk for relapse and the potential of networking with community stakeholders. Threats included time constraints for this project coupled with the occurring pandemic and failure to document correctly or lack of motivation to complete the questionnaire. The SWOT analysis is provided in Appendix C.

The vision of the project was to empower adults with a history of substance use disorder by supporting them in identifying situations that trigger relapse. This vision supports the vision of the rehabilitation facility, “to address the needs of the person served by providing assistance with issues caused by substance use disorders.” The projects mission was to lower the risk of relapse in substance use in the adult population. The level of system change that the project created was micro-level because it is a contained system that includes intra and interpersonal relationships. This micro system comprises of the health professionals who work directly with patients and their families to obtain the desired outcome.
**Implementation Plan with Timeline and Budget**

TTM framework was appropriate for my project. TTM guides the implementation of MBI in participants 18 years and older in identifying barriers that often result in relapse. The implementation of MBI incorporates behavioral treatment focusing on individual responses to high-risk situations along with skills training with cognitive interventions (Bowen et al., 2009). Mindfulness behavioral treatment focuses on responses to high-risk situations, combining skills-training with cognitive interventions (Bowen et al., 2014). The goal of MBI is decreasing the risk and severity of relapse to substance use following treatment. Hence, predicting the achievement of the project’s goal of reducing the rate of relapse related to SUD.

Short-term goal for the project was a 15% or more reduction in the risk of relapse in patients who have participated in aftercare. The long-term goal is the achievement of a 25% or more reduction in the risk of relapse and the incorporation of the MBRP intervention in the policy and procedure for the rehabilitation facility with sustainability of this evidenced-based project after 6 months.

A multidisciplinary team was formed to ensure a successful change project implementation. The team consisted of the medical director, healthcare providers, mental health therapist, the DNP student and office support staff. Each team member was made aware of their roles and responsibilities and the project’s timeline and milestones. Expectations were clearly communicated, and accountability established.

A timeline is important in implementing and achieving the goals of the project. The tasks, assigned personnel, and allotted time frame are outlined in Appendix D. Reminding team members of the project timeline was also essential to ensure achievement of assigned tasks. The timeline began with preparing the project proposal and holding weekly meetings and/or
conversations with the preceptor. Next, the DNP student secured an Evidence-Based Review Council approval from the University of St. Augustine for Health Sciences (USAHS) and from the facility. The next step included meeting with key stakeholders and training staff involved in the implementation of the intervention. After the project implementation commenced, the data collected was analyzed by the DNP student and a statistician. Finally, the results were disseminated and presented.

Data Tool

The data collection included participants completing the Stimulant Relapse Risk Scale (SRRS). SRRS is a scale designed to measure Relapse Risk among Substance Dependence. (See Appendix F). SRRS is a 35 item self-report multidimensional instrument with a 5-point Likert type rating scale with response options ranging from ‘strongly agree’ to ‘strongly disagree’. A letter of approval was unnecessary to use this tool as the authors indicated free use of SRRS without permission from the developer (Tokyo Metropolitan Institute of Medical Science) in case of intended purpose for academic, clinical setting, and research. The only requirement was citing the reference. (See Appendix G). The data were collected by the DNP student with PHI being secured prior to collecting the data.

Reliability and Validity

Reliability and validity are fundamental features in the evaluation of data collection tool for effectiveness. Inter-rater reliability is used to measure the data collected and help to determine whether the data collection instrument is clear, relevant, reasonable and a valid measuring tool.

The project manager has an important role in the success of any evidence-based project. They must possess key leadership skills. These include: 1) organizing the project with specific steps that provide structure and a framework that is easy to monitor and to change as needed; 2)
engaging all members involved; 3) effectively managing the project in collaboration with others at the microsystem level; 4) and controlling the project so that it is continually on time, on budget, and within the scope of the requirements.

**Evaluation Plan**

The goal of this project was to reduce the risk of relapse in adults with a history of substance use disorder. With rates of relapse following substance abuse treatment estimated over 60%, SUDs are often described as “chronic relapsing conditions” (Bowen et al., 2010). The evaluation process is important in measuring success of the EBP and determining whether the implementation of the intervention was effective. While statistical significance is important, creating clinically significant results is also important for this EBP and the organization. Monitoring and providing support to staff ensured that the independent variable of implementing a mindfulness-based intervention directly caused the intended change of reducing the incidence of relapse. The evaluation strategies used a pre and post questionnaire to measure the risk of relapse for the participants of the study. This project demonstrated a decrease in the risk of relapse for patients, which was achieved through the project interventions.

**Data Source**

The data source was an internally created tool documented on an Excel Spreadsheet. The data's privacy and confidentiality were maintained by storing data in electronic files on a password protected laptop. The laptop was stored in a locked desk drawer in a secured office. A random identification number was assigned to each participant to de-identify data collected. No PHI was included in the analytical dataset.
Balancing Measures

Balancing Measures included the cost for consulting with a statistician to help interpret the data, which cost $99. No additional cost was incurred because the staff were trained during normal work hours and no additional supplies were needed or used.

Process Measures

The interventions were evaluated with process measures before and after implementation to demonstrate fidelity to the new MBI. The intervention was measured for the percentage of completion pre- and post-implementation.

Financial Measures

Financial measures evaluate costs associated with the project and overlaps with the balancing measures. Again, the financial cost was minimum as staff was trained during normal business hours and didn’t require any additional training outside of normal work hours.

Outcome Measures

The outcome measure was 15% or more reduction in the risk of relapse in patients who have participated in the intervention. Therefore, this outcome measure was met.

Sustainability Measures

Sustaining measures were implemented to monitor the project over time. This data allowed the organization’s leadership to continue to observe and monitor the project significance and to ensure it aligns closely with the organization’s mission and values and there are resources to promote sustainability.

Data Analysis

Data collection began after receiving approval from University of Saint Augustine’s Evidence Practice Review Council (EPRC) and from the facility’s Executive Team. A data
collection spreadsheet was developed by the DNP student and reviewed to ensure accuracy and to ensure there was no duplication of data or missing data.

The participants for this study included adults 18 years and older with a history of substance use disorder and were residents at a rehabilitation facility in April and May 2021. Therefore, the first part of data collection addressed the demographic data that were collected to describe the participants in the project. Data collected included age, gender, race, history of use in years, number of days abstinent from substance use and outpatient or inpatient rehabilitation treatment. Intellectus, a statistical software was used to analyses the data. Data obtained were organized and presented utilizing frequency and percentage distribution figures. Summary statistics were calculated for each interval and ratio variable. Frequencies and percentages were calculated for each nominal variable. Frequencies and percentages are presented in Appendix H.

The second part of the data collection included the comparison between pre and post intervention questionnaire. The outcome of the questionnaire is an important tool in monitoring and providing support to the rehabilitation staff. The aim of the intervention was to improve clinical significance of outcomes relevant to previous research. T-test was used to measure the level of change from pre-intervention to post-intervention. The result of the two-tailed paired sample t-test was significant based on an alpha value of 0.05, indicating the null hypothesis can be rejected. This finding suggests the difference in the mean of relapse risk overall pre-test and the mean of relapse risk overall post-test was significantly different from zero. Baseline incidence rate for relapse was 2.85% and was reduced to 2.58% post intervention (Intellectus, 2021). The 0.27% reduction as significantly lower than the set goal of 15%. The results indicate that the reduction in the risk of relapse in adult patients with a history of SUD post implementation was not significantly significant. The results are presented in Appendix I.
Impact

This project has addressed the practice problem by supporting the evidence that mindfulness-based training can produce significant therapeutic effects on SUDs and prevent relapse. Implementation of MBI positively impacted the level of awareness, both internally and externally, of participants with a history of substance use and created an opportunity for them to identify triggers versus instinctively using substances. Throughout the 8-week implementation phase, the participants experienced a transformation that ultimately may reduce the risk of future substance misuse.

The outcome from the implementation of Mindfulness Based Intervention was the reduction in the incidence of relapse in adults with a history of substance abuse. Although the reduction in the incidence of relapse was not statistically significant, the findings indicated a clinically meaningful improvement on relapse outcomes post implementation.

The practice change encountered some challenges. Due to COVID 19, the rehabilitation facility had to limit the number of residents which led to a smaller sample size. However, despite the limited number of participants, the findings of the project still provided a reduction in relapses, demonstrating an improvement post-implementation. Also, it is unknown whether MBI is more efficacious as a stand-alone treatment or bridged with another treatment plan. Going forward, this should be explored to see if MBI can provide the same results of reduction in incidence of relapse or should it be used in conjunction with other treatment modalities for best results and sustainability. Finally, it should be noted that pursuit of a healthy lifestyle is not something that is finalized over the course of an 8-week intervention (Garland & Howard, 2015). Hence, consideration should also be made with MBI and the need to be practiced post-intervention in order to maintain therapeutic effects and achieve addiction recovery.
Future Implications

The ongoing goal is sustainability and assisting the organization in standardizing an effective and evidenced based treatment therapy. Suggestions for next step would include incorporating the practice change as part of an individual’s treatment plan and providing longer term follow up to assess the durability of observed treatment effects (Garland & Howard, 2015). The implementation of this change project is aligned with the organization’s mission, vision, and values. In order to ensure sustainability of the intervention, leadership must provide on-going evaluations of its effectiveness. Thus, monitoring of the interventions and outcomes will continue, and data will be reviewed by leadership on a bi-monthly basis.

Dissemination Plan

After the data collection and analysis, a PowerPoint presentation of the results and evaluation of the project was presented to the project team. The Medical director, healthcare providers, and mental health are the intended audience. For team members who could not attend the meeting, an email was sent to summarize the findings. Peer reviews of the project results was conducted prior to sharing the results. The peer reviews included constructive feedback from the faculty advisor, preceptor, and writing center coach.

Regional and local organizations to which this could be presented would include other substance abuse treatment centers within the state of Maryland. Nationally, there is an annual NAADAC, the Association for Addiction Professionals, Conference. NAADAC represents the professional interests of counselors, educators and other addiction-focused health care professionals in the United States, Canada and abroad. Externally, The Journal of Addictions Nursing (JAN), is the preferred journal for publication because it is a peer-reviewed quarterly international journal publishing original articles on current research, issues, practices, and
innovations as they relate to the field of addictions. A publication of the manuscript will be submitted in full text to Scholarship and Open Access Repository (SOAR@USA) to fulfill the DNP program requirements. The SOAR is an institutional repository for the university where projects can be accessed and reviewed.

**Conclusion**

The paper aimed to evaluate the effect of mindfulness-based intervention (MBI) implementation on relapse prevention in adults with a history of substance use disorder at a rehabilitation facility after a two-month period. Research and evidence support the effectiveness of healthcare professionals including therapist in implementing mindfulness-based intervention, along with a multidisciplinary approach, audit, and feedback in reducing the incidence relapse. A high staff compliance rate achieved on MBI will lead to a successful preventive measures implementation and improve relapse rate in participants with a history of substance use disorder. The outcome is aligned with the facility’s vision and mission of providing the highest quality of care for patients and the community.
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Appendix A

PRISMA Flow Diagram

CINAHL 2012-2019
49 Citations

PubMed 2012-2019
136 Citations

Google Scholar 2012-2019
93 Citations

73 Non-Duplicated Citations Screened

Inclusion/Exclusion Criteria Applied

52 Articles Excluded After Title/Abstract Screen

21 Articles Retrieved

Inclusion/Exclusion Criteria Applied

11 Articles Excluded After Title/Abstract Screen

11 Articles Included
## Appendix B

### Evidence Table

| Citation | Design Level/Quality Grade | Sample/Sample size | Intervention/Comparison | Theoretical Foundation | Outcome Definition | Usefulness Results/Key Findings |
|----------|----------------------------|--------------------|-------------------------|------------------------|--------------------|----------------------------------|
| Bowen, S., Witkiewitz, K., Clifasefi, S. L., Grow, J., Chawla, N., Hsu, S. H., Carroll, H. A., Harrop, E., Collins, S. E., Lustyk, M. K., & Larimer, M. E. (2014b). Relative Efficacy of Mindfulness-Based Relapse Prevention, Standard Relapse Prevention, and Treatment as Usual for Substance Use Disorders. *JAMA Psychiatry, 71*(5), 547. https://doi.org/10.1001/jamapsychiatry.2013.4546 | Level I; Quality Rating A | 26 individuals who successfully completed initial treatment for substance use disorders at a private, nonprofit treatment facility | To evaluate the long-term efficacy of MBRP in reducing relapse compared with RP and treatment as usual (TAU [12-step programming and psychoeducation]) during a 12-month follow-up period. Participants were randomly assigned to 8 weekly group sessions of Mindfulness Based Relapse prevention, Relapse prevention or Treatment as usual after successfully completing initial treatment for substance use disorders 12 months prior. | None indicated | Primary outcome is a decrease in relapse to drug use and heavy alcohol and frequency of substance use in 90 days. | At the 12-month follow-up, MBRP participants reported significantly fewer days of substance use compared with RP and TAU. |
| Chiesa, A., & Serretti, A. (2013). Are Mindfulness-Based Interventions Effective for Substance Use Disorders? A Systematic Review of the Evidence. *Substance Use & Misuse, 49*(5), 492–512. | Level III Quality Rating B | 24 studies retrieved from four electronic databases that supported MBIs | Reviewing current evidence on the therapeutic efficacy of MBIs for substance use and misuse. Focusing on the usefulness of MBIs for the reduction of substance use and misuse. | None Indicated | Measuring the difference between MBIs and active or inactive comparators on measures of objective and subjective substance use or misuse reduction. | MBIs can reduce consumption of several substances and can improve several psychological outcomes associated with drug consumption. |
| Reference                                                                 | Level | Quality Rating | Methodology                                                                                                                                   | Outcomes                                                                                           | Results                                                                                              |
|-------------------------------------------------------------------------|-------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Davis, J. P., Berry, D., Dumas, T. M., Ritter, E., Smith, D. C., Menard, C., & Roberts, B. W. (2018). Substance use outcomes for mindfulness-based relapse prevention are partially mediated by reductions in stress: Results from a randomized trial. *Journal of Substance Abuse Treatment*, 91, 37–48. [https://doi.org/10.1016/j.jsat.2018.05.002](https://doi.org/10.1016/j.jsat.2018.05.002) | Level I | Quality Rating B | 79 adults over the age of 18 years from a residential substance use treatment center.                                                           | To examine the effect of the experimental condition (treatment as usual + MBRP) compared to a control condition (treatment-as-usual plus additional 12-step meetings (TAU)) on perceived stress, craving and substance use. | None indicated                                                                                     |
| Dingle, T., & Bowen, S. (2021). Evaluating substance use treatment efficacy for younger and older adults. *Addictive Behaviors*, 112, 106618. [https://doi.org/10.1016/j.addbeh.2020.106618](https://doi.org/10.1016/j.addbeh.2020.106618) | Level I | Quality Rating A | 221 in a community-based SUD aftercare; 107 adults under 40; adults over 40 = 140                                                                 | To examine the differential efficacy of aftercare substance use treatments for younger versus older adults | None Indicated                                                                                     |
| Grant, S., Colaiaco, B., Motala, A., Shanman, R., Booth, M., Sorbero, M., & Hempel, S. (2017). Mindfulness-based Relapse Prevention for Substance Use | Level 1 | Quality Rating A/B | 9 randomized controlled trials comprising 901 adult participants who were 18 years of age or older.                                            | Comparing previous RCTs and evaluating the effects and safety of MBRP for adults with SUDs.         | None indicated                                                                                     |

Substance use increased relatively rapidly, immediately following treatment discharge for individuals assigned to TAU with sustained low endorsement of substance use over the 6-month follow-up period for those assigned to MBRP.
| Study | Quality Rating | Participants | Methods | Results |
|-------|----------------|--------------|---------|---------|
| Grow, J. C., Collins, S. E., Harrop, E. N., & Marlatt, G. A. (2015). Enactment of home practice following mindfulness-based relapse prevention and its association with substance-use outcomes. *Addictive Behaviors, 40*, 16–20. https://doi.org/10.1016/j.addbeh.2014.07.030 | Level 1 Quality Rating B | 168 adults with substance use disorder who were recruited from a community treatment agency | Examining the relationships between treatment enactment (i.e., home mindfulness practice) and alcohol and other drug (AOD) use and craving in the context of a larger study of mindfulness-based relapse prevention (MBRP). | The number of participants who increased the amount of time spent in home mindfulness practice over the course of the study. Further, greater time spent in home practice was associated with less AOD use and craving at the 2- and 4-month follow-ups. |
| Kargin, M., & Hicdurmaz, D. (2020). Psychoeducation Program for Substance Use Disorder: Effect on Relapse Rate, Social Functioning, Perceived Wellness, and Coping. *Journal of Psychosocial Nursing and Mental Health Services, 58*(8), 39–47. https://doi.org/10.3928/02793695-20200624-03 | Level 2 Quality Rating A/B | The study sample comprised 92 individuals (n = 46 intervention group, n = 46 control group) who received SUD treatment | To assess the effect of a psychoeducation program on relapse rate, social functioning, perceived wellness, and ways of coping in individuals with substance use disorder (SUD) who have received treatment and are in recovery. | To determine the effects of a relapse prevention psychoeducation program such as Mindfulness Based Relapse Prevention, on relapse rate, social functioning, perceived wellness, and ways of coping in individuals with SUD. |
**MINDFULNESS AND RELAPSE PREVENTION**

Korecki, J. R., Schwebel, F. J., Votaw, V. R., & Witkiewitz, K. (2020b). Mindfulness-based programs for substance use disorders: a systematic review of manualized treatments. *Substance Abuse Treatment, Prevention, and Policy, 15*(1), 51. https://doi.org/10.1186/s13011-020-00293-3

**Level 1 Quality Rating B**

- 30 studies collaboratively from PubMed, Psych INFO, and Web of Science databases from January 2016 to April 2020.
- Comparing studies that examined the effects of MBI and employed a RCT design with repeated measures, that enrolled participants seeking treatment for substance use disorder
- None Indicated
- To determine whether MBIs appear to be as effective at reducing the frequency and quantity of alcohol and drug use and other substance related problems, therefore increasing the rate of abstinence.
- MBIs is an effective tool for the treatment of substance use disorders, craving for substance use, and at increasing the rate of abstinence.

Li, W., Howard, M. O., Garland, E. L., McGovern, P., & Lazar, M. (2017). Mindfulness treatment for substance misuse: A systematic review and meta-analysis. *Journal of Substance Abuse Treatment, 75*, 62–96. https://doi.org/10.1016/j.jsat.2017.01.008

**Level 1 Quality Rating B**

- 42 pertinent studies from PubMed, PsychINFO, and Web of Science
- Mindfulness treatment for substance misuse is a promising intervention for substance misuse and in reducing the frequency and severity of substance misuse, intensity of craving for psychoactive substances, and severity of stress.
- None Indicated
- Decreases in substance misuse-related behaviors and problems, including severity of substance misuse, craving for substances, and substance use-related problems at posttreatment and follow-up assessments.
- Mindfulness treatment was superior to control conditions (e.g., TAU, relapse prevention treatment, CBT, and active support group) in reducing the frequency and amount of alcohol and drug use, number of alcohol and drug related problems, and level of craving for substance use, and in increasing abstinence rates

Witkiewitz, K., Bowen, S., Douglas, H., & Hsu, S. H. (2013b). Mindfulness-based relapse prevention for substance craving. *Addictive Behaviors, 38*(2), 1563–1571.

**Level 1 Quality Rating B**

- 168 clients from a private, non-profit treatment agency
- Examining MBRP as an aftercare treatment for SUD and evaluating potential mechanisms by which MBRP might be associated with lower levels of craving (urge or desire to use substances).
- None indicated
- Significant lower levels of craving following MBRP treatment. Craving scores calculated using a possible range of 0 to 6 with 0= no cravings and
- Participating in MBRP was associated with significant reductions in self-reported craving during and following treatment
| 6= constant thoughts of craving. |  |  |  |
Appendix C

SWOT Analysis

| Strength                                                                 | Weakness                                      |
|-------------------------------------------------------------------------|-----------------------------------------------|
| • Relapse rate data that supports the need for the project, multidisciplinary team with open to feedback from stakeholders | • Public awareness of the services             |
| • Highly experienced clinical team                                       | • Lack of participation among participants     |

| Opportunities                                                                 | Threat                                           |
|----------------------------------------------------------------------------|--------------------------------------------------|
| • Interest in providing support to participants at risk for relapse         | • Time constraints                               |
| • Networking with community stakeholders                                  | • Occurring pandemic                             |
|                                                                         | • Failure to document correctly                  |
|                                                                         | • Lack of motivation to complete the questionnaire. |


Appendix D

Project Timeline

| Task                                      | Time Frame                | Who is Responsible                                      |
|-------------------------------------------|---------------------------|---------------------------------------------------------|
| 1. Prepare Project proposal               | 9/10/2020-12/15/2020      | DNP Student                                             |
| 2. IRB approval from the University and Facility | 1/15/2021-2/14/2021      | DNP Student                                             |
| 3. Meet with key stakeholders             | 2/15/2021                 | DNP Student, Medical Director, Healthcare Professionals and Therapist |
| 4. Educate/train staff                    | 2/20/2021-3/5/2021        | DNP Student and Therapist                               |
| 5. Start Intervention (MBRP)              | 3/15/2021-5/15/2021      | DNP Student and Healthcare Professionals/Therapist      |
| 6. Data Analysis                          | 6/1/2021-6/15/2021        | DNP student and Statistician                            |
| 7. Dissemination of Results               | 7/1/2021-7/23/2021        | DNP student                                             |
Appendix E: Budget

| Expenses                  | Revenue          |   |
|---------------------------|------------------|---|
| **Direct:**               |                  |   |
| Supplies                  | $0               |   |
| Staff Training            | $0               |   |
| Services (Statistician)   | $99              |   |
| **Indirect:**             |                  |   |
| Overhead                  | $0               |   |
| Total Expense             | $99              |   |
Appendix F

(Project Name / Activity Name)
Pre-activity Evaluation Questionnaire

Please describe your state during the past week. For each statement below, please circle one answer that best describes you. For the word "drug" that appears in the statements, think about the drug you currently abuse.

| Statement                                                                 | (1) | (2) | (3) | (4) | (5) |
|---------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| 1. The feeling I used to have while using the drug sometimes comes back   |     |     |     |     |     |
| 2. There are times I want to use the drug                                  |     |     |     |     |     |
| 3. I feel a constant need to put something in my mouth                     |     |     |     |     |     |
| 4. I can stop using the drug by myself                                    |     |     |     |     |     |
| 5. I am annoyed by words from others                                     |     |     |     |     |     |
| 6. I am anxious about causing the drug                                    |     |     |     |     |     |
| 7. I am irritated                                                          |     |     |     |     |     |
| 8. I would do almost anything in order to use the drug                     |     |     |     |     |     |
| 9. I feel easier than before                                               |     |     |     |     |     |
| 10. I am not motivated to do anything                                    |     |     |     |     |     |
| 11. I would be fine without the drug                                      |     |     |     |     |     |
| 12. Thinking about my family, I can no longer use the drug                |     |     |     |     |     |
| 13. I have already recovered from drug abuse                              |     |     |     |     |     |
| 14. I am afraid of hallucinations due to drug use                          |     |     |     |     |     |
| 15. I am confident that I would not use the drug again                     |     |     |     |     |     |
| 16. I feel lonely                                                          |     |     |     |     |     |
| 17. I would not be able to control myself if I use the drug               |     |     |     |     |     |
| 18. If someone holds the drug under my nose, I would not be able to refuse it |     |     |     |     |     |
| 19. I am anxious about my future                                          |     |     |     |     |     |
| 20. I would use the drug if I am alone                                     |     |     |     |     |     |
| Statement                                                                 | (1) | (2) | (3) | (4) | (5) |
|---------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| 22. If I use the drug, it would badly influence my study/work              |     |     |     |     |     |
| 22. If my friend gives me the drug, I would use it even in the hospital    |     |     |     |     |     |
| 23. I cannot control my feeling                                            |     |     |     |     |     |
| 24. If the drug is placed in front of me, I would use it                   |     |     |     |     |     |
| 25. I feel tired due to impatience                                         |     |     |     |     |     |
| 26. I think I am an addict                                                |     |     |     |     |     |
| 27. If I have a large sum of money, I want to buy the drug                 |     |     |     |     |     |
| 28. I would do anything to get money for the drug                          |     |     |     |     |     |
| 29. If I use the drug, I would be less nervous                            |     |     |     |     |     |
| 30. If I use the drug, I would feel everything is going well              |     |     |     |     |     |
| 31. I want the drug even if I have to steal                                |     |     |     |     |     |
| 32. If I use the drug, I would feel integrated                            |     |     |     |     |     |
| 33. I will use the drug in near future                                     |     |     |     |     |     |
| 34. I want to obtain the drug even by working illegally                    |     |     |     |     |     |
| 35. Even though I know I will be arrested, I would use the drug            |     |     |     |     |     |

Gender: [ ] Male  [ ] Female
Age: __________ years old

Have you joined any of the following activities: [select all that apply]

[ ] Please list other activities in the programme
[ ] Please list other activities in the programme
[ ] Please list other activities in the programme
[ ] Please list other activities in the programme
[ ] Please list other activities in the programme

Thank you.
Appendix G

Do you consider using the SRRS?

- You are free to use the SRRS without permission from the developer (Tokyo Metropolitan Institute of Medical Science) in case of intended purpose for academic, clinical setting, and research.
- However, please refrain from commercial use.
- You can use the following link to download the file of the SRRS.
- Please cite the following reference in conference presentations or articles. The results of standardization of the SRRS are described in the following article.

Ogai, Y., Haraguchi, A., Kondo, A., Ishibashi, Y., Umeno, M., Kikumoto, H., Hori, T., Komiyama, T., Kato, R., Aso, K., Asukai, N., Senoo, E., and Ikeda, K. (2007) Development and validation of Stimulant Relapse Risk Scale for drug abusers in Japan. *Drug and Alcohol Dependence*. 88, 174-171.
### Appendix H

#### Frequency Table for Nominal Variables

| Variable                                      | n  | %      |
|-----------------------------------------------|----|--------|
| Gender                                        |    |        |
| M                                             | 5  | 41.67  |
| F                                             | 7  | 58.33  |
| Missing                                       | 0  | 0.00   |
| Race                                          |    |        |
| AA                                            | 9  | 75.00  |
| Caucasian                                     | 2  | 16.67  |
| Other                                         | 1  | 8.33   |
| Missing                                       | 0  | 0.00   |
| treatment_program_type                        |    |        |
| I                                             | 8  | 66.67  |
| O                                             | 4  | 33.33  |
| Missing                                       | 0  | 0.00   |

*Note.* Due to rounding errors, percentages may not equal 100%.

#### Summary Statistics Table for Interval and Ratio Variables

| Variable                        | M     | SD     | n  | Min  | Max  |
|---------------------------------|-------|--------|----|------|------|
| Age                             | 35.83 | 9.81   | 12 | 21.00| 54.00|
| Hx_of_use_in_yrs                | 15.58 | 11.24  | 12 | 2.00 | 36.00|
| X_days_of_abstinence            | 63.42 | 18.59  | 12 | 33.00| 89.00|

*Note.* '-' indicates the statistic is undefined due to constant data or an insufficient sample size.
### Appendix I

**Two-Tailed Paired Samples t-Test for the Difference Between RelapseRisk Overall Pretest and RelapseRisk Overall Post**

| RelapseRisk_Overall_Pretest | RelapseRisk_Overall_Post | t     | p     | d    |
|-----------------------------|--------------------------|-------|-------|------|
| M                           | SD                       | M     | SD    |      |
| 2.85                        | 0.19                     | 2.58  | 0.14  | 6.27 | < .001 | 1.81 |

*Note.* N = 12. Degrees of Freedom for the t-statistic = 11. *d* represents Cohen's *d.*
