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Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)

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NURS 5330: Doctor of Nursing Practice Project

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Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)

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Abstract

This project aims to implement and evaluate Mindfulness-Based Stress Reduction (MBSR), an evidence-based program effective for reducing stress and anxiety, in United States Air Force Academy (USAFA) personnel. Increased stress and anxiety among military members are a high priority concern. Mental health issues, such as increased stress and anxiety, reduce mental wellness and negatively impact the military mission. Addressing this identified problem aligns with the Defense Health Agency's (DHA) Quadruple Aim of better health, better care, improved readiness, and lower cost. We implemented an online MBSR program for military personnel at USAFA. Inclusion criteria include any service member stationed at USAFA, over 18, who self-identified as interested in reducing stress or anxiety. PSS-10 and GAD-7 scores were measured at baseline and post-program to measure stress and anxiety. Administrators were available via email and teleconference throughout the program to answer questions and address concerns. MBSR reduced stress and anxiety among these persons, alluding to the possibility of using MBSR for all DoD members for stress and anxiety reduction. MBSR promoted healthy behaviors and increased member resilience and military readiness.

Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)

Dealing with stress or anxiety is concomitant with being a military professional. Currently, 1.3 million serve in the U.S. Armed Forces (Defense Manpower Data Center, 2019), and nearly 14% suffer from a condition related to stress or anxiety (Military Health System Data Repository (MDR), 2017). Stress and anxiety affect service members' quality of life and incur high costs for the Department of Defense (DoD). From 2007 to 2012 alone, stress and anxiety-related disorders' cost the DoD an estimated 4 billion dollars (Brewin, 2013). Mindfulness-Based Stress Reduction (MBSR) programs cost little, are easy to implement, require up to eight weekly sessions, are delivered either in person or online, and have shown promising results. MBSR improved stress and anxiety in veterans (Serpa, Taylor, & Tillisch, 2014), civilian adults (Krusche, Cyhlarova, & Williams, 2013), and college students (Ramler, Tennison, Lynch, & Murphy, 2015). This project used a pre-/post assessment of the effects of implementing MBSR, an evidence-based program, at the United States Air Force Academy (USAFA).

Problem Synthesis

Stress and anxiety conditions are common in the United States (U.S.). Current statistics show that approximately 40 million U.S. adults aged 18 or older are afflicted with stress or anxiety-related conditions annually (Anxiety and Depression Association of America, 2018). These conditions reduce work productivity, increase disability claims, and result in more than 4.1 billion dollars in workplace costs (APA, 2020). These conditions are also associated with several health disorders, including heart disease, respiratory disorders, and gastrointestinal conditions (Harvard Health Publishing, 2018). Stress and anxiety-related conditions impact the U.S. population, but as the military is a microcosm of the U.S., stress and anxiety-related conditions have a detrimental effect on our heroes.

Illustrating the burden that stress and anxiety have on service members, in 2016 alone, these conditions accounted for the highest number of hospital bed days in the Department of Defense (DoD) (Stahlman & Oetting, 2018). Additionally, from 2005 to 2017, those diagnosed with stress or anxiety-related conditions nearly reached 250,000 (Stahlman & Oetting, 2018), with 60,000 new cases in 2016 (Military Health System Data Repository (MDR), 2017). The DoD spent 4 billion dollars from 2007 to 2012 to combat this epidemic with limited results (Brewin, 2013). Service members reported adverse effects of stress and anxiety, including reduced ability to work when performing official duties, increased likelihood of using substances to help deal with the burdens of each day, and increased likelihood of leaving the military (Harms et al., 2018). Thus, implementing and evaluating evidence-based solutions to combat stress and anxiety within the military is necessary.

Relevance to Military Nursing

Stress and anxiety negatively impact psychological well-being, physical well-being (Harvard Health Publishing, 2018), individual readiness, and the military mission (Harms et al., 2013). Air Force Instruction (AFI) 90-5001 states that the Air Force will provide its members with knowledge, skills, and tools that support resilience and violence prevention (Meadows et al., 2015). Numerous programs support resiliency and wellness, including airman resilience training, the deployment transition center, the Air Force Wounded Warrior Program, Wingman Day, Military Family Life Consultants, and Master Resilience trainers (Meadows et al., 2015). Mandatory training boosts knowledge of the importance of resiliency and includes annual training, first-term airmen center training, resilience training, leadership training, and accessions training (Meadows et al., 2015). Still, this may not be enough to address the mental health needs of service members.

This project aligns with the Defense Health Agency's (DHA) Quadruple Aim: better health, better care, increased readiness, and lower cost (Defense Health Agency, 2019). MBSR offers the military a cost-effective and timely solution to reducing stress and anxiety, improving mental wellness, and reducing healthcare costs. By proactively giving service members the tools they need to combat the psychological stress that this career field brings, health care utilization and cost could be reduced.

Clinical Question

In United States Air Force Academy (USAFA) service members with stress and anxiety, does an online 8-week MBSR program improve stress and anxiety when comparing pre-program levels at baseline, to levels at the end of the program?

Search Strategy and Results

To guide our search strategy, we used the following PICOT question: In adults with stress and anxiety (P), does an online 8-week MBSR program (I) compared to pre-implementation of the program (C) improve stress and/or anxiety levels (O) over an 8-week implementation period? We used the following databases for our search: PubMed, PsychINFO, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Our search terms included; "Mindfulness-Based Stress-Reduction" OR "MBSR" OR "Mindfulness" OR "Mindfulness-Based Programs" AND "online" OR "digital" OR "internet" AND "stress" OR "anxiety" OR "perceived stress" OR "distress" AND "military" OR "military members" OR "veterans" OR "service members" OR "students" OR "college students" OR "providers" OR "healthcare providers" AND "Perceived Stress Scale" or "PSS" OR "Generalized Anxiety Disorder 7-item scale" OR "GAD-7". See Appendix A for PRISMA detailing our search results.

Inclusion criteria included articles that evaluated 8-week MBSR programs and their effects on stress, anxiety, or both. Exclusion criteria consisted of MBSR programs shorter or longer than eight weeks, MBSR for acute medical populations, i.e. (breast cancer, hypertension, autism), and studies describing MBSR. We started with 393 articles; 324 articles met the title and abstract screening criteria after duplicate removal. Of the 324 identified, we excluded 262 due to irrelevancy (older than ten years, editorials, wrong intervention, wrong population), and 62 met the full-text review criteria. After a full-text review, 56 were excluded for the following reasons: wrong intervention, wrong population, wrong outcomes, wrong study design, unavailability of articles, and ongoing studies. Six articles were chosen and included for project implementation.

We utilized the Johns Hopkins nursing quality of evidence-based practice tool (Dang & Dearholt, 2017) to grade and assign quality levels to the evidence. See Appendix B for the evidence table.

Solution Synthesis

MBSR has a multitude of positive benefits. Empirical evidence supports the effectiveness of MBSR in enhancing the following health outcomes: mindfulness and psychological well-being (Serpa, Taylor & Tillisch, 2014), quality of life (Benzo, Anderson, Bronars & Clark, 2018), feelings of personal accomplishment, and self-compassion (Verwejj et al., 2017). Current evidence also supports MBSR's role in reducing adverse health outcomes such as worry, stress, anxiety, depression (Krushe, Cyhlarova & Williams, 2013), and suicidal ideation (Serpa, Taylor & Tillisch, 2014). Although most MBSR studies use study outcomes that rely on participant self-

reports, studies investigating biological stress markers are emerging. One such study found MBSR effective in reducing salivary cortisol levels in a sample of college students (Ramler et al., 2015).

MBSR can be useful for active-duty personnel. This is because military life's inherent stressors include frequent moves, deployments, and temporary duties away from families and support networks. A study of 79 veterans who participated in a standard eight-week MBSR course showed significant improvements in general mental health functionality and mindfulness, including reductions in anxiety, depression, and suicidal ideation (Serpa, Taylor & Tillisch, 2014). Seen repeatedly across studies measuring outcomes of MBSR are the Generalized Anxiety Disorder-7 (GAD-7) and Perceived Stress Scale-10 (PSS-10). The GAD-7 is an instrument that measures anxiety severity, and it has demonstrated good reliability and consistency (Spitzer et al., 2006). The PSS-10 is one of the most widely used scales for perceived stress and has strong internal consistency (Cohen et al., 1983). The PSS-10 and GAD-7 instruments are available in the public domain and used to measure stress and anxiety in this project.

MBSR is a multifaceted program applicable to various populations and settings. MBSR is beneficial for reducing stress and anxiety among veterans, civilian adults, and students. It is also beneficial for medical residents (Verweijj et al., 2017), health care providers (Benzo, Anderson, Bronars & Clark, 2018) and those with a mental health diagnosis (Hoge et al., 2013). When 100 health care providers participated in a standard MBSR course, they had less perceived stress, increased quality of life, and improved nonreactivity (Benzo, Anderson, Bronars & Clark, 2018). Patients with Generalized Anxiety Disorder (GAD) had similar positive outcomes. Hoge et al.

(2013) found a reduction in distress and anxiety in patients with GAD who participated in an MBSR course.

Like any versatile tool, MBSR is administered online with comparable efficacy. Krusche and colleagues found that an eight-week MBSR course delivered online effectively reduced perceived stress, anxiety, and depression at course completion and one-month follow-up, with effect sizes comparable to a face-to-face MBSR course (Krusche, Cyhlarova, & Williams 2013). MBSR is a low-risk and safe intervention. It is a short, eight-week intervention with no documented evidence of harm. A systematic review of 41 articles examining mindfulness and mantra meditation, including MBSR, found no evidence of injury or adverse events, including no toxicities of meditation to hematologic, renal, and liver markers (Agency for Healthcare Research and Quality, 2014).

MBSR is an affordable intervention. MBSR's potential benefits are great, especially given the DoD's high expenditures on mental health care (Brewin, 2013). MBSR is a low-cost, effective, and low-risk intervention. An online MBSR course costs approximately $90 (Krusche, Cyhlarova, & Williams, 2013). Herman et al. (2017) compared the cost-effectiveness of MBSR to usual care (UC) and cognitive behavioral therapy (CBT) in patients with chronic low back pain. They found MBSR cost-saving compared to UC and CBT (Herman et al., 2017).

MBSR is an educational intervention that provides a bundle of interventions to participants in formal and informal meditation practices such as yoga, sitting meditation, mindful eating, and practicing mindfulness in daily activities (UMass Memorial Health Center, 2020). Academic detailing is also included in ongoing communication with participants and key stakeholders to ensure comprehension of the program and process.

MBSR has proven beneficial to reduce stress and anxiety among numerous populations and settings, with little cost and no risk. Implementing MBSR holds great potential to reduce stress and anxiety within the military.

Focus Areas

This project has three main focus areas:

1) Engaging Air Force service members in a health promotion program such as the MBSR program.

2) Contributing to reducing stress and anxiety of Air Force service members.

3) Maintaining adherence to a health promotion program such as MBSR in Air Force service members.

Business Case Analysis

Twelve percent of active-duty Air Force members suffer from a stress or anxiety-related condition (Psychological Health Center of Excellence, 2017). The programs utilized to reduce stress and anxiety in Air Force service members come from Air Force Instruction (AFI) 90-5001 (Secretary of the Air Force, 2019). AFI 90-500 details many programs to alleviate stress or anxiety in service members but falls short on standardized stress or anxiety reduction measures and lacks direction for implementation strategies.

MBSR has been shown to effectively reduce stress and anxiety (Krusche et al., 2013) while being cost-effective (Herman et al., 2017). Additionally, MBSR is accessible in a standardized, evidence-based online format at zero cost to the user (Potter, n.d.).

Implementation of an MBSR program can reduce stress and anxiety in USAFA service members and could conservatively recapture millions of dollars annually in mental health treatment costs.

Organizing framework

The Iowa Model Revised guides health care professionals in making decisions about clinical practice; it outlines a multiphase process of change with feedback loops (Iowa Model Collaborative, 2017). Our project closely aligns with the Iowa Model Revised steps and is the chosen model to guide our project (see Appendix D). The model begins with the clinician identifying high-priority areas of healthcare needing improvement. We have identified high rates of stress and anxiety among USAFA service members, which drives our triggering issue.

Next, the established team selects and critiques available evidence for a solution and decides if there is sufficient evidence. Our team reviewed the available literature to seek an appropriate solution. We identified MBSR as a cost-effective and expeditious solution to our clinical problem. The next step is to design and pilot the intervention. We collected pre and post-pilot data and used this information to make organizational and practice changes. We developed our project's procedural steps and our data analysis plan, which we implemented upon arrival at USAFA after receiving IRB approval.

The last step in the Iowa model indicates that if the change is appropriate and the outcomes are desirable, then the team integrates the change into practice by engaging key stakeholders and disseminating the results. After data collection, result dissemination and practice recommendations will be communicated to USAFA, USUHS leadership, and key stakeholders.

General Approach

Our project aims at promoting health in USAFA service members. This project uses a pre-/post assessment of the effects of implementing MBSR, an evidence-based program for USAFA service members.

Setting and Population

Our project is considered a health and wellness promotion evidence-based program offered to USAFA service members. Eligibility criteria include being a USAFA service member, willing to participate in this program, over 18, and self-identifying as interested in decreasing stress and/or anxiety. Possible exclusion criteria (these circumstances do not rule out the possibility of being in the program; however, they would need to be evaluated for safety/appropriateness for the program (Kabat-Zinn et al., 2017)) include a history of or presently experiencing any of the following: active suicidality, active substance use disorders in early recovery, active untreated psychosis, post-traumatic stress disorder (PTSD), recent or significant loss or death in the family, social anxiety disorder. Participants were under the care of a mental health provider and were screened for appropriateness by program facilitators. If safety were ever a concern, the participant's mental health provider would have been notified, and the clinic's policy would have been abided followed. Our local clinical supervisor supervised all interactions with members, a mental health provider on staff at the local mental health clinic.

The USAFA clinic is under the tenth medical group, housing 30 specialties (Tricare, 2020). USAFA service members can access three mental health services categories, including the mental health clinic, the Alcohol and Drug Abuse Prevention and Treatment (ADAPT), and Family Advocacy Program (FAP). Other resources at USAFA include the Peak Performance Center (PPC), Military Family Life Counselors (MFLC), Chaplains, and the Personal Ethics and Education Representative (PEER) program (United States Air Force Academy, 2020).

Procedural Steps

Before arriving at USAFA, local practices for USAFA service member stress and anxiety management were evaluated and compared to the MBSR program. This project was presented to

local key stakeholders to ensure support and convey the need for MBSR to improve USAFA service members' stress and anxiety levels. With key stakeholders and USAFA leadership support, the project was initiated after IRB determination and approval. All communication with program users was via email.

With local leadership support, participants were recruited through referrals from mental health providers in the clinic. Visual advertising was displayed throughout the clinic. The purpose, benefits, and potential risks of MBSR, weekly time commitment, and the inclusion and exclusion criteria were provided to interested participants. We then provided further instructions for participation, including completing pre-program screeners and consents.

At the beginning of each week of the 8-week MBSR program, participants were emailed their weekly schedule and the tasks based on Jon Kabat-Zinn's MBSR curriculum guide (Kabat-Zinn et al., 2017). Participants had clinic contact information and the national suicide helpline to all participants.

Upon program completion, we conducted clinical assessments of stress and anxiety levels using the PSS-10 and GAD-7, respectively (similar to the assessment done at baseline before program completion). Results were analyzed and evaluated and distributed to USAFA's and USUHS's key stakeholders.

Data Analysis Plan

We used descriptive statistics to calculate mean stress and anxiety scores and frequencies and percentages of participants in each stress and anxiety severity category. We also compared pre-and post- mean stress and anxiety scores using a Wilcoxon signed-rank test. Please see Appendix F for more detailed information on the data analysis table.

Potential Barriers

There may be several barriers to our project. Lack of interest in participation from the USAFA service members could result in erroneous results or abandonment. We plan to prevent this by engaging the USAFA leadership and implementing the MBSR program as a part of the wellness offerings. The second barrier could be spotty internet access to the required MBSR program. We will prevent this by uploading all required materials onto an intranet server to bypass internet access issues. The third barrier is not having the GAD-7 or PSS-10 filled out correctly or not receiving the respective forms on time. We plan to deal with this by making those available to program participants using the clinic's approved online clinic forms. The fourth barrier is the time commitment. The 8-week MBSR course requires roughly 2.5 hours of course work a week and daily practice, which equates to 45-60 min a day of engagement with the material. We hope that through a virtual academic detailing session, we can gain buy-in from the USAFA service members to improve their stress and anxiety levels. Demarzo et al. (2017) showed that as little as four weeks of MBSR could produce positive effects. The last barrier is that the USAFA service members could worsen after exposure to an MBSR program. The current literature shows no harm from an MBSR program (Baer & Kuyken, 2016), (Hirshberg et al., 2020). USAFA service members were provided with the mental health clinic contact information during the initial assessment. In increased distress or crisis cases, USAFA service members will be referred to the mental health clinic, and clinic policy will be followed for any safety issues.

Sustainment and Dissemination

Sustainment of the MBSR program and the USAFA service members' successful progression will be accomplished through weekly email reminders to check for progress.

The results' dissemination will include a poster presentation and MBSR PowerPoint presentation to USAFA leadership, clinical staff, hospital leadership, and key stakeholders detailing the project's outcomes. All in attendance will be given the opportunity for feedback to the project team to improve future iterations. Furthermore, following the USAFA project/poster presentations, a project presentation and poster presentation to USUHS key stakeholders will occur to detail the strengths and opportunities of the MBSR project. Feedback opportunities will follow for future project implementations.

HIPAA Concerns/Ethical Considerations

Our project's primary purpose is to see if an MBSR intervention improves stress and anxiety scores in the USAFA service members population. No names or identifying data were collected. Each program participant was given a project number, which was used to monitor stress and anxiety levels before and after the use. Age, sex, GAD-7, and PSS-10 scores were collected from the USAFA service members, but no protected health information (PHI) was accessed. All information collected was stored on a common- access-card (CAC) enabled computer. The USAFA service members' autonomy, beneficence, nonmaleficence, privacy, and confidentiality was paramount in each project stage. Before project initiation, privacy review was conducted before project initiation to ensure these ethical principles were considered.

Project results

An 8-week, online, without facilitator involvement MBSR program was implemented from October 2021 to December 2021 at the USAFA mental health clinic. During this time, the USAFA mental health clinic conducted 838 patient encounters, of which 737 were eligible for MBSR per project guidelines. Of the 737 encounters, 30 patients were recruited and sent a packet consisting of informed consents with the GAD-7 and PSS-10 screeners to an email of

their choosing. Seven service members returned completed informed consents and screeners for a 23% response rate, and five service members ultimately completed the 8-week course for a 29% attrition rate.

Service members reported moderate anxiety (M = 10.6) and high stress (M = 23.0) levels before MBSR project engagement. After the MBSR project completion, service members reported improved anxiety levels (M = 3.8) but no improvement in stress levels (M = 17.2). Regarding the reduction in anxiety and stress levels as measured by the GAD-7 and PSS-10, 4 out of 5, or 80% of service members, saw an improvement from moderate anxiety levels to minimal or no anxiety levels. In contrast, 2 out of 5, or 40% of service members, experienced a decrease in their stress levels. Due to the small sample size (N = 5), whether MBSR had a statistically significant impact on service members' stress or anxiety levels could not be determined. A Wilcoxon signed-rank test was performed to assess MBSR's effect on anxiety and stress reduction and found large effects for anxiety reduction (r = -0.64) and stress reduction (r = -0.51). However, these results should be interpreted cautiously due to the small sample size and potential regression to the mean.

Analysis of results

The results of the current project with reduced anxiety and stress scores resemble similar outcomes seen by Krusche et al. (2013), Rice et al. (2019), and Fish et al. (2016). Krusche et al. showed large effect sizes in reducing anxiety and stress scores from an online implementation of MBSR, similar to the effect sizes found during the most recent project. Rice et al. utilized virtual reality and an abbreviated MBSR curriculum to help active-duty service members with stress similar to the current population and mode of instruction. In a systematic review of online MBSRs and their efficacy in reducing stress and anxiety levels, Fish et al. demonstrated that

subjects' anxiety and stress levels significantly improved through MBSR immersion without facilitator involvement. Fish et al. also noted common barriers in the current project associated with MBSR intervention, including high attrition, decreased engagement, and low adherence. However, the current literature review population of interest was not clinical as with the current project. Based on the limited evidence of MBSR utilized in clinical populations, with the majority of efficacy seen in non-clinical populations, the authors recommend that MBSR's current use is best suited as a wellness promotion tool to ameliorate exacerbation of anxiety and stress symptoms from progressing to mental health disorders.

Similar reductions in stress and anxiety levels were seen in the current project and previously published literature regarding MBSR's effect on stress and anxiety. However, due to the small sample size, whether or not MBSR significantly impacted service members' stress and anxiety levels cannot be determined. Many factors may have deterred service members from wanting to participate, including lack of time, lack of interest, being a patient in the mental health clinic, and lack of understanding regarding the intricacies of MBSR. To combat these factors, the authors utilized many strategies to increase participation. MBSR was presented to individuals during mental health appointments to enhance treatment. Group therapy sessions were attended in search of candidates. Fliers were posted around the mental health clinic detailing the benefits of MBSR participation. Mental health providers in the clinic provided referrals of potential candidates. Weekly email reminders were sent to already enrolled participants detailing the requirements for each MBSR week. Despite the authors' best efforts, participation remained low.

Reflection and looking back through the literature are wise when analyzing why participation was low. Upon reflection, the authors could have had the informed consent and

initial screeners forms to have service members fill out at first contact. Having service members fill out these forms in person potentially could have raised the number of participants as it appears this is where most participants were lost. In order to further increase interest and adherences, Dillman et al. (2009) found that the inclusion of multiple sequential modes of different communication mediums leads to better results. Dillman et al. suggest utilizing email, phone, and face-to-face interactions with incentives to participants for the best outcomes (p.16). Matching MBSR objectives to the target population is also recommended. Brintz et al. (2019) created an adapted MBSR protocol for active-duty service members, which may have proved valuable in the current project (p. 390). Implementing these practical, evidence-based suggestions may have improved participation and led to more tangible results.

Organizational impact

Currently, mindfulness practice is recommended as a second-line treatment for Generalized Anxiety Disorder after Cognitive Behavioral Therapy (Anxiety and Depression Association of America, 2015). Based on our findings, MBSR resulted in positive changes in anxiety and stress levels, demonstrating a clinically significant decrease in GAD7 and PSS 10 scores. Granted, the participants in this project were engaged in other forms of treatment, such as medication management and other forms of psychotherapy. Still, based on preexisting research and the results presented here, MBSR contributed to reduced stress and anxiety.

Preexisting research demonstrates the promise of MBSR but acknowledges many criticisms of the online delivery of mindfulness programs. Fish et al. (2016) recognize that online mindfulness programs can be popular with participants and follow the growing trend of mental health care via online delivery and mobile apps. However, the authors acknowledge downfalls such as high attrition rates and reduction of effectiveness without interaction with a therapist,

thus recommending further research before such an intervention is fully supported for clinical practice (Fish et al., 2016). Though our findings demonstrated clinically significant improvement in anxiety and stress, given our small sample size and confounding variables, it is necessary to replicate this project in a larger sample size not engaged in psychotherapy. The participants in this project were engaged in mental health services. Thus, we cannot confidently conclude that neither psychotherapy nor medication contributed to participants' reduced anxiety or stress levels. Despite the recommendation for project replication, given the positive outcomes, cost-effectiveness, and no documented evidence of harm, MBSR should not be disregarded. We recommend MBSR as a tool to reduce stress, and anxiety, prevent stress and anxiety's heightening to pathological levels and promote wellness for individuals with stress or anxiety without suicidal cognitive content. That being said, this tool is best utilized in healthcare settings focused on primary prevention interventions.

Specific considerations for project replication include an improved recruitment process, tracking participant compliance, and an improved communication process with participants. Pending positive results of project replication, MBSR has the potential to be utilized as a first-line treatment recommendation for anxiety.

Mindfulness practices have demonstrated relevance and positive outcomes in the military population. Deployment is one of the most significant stressors of the military lifestyle. Evidence demonstrates that members experience stress and anxiety in anticipation of deployment, placing them at higher risk for psychiatric illness post-deployment. Resilience as a personal characteristic offers protection from stressors. Stanley et al. (2011) proposed that offering Mindfulness-based Mind Fitness Training (MMFT), adapted from MBSR, specifically for a military population, leads to increased resilience, mindfulness, and reduced stress during the pre-

deployment phase. They demonstrated that MMFT prior to deployment led to greater mindfulness and reduced perceived stress in a group of U.S. Marine reservists. Building resilience with mindfulness practice can increase military member retainability and duty performance. MBSR is a valuable tool for commanders, first sergeants, and supervisors to be privy to and suggest when their subordinates are struggling with elevated levels of stress or anxiety. The Air Force has already incorporated resiliency days; MBSR builds on wellness, resilience, and cohesiveness. Individuals in units may practice mindfulness individually and utilize resiliency days to discuss their practice and assist others in their practice and dedication.

Future directions for research and practice

This project was designed on pre-established research and the online MBSR protocol of Jon Kabat-Zinn. There are no recommendations for tracking week-to-week MBSR compliance and completion in the current literature. Fish et al. (2016) conducted a systematic review examining ten studies that implemented web-based mindfulness programs without facilitator input beyond the initial design, acknowledging that participants did not always fully commit to the programs, sometimes engaging less often than instructed. However, studies did not track this compliance. Future research should examine week to week participant compliance with interventions and percent of completion. In doing so, barriers to completion may be captured, and mitigation strategies developed to address such barriers.

Despite the great need for mental health care, there is a limited supply of therapists. In the United States, there are 30 psychologists per 100,000 people (Andrilla et al., 2018), with shortages more likely in rural areas, with many of these rural counties having no access to mental health care (Health Resources & Services Administration, 2022). Considering the lack of providers and the cost of in-person care, there is overwhelming evidence and support for

technological platforms for psychological care delivery. Further, a vast body of evidence supports MBSR for anxiety reduction (Marchland, 2012). The cost-effectiveness and ability to self-administer this program indicate that MBSR has a place in future wellness training and mental health care. Given the increasing popularity of commercial mindfulness training websites and apps, increasing the delivery platforms of MBSR, such as an app, would increase the availability and user-friendliness. Such as with other mindfulness or health-conscious apps, individuals could download MBSR via an app on their tablet or smartphone. MBSR has demonstrated positive benefits for individuals and groups; its benefits belong in health care and everyday military operations. This tool demonstrates effectiveness in building resilience and wellness that is invaluable to military leaders better to support their unit's wellness and operational readiness.

Conclusion

Stress and anxiety contribute to nearly half of service members presenting for mental health services (MSMR, 2021). Current literature demonstrates MBSR's effectiveness in stress and anxiety reduction across numerous populations. Based on our findings, it contributed to reduced stress and anxiety in active-duty adult service members. A large-scale, more robust, military-centric MBSR project is needed to solidify these findings. At this time, MBSR is best utilized as a wellness promotion tool to reduce stress and anxiety and prevent stress or anxiety from rising to pathological levels. MBSR addresses DHA's quadruple aim by contributing to service members' reduced stress, increased resiliency, and readiness using a low-cost, evidence-based intervention.

References

Agency for Healthcare Research and Quality. (2014). Meditation programs for psychological stress and well-being (124). Johns Hopkins University Evidence-based Practice Center. https://pubmed.ncbi.nlm.nih.gov/24395196/

American Psychiatric Association. (2020). Anxiety Disorders: Why they matter and What Employers Can do. http://workplacementalhealth.org/News-Events/News-Listing/Anxiety-Disorders-Why-They-Matter

Andrilla, C. H., Patterson, D. G., Garberson, L. A., Coulthard, C., & Larson, E. H. (2018). Geographic variation in the supply of selected behavioral health providers. American Journal of Preventive Medicine, 54(6), S199-S207. https://doi.org/10.1016/j.amepre.2018.01.004

Anxiety and Depression Association of America. (2015, July 2). Clinical practice review for GAD. https://adaa.org/resources-professionals/practice-guidelines-gad

Anxiety and Depression Association of America. (2018). Facts & statistics. Retrieved April 15, 2020, from https://adaa.org/about-adaa/press-room/facts-statistics

Baer, R., & Kuyken, W. (2016, May 23). Is mindfulness safe? Mindful. https://www.mindful.org/is-mindfulness-safe/

Benzo, R.P., Anderson, P.M., Bronars, C. & Clark, M. (2018). Mindfulness for Healthcare Providers: The Role of Non-Reactivity in Reducing Stress. Explore, 14(6), 453-456. https://doi.org/10.1016/j.explore.2018.03.008Get

Bowden, R. (2019, May 30). The breakdown: The stats on the Air Force Academy's class of 2019. United States Air Force Academy.

https://www.usafa.af.mil/News/Article/1860921/the-breakdown-the-stats-on-the-air-force-academys-class-of-2019/

Brewin, B. (2013, Aug 22). Pentagon Spent Over $4 Billion on Mental Health Treatment Between 2007 and 2012. Nextgov. https://www.nextgov.com/cio-briefing/2013/08/pentagon-spent-nearly-1-billion-mental-health-treatment-2012/69194/

Brintz, C. E., Miller, S., Olmsted, K. R., Bartoszek, M., Cartwright, J., Kizakevich, P. N., Butler, M., Asefnia, N., Buben, A., & Gaylord, S. A. (2019). Adapting mindfulness training for military service members with chronic pain. Military Medicine, 185(3-4), 385-393. https://doi.org/10.1093/milmed/usz312

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. Journal of Health and Social Behavior, 24(4), 385. https://doi.org/10.2307/213640

Dang, D., & Dearholt, S. L. (2017). Johns Hopkins nursing evidence-based practice: Model and guidelines (3rd ed.). Sigma Theta Tau.

Dave Potter. (n.d.). Online mindfulness-based stress reduction (MBSR). https://palousemindfulness.com/index.html

Defense Health Agency. (2019). Quadruple aim performance process: Transforming performance improvement. https://health.mil/

Defense Manpower Data Center. (2019). Armed forces strength figures for February 29, 2020. https://www.dmdc.osd.mil/appj/dwp/dwp_reports.jsp

Demarzo, M., Montero-Marin, J., Puebla-Guedea, M., Navarro-Gil, M., Herrera-Mercadal, P., Moreno-González, S., Calvo-Carrión, S., Bafaluy-Franch, L., & Garcia-Campayo, J. (2017). Efficacy of 8- and 4-Session mindfulness-based interventions in a non-clinical

population: A controlled study. Frontiers in Psychology, 8. https://doi.org/10.3389/fpsyg.2017.01343

Dillman, D. A., Phelps, G., Tortora, R., Swift, K., Kohrell, J., Berck, J., & Messer, B. L. (2009). Response rate and measurement differences in mixed-mode surveys using mail, telephone, interactive voice response (IVR) and the internet. Social Science Research, 38(1), 1-18. https://doi.org/10.1016/j.ssresearch.2008.03.007

Fish, J., Brimson, J., & Lynch, S. (2016). Mindfulness interventions delivered by technology without facilitator involvement: What research exists and what are the clinical outcomes? Mindfulness, 7(5), 1011-1023. https://doi.org/10.1007/s12671-016-0548-2

Harms, P. D., Krasikova, D. V., Vanhove, A. J., Herian, M. N., & Lester, P. B. (2013). Stress and emotional well-being in military organizations. Research in Occupational Stress and Well-being, 103-132. https://doi.org/10.1108/s1479-3555(2013)0000011008

Harvard Health Publishing. (2018, May 29). Anxiety and physical illness. Retrieved April 15, 2020, from https://www.health.harvard.edu/staying-healthy/anxiety_and_physical_illness

Health Resources & Services Administration. (2022, February 26). Shortage areas. data.hrsa.gov. https://data.hrsa.gov/topics/health-workforce/shortage-areas

Herman, P. M., Anderson, M. L., Sherman, K. J., Balderson, B. H., Turner, J. A., & Cherkin, D.C. (2017). Cost-effectiveness of mindfulness-based stress reduction versus cognitive behavioral therapy or usual care among adults with chronic low back pain. SPINE, 42(20), 1511-1520. https://doi.org/10.1097/brs.0000000000002344

Hirshberg, M. J., Goldberg, S. B., Rosenkranz, M., & Davidson, R. J. (2020). Prevalence of harm in mindfulness-based stress reduction. Psychological Medicine, 1-9. https://doi.org/10.1017/S0002834

Hoge, E. A., Bui, E., Marques, L., Metcalf, C. A., Morris, L. K., Robinaugh, D. J., & Simon, N. M. (2013). Randomized controlled trial of mindfulness meditation for generalized anxiety disorder. The Journal of Clinical Psychiatry, 74(08), 786-792. https://doi.org/10.4088/jcp.12m08083

Hoge, E. A., Bui, E., Palitz, S. A., Schwarz, N. R., Owens, M. E., Johnston, J. M., &Simon, N. M. (2018). The effect of mindfulness meditation training on biological acute stress responses in generalized anxiety disorder. Psychiatry Research, 262, 328-332. https://doi.org/10.1016/j.psychres.2017.01.006

Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223

Janssen, M., Heerkens, Y., Kuijer, W., Van der Heijden, B., & Engels, J. (2018). Effects of mindfulness-based stress reduction on employees' mental health: A systematic review. PLOS ONE, 13(1), e0191332. https://doi.org/10.1371/journal.pone.0191332

Kabat-Zinn, J., Santorelli, S., Meleo-Meyer, F., & Koerbel, L. (2017). Mindfulness-Based stress reduction (MBSR): Authorized curriculum guide. https://www.umassmed.edu/globalassets/center-for-mindfulness/documents/mbsr-curriculum-guide-2017.pdf

Krusche, A., Cyhlarova, E., & Williams, J. M. (2013). Mindfulness online: An evaluation of the feasibility of a web-based mindfulness course for stress, anxiety and depression. BMJ Open, 3(11), e003498. https://doi.org/10.1136/bmjopen-2013-003498

Marchland, W. R. (2012). Mindfulness-based stress reduction, mindfulness-based cognitive therapy, and Zen meditation for depression, anxiety, pain, and psychological distress.

Journal of Psychiatric Practice, 18(4), 233-252. https://doi.org/10.1097/01.pra.0000416014.53215.86

Meadows, S. O., Miller, L. L., & Robson, S. (2015). Airman and family resilience: Lessons from the scientific literature. Rand Corporation.

Metcalf, C.A., & Dimidjian, S. (2014). Extensions and mechanisms of mindfulness-based cognitive therapy: A review of the evidence. Australian Psychologist, 49(5), 271-279. DOI: 10.1111/ap.12074

Military Crisis Line. (n.d.). Military crisis line: Suicide prevention hotline, chat & text – Veterans crisis line. Veterans Crisis Line: Suicide Prevention Hotline, Text & Chat. https://www.veteranscrisisline.net/get-help/military-crisis-line

Military Health System Data Repository (MDR). (2017). Prevalence of mental health conditions among active duty service members from 2005-2016: Denominator, numerators, and rates. Psychological Health Center of Excellence. https://www.pdhealth.mil/sites/default/files/images/mental-health-disorder-prevalence-among-active-duty-service-members-508.pdf

Mohney, G. (2018, January 15). Stress: What it Costs U.S. economy. Healthline. https://www.healthline.com/health-news/stress-health-costs#How-stress-impacts-certain-groups

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. Annals of Internal Medicine, 151(4), 264. https://doi.org/10.7326/0003-4819-151-4-200908180-00135

Peterson, T.J. (2020, August 31). Mindfulness-based cognitive therapy: How it works, cost, & what to expect. Choosing Therapy. https://www.choosingtherapy.com/mindfulness-based-cognitive-therapy/

Potter, D., & Palouse Mindfulness: Mindfulness-Based Stress Reduction. (n.d.). Online mindfulness-based stress reduction (MBSR). Retrieved April 22, 2020, from https://palousemindfulness.com/

Psychological Health Center of Excellence. (2017). Prevalence of mental health conditions among active duty service members from 2005-2016: Denominator, numerators, and rates. Military Health Center Data Repository. https://www.pdhealth.mil/research-analytics/psychological-health-numbers/mental-health-disorder-prevalence-and-incidence

Ramler, T. R., Tennison, L. R., Lynch, J., & Murphy, P. (2015). Mindfulness and the college transition: The efficacy of an adapted mindfulness-based stress reduction intervention in fostering adjustment among first-year students. Mindfulness, 7(1), 179-188. https://doi.org/10.1007/s12671-015-0398-3

Rice, V. J., Liu, B., Allison, S. C., & Schroeder, P. J. (2019). Mindfulness training offered in-person and in a virtual world—Weekly self-reports of stress, energy, pain, and sleepiness among US military active duty and veteran personnel. Mindfulness, 10(9), 1815-1827. https://doi.org/10.1007/s12671-019-01129-3

Schimelpfening, N. (2020, February 24). How mindfulness-based cognitive therapy works. Very well Mind. https://www.verywellmind.com/mindfulness-based-cognitive-therapy-1067396

Secretary of the Air Force. (2019). Air Force Instruction 90-5001 (p. 5-12). Washington DC. e-Publishing.af.mil

Serpa, J. G., Taylor, S. L., & Tillisch, K. (2014). Mindfulness-based stress reduction (MBSR) reduces anxiety, depression, and suicidal ideation in veterans. Medical Care, 52, S19-S24. https://doi.org/10.1097/mlr.0000000000000202

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder. Archives of Internal Medicine, 166(10), 1092-1097. doi:10.1001/archinte.166.10.1092

Stahlman, S. & Oetting, A. (2018). Mental health disorders and mental health problems, active component, U.S. Armed Forces, 2007-2016. Medical Surveillance Monthly Report, 25(3), 2-11. https://www.ncbi.nlm.nih.gov/pubmed/29578729

Stanley, E. A., Schaldach, J. M., Kiyonaga, A., & Jha, A. P. (2011). Mindfulness-based mind fitness training: A case study of a high-stress Predeployment military cohort. Cognitive and Behavioral Practice, 18(4), 566-576. https://doi.org/10.1016/j.cbpra.2010.08.002

Tricare. (2020, July 13). Facility information. https://tricare.mil/mtf/view.aspx?ID=133

UMass Memorial Medical Center. (2020). Center for Mindfulness. UMass Memorial Health Care. https://www.umassmemorialhealthcare.org/umass-memorial-medical-center/services-treatments/center-for-mindfulness/faqs

Update: Mental health disorders and mental health problems, active component, U.S. Armed Forces, 2016-2020. (2021). MSMR, 28(8), 2-9.

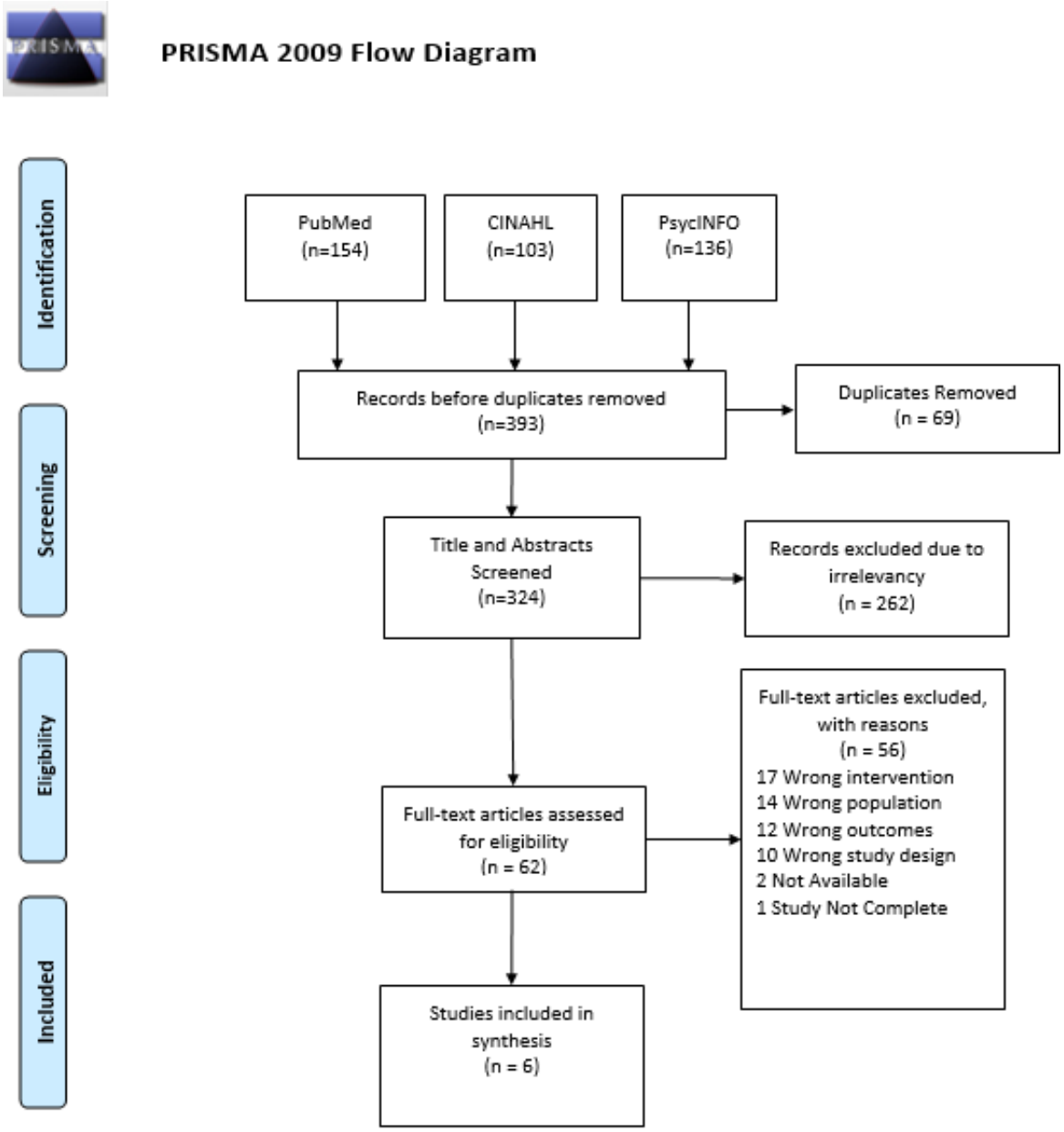
United States Air Force Academy. (2020, May 19). Education at a different altitude. Retrieved September 24, 2020, from https://www.usafa.edu/about/

Verweij, H., Van Ravesteijn, H. V., Van Hoof, M. L., Lagro-Janssen, A. L., & Speckens, A. E. (2017). Mindfulness-Based stress reduction for residents: A randomized controlled trial.

Journal of General Internal Medicine, 33, 429-436. https://doi/10.1007/s11606-017-4249-x

Wu, S. M., & Amtmann, D. (2013). Psychometric evaluation of the perceived stress scale in multiple sclerosis. ISRN Rehabilitation, 2013, 1-9. https://doi.org/10.1155/2013/60835

Appendix A: PRISMA



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For more information, visit www.prisma-statement.org.

Appendix B: Evidence Table

Evidence Table											
1st Author Name & Publication Year	Study Purpose/Aims	Study Design	Total Sample Size (initially & at end)	Sampling Plan	Independent Variables & Level of Measurement	Dependent Variables and Level of Measurement	Statistical Analyses: What tests were used for which research questions?	Results	Strengths (how promoted internal/external validity)	Weaknesses (biases, threats to internal/external validity)	LEVEL OF EVIDENCE - JHNEBP tool (Strength and Quality)
Ramler, Tennison, Lynch & Murphy, 2015	Examine efficacy of MBSR in fostering adjustment in 1st year students	Quasi experiment: comparison between intervention and control group to determine impact of MBSR on the outcome variables	62 students (30=intervention) (32=control). During the study, 6 participants dropped out of school. All data are reported on a total of 56 students (36 females, 20 males). Of these, 27 made up the control group and 29 made up the intervention group.	Students enrolled in the First Year Seminar (FYS) course made up the intervention group and received mindfulness instruction (this represents a homogeneous first year student sample). Control first year participants were drawn from introductory psychology courses, this sample also represents homogenous sample of first year students.	8-week MBSR Intervention Weekly 2hr meetings (Standard MBSR 2.5hr meetings) Format: Face to Face Components: Instructor led discussion of reading assignments, training in meditation and yoga teachings spread out over 8 weeks Day long weekend retreat (No mention if it was a silent day or not) Nominal Level Data	Both groups completed 2 measures after the intervention period: psychological assessment of student adjustment (SACQ was used: 67 item self-report instrument, yields scores for one primary full scale and 4 subscales: academic adjustment, social adjustment, personal-emotional adjustment and attachment to the institution) and physiological assessment of stress using salivary cortisol samples. Intervention group also completed a pre-and post-intervention mindfulness questionnaire (mindfulness skills assessed with the Five Facet Mindfulness Questionnaire: FFMQ). To quantify stress, concentrations of salivary cortisol were used as a biomarker. Participants were instructed on how to obtain the samples.	ANOVA used to compare mean differences among the full SACQ full and subscales. Means and SDs calculated for each of the 5 SACQ scales. Two way ANOVA used in comparison of salivary cortisol levels and paired sample T tests used to compare pre and post intervention levels of mindfulness among intervention group participants: Means and SDs were calculated for each facet of the FFMQ for both pre and post intervention.	Students in the intervention group reported higher scores of the Personal-Emotional Adjustment subscale of the SACQ; the intervention group scored higher than the control in each of the 5 subscales. Of the 56 participants, 8 were eliminated from salivary examination due to incomplete or unusable samples. Intervention participants exhibited significantly lower cortisol levels relative to the control group. 26/29 participants completed both pre/post intervention mindfulness assessments; participants scores found to have increased significantly from pre to post intervention.	Strength: non volunteer sample of enrolled students allowed for less self-selection bias, suggests the potential benefits of MBSR to a broader population beyond first year college students. The manner of how students were placed in groups is superior to the methodology of other studies using self-selection for sampling.	Limitations: more females in the study in proportion to males, lack of FFMQ comparison scores for control participants; disables cause and effect inferences to be drawn	IIA
						Interval Level Data					
Verweij, et al. 2017	Measure effects of MBSR on burnout symptomology in Dutch Residents	Powered Randomized Controlled Trial	148 enrolled, 138 in analysis	Information briefing at beginning of residency and through monthly newsletters. Residents from all medical, surgical and primary care disciplines were eligible to participate. Participants were self-referred.	8 week MBSR Intervention Weekly 2.5hr meetings Format: Face to Face Components: Instructor led mindfulness exercises including body scan, yoga, sitting and walking meditation, psychoeducation about stress Participants practiced skills at home for 45 min each day One 6hr silent day during the weekend (Did not specify which weekend) Nominal Level Data	Baseline and Immediate Post Intervention Emotional Exhaustion (Maslach Burnout Inventory), Worry (Penn State Worry Questionnaire), Positive Mental Health (Mental Health Continuum-Short Form, Self-Compassion (Self-Compassion Scale Short Form) Empathy (Jefferson Scale of Physician Empathy) Mindfulness skills (Five-Facet Mindfulness Questionnaire) Interval Level Data	Post-intervention scores between two groups were compared via ANCOVA controlling for baseline measures and minimization criteria, all tests used two-sided p values with an alpha < 0.05.	No significant difference in emotional exhaustion was found between the two groups. However, the MBSR group reported significantly greater improvements than the control group in personal accomplishment ($p = 0.028$, $d = 0.24$), worry ($p = 0.036$, $d = 0.23$), mindfulness skills ($p = 0.010$, $d = 0.33$), self-compassion ($p = 0.010$, $d = 0.35$) and perspective-taking (empathy) ($p = 0.025$, $d = 0.33$). No effects were found for the other measures. Exploratory moderation analysis showed that the intervention outcome was moderated by baseline severity of emotional exhaustion; those with greater emotional exhaustion did seem to benefit.	USE of RCT design, Large Sample Size, Real-life setting	Limitations: Performed in single medical university (limits generalizability), Self-selection of participants may have influenced selection bias, Men and residents from surgical specialties were underrepresented, Limited to immediate post intervention outcomes	IA
Krusche, Cyhlarova, & Williams 2013	Investigation of the feasibility and effectiveness of an online mindfulness course for perceived stress, anxiety and depression.	Comparative Non-Randomized Research Design	5094 people signed up for course from Nov 2010 to August 2013, 1497 people completed course and followed up, 273 chosen from sample that completed PSS-10, GAD-7 and PHQ-9 at all time points (Pre, Post, 1-month Post)	Online Environment	8 Week Modified MBSR/MBCT Intervention Weekly Email Reminders to continue Course Format: Online Components: 10 interactive video sessions, assignments, and emails Skills taught:	Pre, Post, and 1 Month Follow up of GAD-7, PSS-10, PHQ-9 scores Interval Level Data	The mean PSS -10 score of the sample prior to the course was 23.04 (SD 6.85, range 1–40). The mean PSS score after the online mindfulness course was 15.06 (SD 6.42, range 0–36) and at 1-month follow-up 13.45	Results: Perceived stress, anxiety and depression significantly decreased at course completion and further decreased at 1-month follow-up, with effect sizes comparable to those found with face-to-face and other online mindfulness courses and to other types of intervention, such as cognitive behavioral	Large sample that consisted of actual users = generalizability, Sample was Anonymous, and data suggest non-clinical sample of participants who are 'highly stressed', 'moderately depressed' and 'moderately anxious' benefit from MBSR intervention	No control group, so unclear whether the course contributed to a decrease in negative symptoms or whether it was regression to the mean.	IIIA

					Formal Meditation (Body scan, mindful movement, sitting meditation, 3-minute breathing space) Informal Mindfulness (incorporating mindfulness into daily activities, eating) Nominal Level Data		(SD 6.99, range 0–37). A repeated measures ANOVA indicated that there was a significant decrease from precourse to postcourse (F(1.86,506.97)=357.89, p<0.001)1, and post hoc tests using the Bonferroni correction revealed that that PSS score further decreased significantly from postcourse to 1 month follow-up, mean difference from postcourse to follow-up 1.612, standard error 0.348, p<0.001. GAD-7 The mean GAD-7 score of the sample prior to the course was 10.98 (SD 5.17, range 0–21). The mean GAD-7 score after the online mindfulness course was 5.45 (SD 3.77, range 0–19) and at 1-month follow-up 4.60 (SD 3.72, range 0–21). A repeated measures ANOVA indicated that the mean GAD-7 score	therapy for stress. The amount of meditation practice was found to be associated with greater decreases in stress.			
							changed significantly precourse to postcourse (F(1.71,465.4) =325.53, p<0.001)2 and post hoc tests using the Bonferroni correction revealed that GAD-7 score also further significantly decreased at 1 month follow-up, mean difference post to follow-up 0.850, standard error 0.211, p<0.001				
Benzo, Anderson, Bronars & Clark, 2018	Aim: Determine whether changes in non-reactivity to inner experiences are associated with changes in perceived stress in health care providers	Cross-Sectional Study	100 health care providers from a large, midwest teaching hospital	Participants were recruited via advertising at the Mayo Clinic Wellness center. No exclusionary criteria	8 Week MBSR Intervention Weekly 2.5hr Sessions Format Face to Face Components: Instructor Led Mindfulness Practices (body scan, seated meditation, walking meditation, hatha yoga), Group sharing (weekly theme) Daily mindfulness practices at home Day long Silent Retreat (No mention of which week) Nominal Level Data	Perceived stress (perceived stress scale-10), Quality of life (linear analog scale assessment to measure quality of life) and non-reactivity to inner experience measured using the non-reactivity subscale of the Five Facet Mindfulness Questionnaire. Interval Level Data	Changes from baseline were tested with Wilcoxon rank sum tests, Cohen's D effect sizes calculated by taking the difference between the baseline and post intervention measures and dividing by the baseline SD. Linear regression models were used to model the association of the change in perceived stress with the change in non-reactivity to inner experience and change in overall quality of life.	Participants improved on all variables including perceived stress, quality of life and nonreactivity with a clinically meaningful effect size. Perceived stress and non-reactivity improved significantly (p<0.0001) with robust effect sizes. QOL improved significantly (p<0.0001) with moderate effect size. A linear regression model showed that the change in non-reactivity strongly predicted the change in perceived stress (p<0.0001).	Strengths: appropriate sample size, appropriate for PICOT/research question, data analysis appropriate for type of data	Limitations: Limitations not discussed, no control group, participant characteristics not discussed	IIIA
Serpa, Taylor & Tillisch (2014)	Aim: evaluate the effects of MBSR on anxiety, depression, pain, physical/mental health functioning, mindfulness and suicidal ideation in a group of veterans.	Prospective, longitudinal analysis	Of 105 veterans participating in 1 of 9 MBSR courses offered between Jan 2012-Dec 2013, 79 completed both pretests and posttests (analysis focused on these 79)	Participants were either clinician-referred or self-referred after learning about the class from flyers posted at medical center locations	9 Week MBSR Intervention (1st Week was Orientation Week) Weekly 2hr Sessions Format: Face to Face Components Instructor led sitting meditations, waking meditations, body scans, loving kindness meditations Daily Home practice of 30 minutes of weekly themed content 1 Silent Retreat Day between Week 6 and 7 Nominal Level Data	Pre/post intervention measured outcomes: Mindfulness using Five Facet Mindfulness Questionnaire (FFMQ), pain using 1 item from the Pain, Enjoyment, Activity (PEG) scale, depression using PHQ-9, anxiety using GAD-7, for general physical and mental health, Short Form-12 (SF-12) was used. Suicidal ideation measured using item 9 from PHQ-9 Interval Level Data	Univariate analysis done to calculate frequencies, then calculated t tests to reflect significance of changes between pre and post test scores. To assess change in suicidal ideation, dichotomized the outcome to the presence or absence of SI and used McNemar X squared test. Bonferroni corrected P values used. Mediation analyses done to determine if changes in mindfulness were related to changes in the other measured outcomes.	Significant improvements seen in mindfulness (P<.0001), anxiety (P<.0001), depression(P<.0001) and general mental health functionality (P<.0001), over a third of the sample met a priori definitions for clinical significance, frequency of SI decreased by almost half. (P=0.049). Pain and physical health status did not improve significantly after MBSR.	Strengths: authors address attempt to reduce attrition and thus control for sample bias, clinical significance set a priori and discussed, participant characteristics clearly displayed in table, participants not excluded for mental health diagnoses-findings may be applicable to larger population	Limitations: information from participants' medical records not utilized-this information may have influenced the effect of the course, no randomization, no control group, no longitudinal follow up after intervention. Pain showed no significant improvement which differs from other studies-may be attributed to limited assessment of pain (single item).	IIA

Hoge, et al. 2013	To compare MBSR with an active control Stress Management Education (SME) in determining if MBSR would have effects on anxiety levels and if MBSR would perform better than SME when patients were exposed to the Trier Social Stress Test (TSST)	Randomized Controlled Trial	431 Phone screened - 286 excluded, 145 Completed screening visit - 52 excluded, 93 randomized, 3 discontinued study between weeks 1 and 8 in MBSR while 7 discontinued study between weeks 1 and 8 in SME (all included in final analyzation of data (Note: 4 in SME withdrew before any treatment and were not included in analysis) Total included in final analysis: 48 MBSR and 41 SME = 89 analyzed	Participants recruited by referral and media advertisement for a "stress reduction" study, Inclusion criteria: 18+ with GAD as primary problem and scored 20 or greater on Hamilton Anxiety Rating Scale (HAMA) Exclusion criteria consisted of: 1: History of schizophrenia, psychosis, mental retardation, organic medical disorders, bipolar disorder, PTSD or obsessive-compulsive disorder. 2: alcohol or substance abuse or dependence within the past 6 months. 3: significant suicidal ideation or behaviors within the past 6 months. 4: Serious medical illness or instability 5: Concurrent psychotherapy directed toward GAD. 6: More than 4 classes of meditation training and practice in the past 2 years. 7: Pregnancy or Lactation. 8 Significant personality disorder likely to interfere with study participation	8 Week MBSR Intervention compared to 8 Week SME Intervention Weekly Group Classes of 2hr MBSR and 2hr SME Format: Face to Face Components MBSR: Instructor Led (breath-awareness, body-scans, Hatha yoga) Components SME Didactic teaching SME (stress topics, stress physiology, effect of stress on body systems, time management techniques, sleep physiology, insomnia, optimal nutrition, effects of stress on diet, caffeine, exercise, stress hardiness, humor, altruism, volunteering) Daily 20 Minute Homework for MBSR and SME MBSR: 4 hour silent retreat SME: 4 hour "special day" Nominal Level Data	Baseline and Post Intervention HAMA, CGI-S, CGI-I, BAI, PSQI - Interval Level Data Baseline and Post Intervention Anxiety during TSST assessed with "State Anxiety' section of STAI, SUDS utilized to assess overall Distress during the task Interval Level Data	Independent samples t tests and Repeated Measures ANOVA for HAMA, BAI, CGI-S, STAI, SUDS Primary univariate analyses consisted of t tests for continuous outcome variables (HAMA, BAI and PSQI scores)	A modified intent-to-treat analysis including participants who completed at least 1 session of MBSR (n=48) or SME n=41) showed that both interventions led to significant (P<.0001) reductions in HAMA scores at endpoint, but did not significantly differ. MBSR, however, was associated with a significantly greater reduction in anxiety as measured by the CG-S, the CGI-I, and the BAI (all P values <.05). MBSR was also associated with greater reduction than SME in anxiety and distress ratings in response to the TSST stress challenge (P<.05) and a greater increase in positive self-statements (P=.004).	Use of RCT design, Use of Active Control compared to other MBSR studies that have a wait-list control.	Small sample size (large-scale replications needed. Results may not be generalizable due to high comorbidity with other diagnoses of GAD individuals, Some individuals were on psychiatric meds (3) which may have skewed results (but all was done to randomize patients into two separate groups), Study lacked a clinical diagnostic assessment at endpoint	IA

Appendix C: Business Case Analysis

BUSINESS CASE with VALUE BASED CARE ASSESSMENT

Proposed Title for Project/Initiative/Opportunity to Improve

Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)

Opportunity Statement

Investing in MBSR, an 8-week mindfulness program, in USAFA service members to reduce stress and anxiety will aid in building resilience, wellness, military readiness and retention.

Business Opportunity/Objectives

Micro Objectives

1. Engage service members in a health promotion program such as the MBSR program
2. Contribute to the reduction in stress and anxiety of USAFA service members
3. Maintain adherence to a health promotion program such as MBSR in USAFA service members

Macro Objectives

4. Enhanced resilience/readiness by boosting mental wellness and healthy behaviors
5. Contribute to reduced health care costs
6. Contribute to health and well-being enhancement of service members

Potential Impact of the Initiative/Project

1. Reduce GAD-7 scores and PSS-10 scores to measure anxiety and perceived stress in volunteers
    a. Metric from MHS Quadruple Aim: enhanced readiness (Defense Health Agency, 2019)
2. Increase active-duty members productivity and job performance
    a. Metric from MHS Quadruple Aim: better health (Defense Health Agency, 2019)
3. Reduce dollars spent on health care utilization by military members
    a. Metric from MHS Quadruple Aim: lower cost (Defense Health Agency, 2019)

Alternatives (courses of action) chosen for Analysis

1. Mindfulness Based Stress reduction (MBSR): This approach is a blend of meditation, body awareness, and yoga; there is an eight-week class with a day of silence; included in the program is psychoeducation, formal meditation and movement practices with daily formal practice (yoga, sitting meditation, body scan, walking meditation) and informal practice (mindful eating, speaking and listening, and mindfulness in daily activities) lasting about 40-45 minutes (UMass Memorial Health Center, 2020).

2. Mindfulness Based Cognitive Therapy (MBCT): an eight-week program, with weekly two hour courses, and one day long class after the fifth week (Schimelpfening, 2020), focuses on the distressing emotional states, the cognitive therapy component includes education about the nature of thoughts as mental events, rather than facts which teaches patients that thoughts are not facts; the link between thought and mood is made explicit in this training (Janssen et al., 2018).

3. "*Status Quo"*: Air Force Instruction (AFI) 90-5001; states that the Air Force will provide its members with knowledge, skills and tools that support resilience and violence prevention; numerous surveys are available to

provide insight regarding the resilience of members. The chaplain corps, medical centers and recreational facilities are in place to support resiliency, and numerous programs have been put in place to build resiliency and wellness to include airman resilience training, the deployment transition center, the Air Force Wounded Warrior Program, Wingman day, Military Family Life Consultants and Master Resilience trainers. Training requirements include annual training, first term airmen center training, resilience training, leadership training, and accessions training (Meadows et al., 2015).

Analysis of Alternatives		
Alternative 1:	MBSR	
Pros	**Cons**	
Delivered in an eight-week format (Schimelpfening, 2020). Has been shown to increase mindfulness and psychological well-being (Serpa et al., 2014), qualityof life (Benzo et al., 2018), and reducing stress, worry, anxiety and depression (Krusche et al., 2013)and reducing suicidal ideation (Serpa et al., 2014). Research on adverse events and harm involving mindfulness practices suggest there is no evidence of harm to patients (Baer & Kuyken, 2016). Available online as a free program (Potter, n.d.). Can be done in an individual or group format (Potter, n.d.) MBSR is cost effective; when compared to usual care and cognitive behavioral therapy (CBT), MBSR was found to be cost saving in the care of chronic low back pain (Herman et al., 2017). Facilitating MBSR does not require any specialized skill. The ability to read, write, present, and direct participants to MBSR materials suffices.	Daily "homework" necessary (Potter, n.d.). MBSR is considered "moderate intensity practice" in which unwanted memories, emotions or thoughts may come to mind when practicing, especially for participants with significant physical or mental health problems; in a study of participants undergoing MBSR with low back pain, it was found that pain got worse before it got better (Baer & Kuyken, 2016).	
Alternative 2:	MBCT	
Pros	**Cons**	

Has been shown to reduce health care costs (Hoge et al., 2018). MBCT has shown success for addressing anxiety and depression (Metcalf & Dimidjian, 2014) Similar to MBSR, MBCT is delivered in an eight-week format (Peterson, 2020).	MBCT is still relatively new, and the long-term effects of this modality are not fully known, also many MCBT studies have been criticized for small sample sizes, a lack of control groups and a lack of randomization-indicating more rigorous studies are needed to evaluate effectiveness of MBCT compared to other treatments (Mindfulness Based Cognitive Therapy, 2018).

Research on adverse events and harm involving mindfulness practices suggest there is no evidenceof harm to patients (Baer & Kuyken, 2016).	MBCT was originally developed for recurrent depression,and most data measures outcomes related to depression, but not anxiety and stress (Peterson, 2020). A standard, eight-week program at the University of Massachusetts is $650 or $555 under insurance (Peterson,2020). MBCT is delivered as weekly group treatment with individual work expected six days a week-MBCT must beled by a qualified professional who is licensed in mental health with additional training in MBCT (Peterson, 2020). Like MBSR, MBCT is considered "moderate intensity practice" in which unwanted memories, emotions or thoughts may come to mind when practicing, especially for participants with significant physical or mental healthproblems (Baer & Kuyken, 2016).
Alternative 3:	*"Status Quo"*: AFI 90-5001; states that the Air Force will provide its members with knowledge, skills and tools that support resilience and violence prevention; including numerous training, surveys, and programs (Meadows et al., 2015).
Pros	**Cons**

Efficient Can easily account for all members completingtraining Already the status quo Not necessary for policy changes	Resilience and wellness efforts start at the headquarters level with the Integrated Resilience Directorate, the established interventions trickle down to Air Force wings,groups, squadrons and flights, but is not standardized among all units (Secretary of the Air Force, 2019). The AFI appoints numerous positions within the resiliencyprogram to maintain accountability of the program-these are generally additional duties on top of the service members primary duty. Time away from the mission-adds to the list of required training of Air Force personnel, which they are likely attempting to complete while at work and cannot give theirfull attention to it. Based on high level of completed suicide in the Air Forcein 2019; this would suggest the possible need for an enhancement of current programs to boost resilience. Although there is a resiliency program, not all units followthese recommendations.

Assumptions

Cost of MBCT for a standard eight-week program is around $650 (Peterson, 2020).
MBSR is available online as a free program, based on the original content developed by Jon Kabat-Zinn (Potter,n.d.).

Eight weeks is needed for MBSR and MBCT (Schimelpfening, 2020).
MBSR has been shown to reduce stress, anxiety, depression, chronic pain, and has a therapeutic effect on other chronic ailments such as migraines, heart conditions and diabetes (UMass Memorial Health Center, 2020).
An online MBSR course improved GAD-7 and PSS-10 scores in a sample of 5094 participants (Krusche et al., 2013).
MBCT's primary use is to prevent depression relapse, it has also been used to help reduce symptoms of mood disorders, anxiety, addictions, personality disorders and chronic medical conditions (Peterson, 2020).
MBCT is best delivered by a trained mental health professional (Peterson, 2020).
Stress or anxiety related conditions affect 12% of Air Force personnel (Psychological Health Center of Excellence, 2017).
Utilizing a wellness tool to prevent mental health problems has impacts at the individual and organizational level; such that it could reduce healthcare utilization and costs (Harms et al., 2013).
Stress results in accidents, lost workdays, employee turnover, reduced productivity and direct medical, legal and insurance costs, costing the U.S. approximately $300 billion annually (Mohney, 2018).

Recommendation and Rationale

Recommendation

Proposal to recommend alternative #1 Mindfulness Based Stress Reduction eight-week program.

Rationale

There is a large body of evidence available supporting MBSR for reduction of stress and anxiety. In addition, the full program, based on the original program, is available online at no cost, and there is no evidence of lasting harmful effects. MBSR will likely reduce stress and anxiety in the USAFA service member population.

Risks and Mitigation Plan	
Risks	Plan
1. USAFA service members not interested in participating in the MBSR program.	1. Academic presentation and leadership backing on benefits of participation.
2. Spotty internet access to required MBSR program materials.	2. Upload materials on intranet server to bypass the need for internet access in emergencies and have paper copy backups available for access.
3. USAFA service members not filling out evaluation materials in a timely manner for program trends.	3. Send follow up emails, get access to USAFA service members org box, hold weekly zoom meetings to check for progress updates.
4. MBSR program not completed in the 8-week time frame.	4. MBSR has shown similar efficacy with 4 weeks of training (Demarzo et al., 2017).
5. USAFA service member becomes worse with mental illness from the MBSR program.	5. No harm with MBSR participation (Hirshberg et. al, 2020). If a USAFA service member experiences exacerbation of mental illness: Referral to USAFA service member counseling center in cases of distress and
	Military Crisis Line 1-800-273-8255 in case of emergency (Military Crisis Line, n.d).

Implementation Plan			
Phase 1:	Identify Triggering Issue(s) and Statement of the Clinical Question		
Milestone Description:	Engage key stakeholders to identify triggers which illuminate gaps in current practice standards. *Measurable goal:* Approval of key stakeholders to continue with project proposal and authorization of an MBSR program based on the proposed clinical question: In United States Air Force Academy (USAFA) service members with stress and anxiety, does an online 8-week MBSR program improve stress and anxiety when comparing pre-program levels at baseline, to levels at the end of the program?		
Deliverables		Due Date	Accountable Person

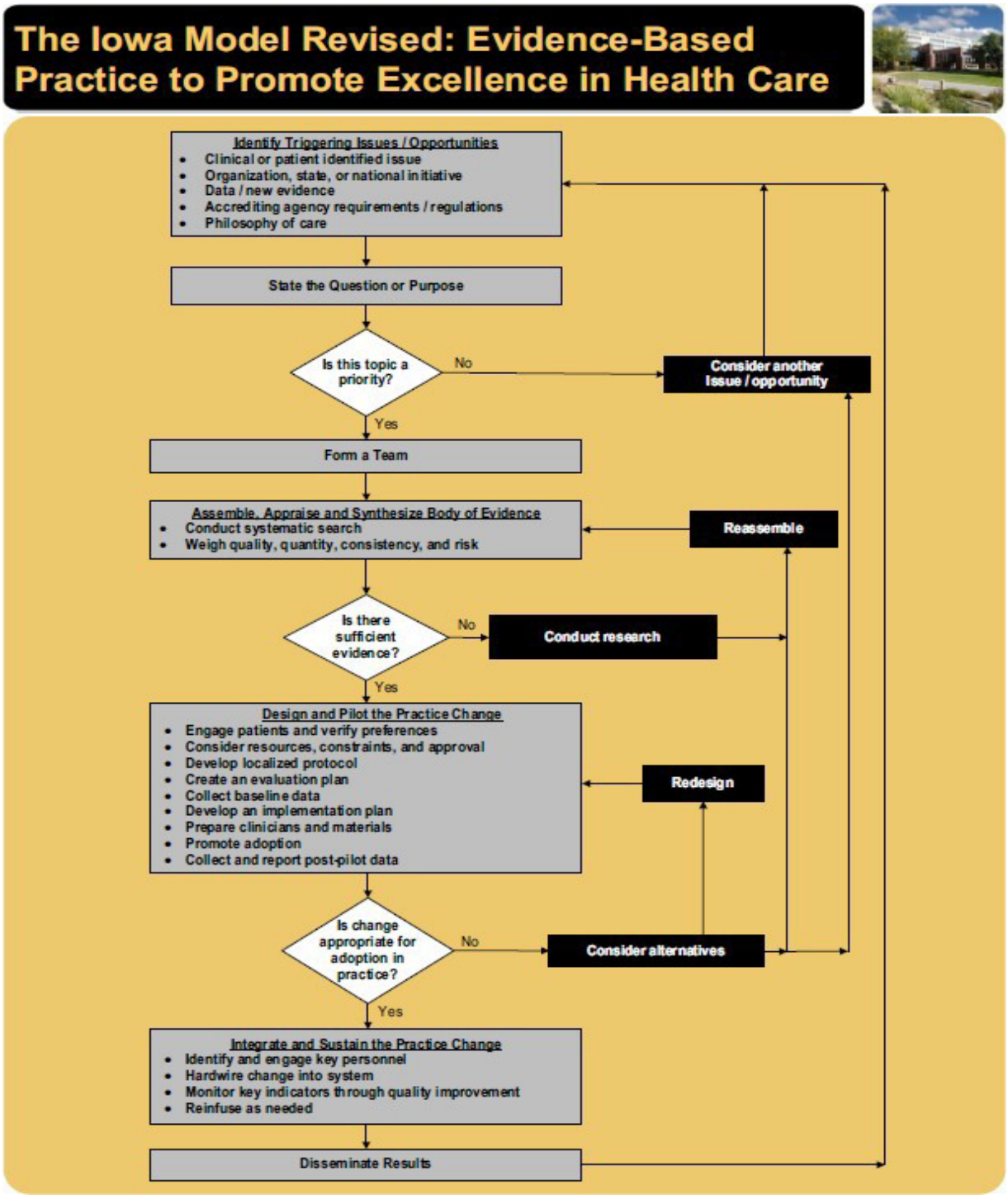
Measurable Goals: Review local practices utilized for USAFA service member stress or anxiety management. Compare local practices to the MBSR program. Brief key stakeholders (presentation) to indicate the need for a supplemental MBSR program to improve USAFA service member stress and anxiety levels.	March 2020 - April 2021	Captain Melissa Anderson, Captain John Wilbur, Clinical Supervisors/Preceptors
Resources Needed		
Access to current AFI's and reports regarding resilience/wellness training for USAFA service members. Meetings with current resilience/wellness instructors to identify gaps in current practice. Mitigate risks by early, frequent, and assertive engagement with key stakeholders, resilience/wellness instructors, and clinical supervisors/preceptors to identify gaps, assess feasibility, and determine if reducing stress and anxiety in the USAFA service member population is an organizational priority worth pursuing.		
Expected Level of Benefit		
Authorization from key stakeholders to proceed with team formation to implement MBSR project.		
Phase 2:	Team Formation and Evaluation of Evidence	
Milestone Description:	Form a team consisting of clinical supervisors/preceptors, P2SD, and senior mentor to evaluate and appraise scientific evidence supporting the project.	
Deliverables	Due Dates	Accountable Person
Measurable Goal: Determine if current evidence is sufficient for a pilot MBSR project.	March 2020 - June 2021	Captain Melissa Anderson, Captain John Wilbur, Clinical Supervisors/Preceptors
Resources Needed		
Access to research databases. Time to complete work. Mitigate risks though collaboration with colleagues and clinical supervisors/preceptors for project implementation.		
Expected Level of Benefit		
Thorough evidence scrutiny from collaborative efforts of the EBP team resulting in consensus affirmation that based on strength of evidence, a pilot MBSR project is cleared to proceed.		
Phase 3:	Design and Pilot MBSR Project	

Milestone Description:	Engage USAFA service members to participate in a pilot MBSR program through educational briefs, an MBSR project guide (Kabat-Zinn et al., 2017), and baseline assessment through stress and anxiety screeners. *Measurable goal:* Conduct MBSR pilot training.	
Deliverables	**Due Dates**	**Accountable Person**
Measurable Goals: Brief USAFA service members on expected MBSR benefits. Complete MBSR project guide. Collect USAFA service members baseline stress/anxiety scores. Conduct MBSR Pilot under supervision of clinical preceptor Collect MBSR project completion USAFA service members stress/anxiety scores.	USAFA service members Brief, Project Guide, Baseline collection of stress and anxiety scores: October 2021 MBSR pilot and completion collection of post stress and anxiety scores: December 2021 – January 2022	Captain Melissa Anderson, Captain John Wilbur, Clinical Supervisors/Preceptors
Resources Needed		
Time to construct MBSR project guides, brief USAFA service members, run MBSR pilot, and collect data. Collection of pre- and post-data to trend and track outcomes. Access to online survey software for collection of results. Mitigate Risks by holding meetings with clinical supervisors/preceptors on implementation strategies and engagement with USAFA service members through weekly emails and meetings to ensure project compliance.		
Expected Level of Benefit		
Piloting the program to the USAFA service member population allows the project to be assessed from multiple levels of management and stakeholders. Any successes and opportunities will be captured in real-time.		
Phase 4:	Evaluation of MBSR Program, Dissemination of Results, Sustainment of Practice	

Milestone Description:	To determine if MBSR reduces stress or anxiety levels in USAFA service members and report findings to USAFA and USUHS key stakeholders. *Measurable Goal:* Compare USAFA service members stress and anxiety levels from baseline measurement and immediately post implementation.	
Deliverables	**Due Dates**	**Accountable Person**

Measurable Goals: Analyze changes in stress and anxiety scores. Report findings of the project to USAFA key stakeholders. Provide USAFA key stakeholders MBSR project guide for future implementation. Report findings to USUHS key stakeholders.	Statistical Analysis of Results: February 2022 Brief of findings to USAFA: March 2022 Brief of findings to USUHS: April 2022	Captain Melissa Anderson, Captain John Wilbur, Clinical Supervisors/Preceptors
Resources Needed		
Time to analyze and evaluate results. Time to prepare a report addressing the successes and limitations of the project. Access to USAFA service members screeners. Mitigate risks by storing data on CAC enabled computers, frequent meetings with clinical supervisors/preceptors on the status of the project.		
Expected Level of Benefit		
Analysis and evaluation of stress and anxiety scores provides evidence whether MBSR is an effective measure to lower stress or anxiety levels in USAFA service members.		

Appendix D: Iowa Model



Appendix E: Project Timeline

Timeframe	Phase	Tasks
March 2020-April 2021	1	Identified problem area/triggering issue Developed clinical question Engage USAFA Key stakeholder/obtain approval to continue with project proposal and authorization of an MBSR program based on the proposed clinical question Review local USAFA practices for cadet anxiety management, compare them to MBSR program
March 2020-October 2021	2	Formed team with clinical supervisor and phase II site director Assembled, appraised, and critiqued the evidence Apply for IRB approval
October 2021-January 2022	3	Design and pilot MBSR program Engage USAFA service members to participate through educational briefings and MBSR project guide (Kabat-Zinn etal., 2017) Baseline assessment scores of stress and anxiety Pilot MBSR program under supervision of preceptor Weekly check-in with USAFA members and schedules sentelectronically
February 2022-April 2022	4	Evaluation of MBSR program Analyze changes in stress and anxiety scores Disseminate results to USAFA/USUHS key stakeholders Recommend change for future directions

Appendix F: Data Analysis Table

Data Analysis Table	Variable Name	Variable Description and type of measure	Data Source	Possible Range of Values	Level of Measurement	Time Frame for Collection	Statistical Test	Decision Rule
IV	Mindfulness-Based Stress Reduction (MBSR) Program	Description: USAFA service members, faculty, patients, receive an 8-week online MBSR program (Potter & Palouse Mindfulness: Mindfulness-Based Stress Reduction, n.d.) Type: Process measure	Local Leadership	0 = Before Program 1 = After Program	Nominal	Fall 2021 (Before MBSR program) and Winter 2021-2022 (After MBSR Program)	None	N/A
DV	A. Perceived Stress Scale 10 (PSS-10) scores B. Generalized Anxiety Disorder Scale 7 (GAD-7) scores	Outcome Measures A1. Mean PSS-10 scores pre-/post- A2. # USAFA service members whose scores dropped from higher to lower stress levels/total number of patients who participated B1. Mean GAD-7 scores pre-/post- B2. # USAFA service members whose scores dropped from higher to lower anxiety levels/total number of patients who participated	EHR or Online Website Repository	A1. PSS-10 score ranges between 0-40 with: 0-13 = Low stress 14-26 = Moderate stress 27-40 = High stress (Wu & Amtmann, 2013) B1. GAD-7 score ranges between 0-21 with: 0-4 = No anxiety 5-9 = Mild anxiety 10-14 = Moderate anxiety 15-21 = Severe anxiety (Spitzer, Kroenke, Williams, & Lowe, 2006) B2. 0 to 100%	Interval	Fall 2021 (Before MBSR program) and Winter 2021-2022 (After MBSR Program)	A1. Paired t-test or Wilcoxon's signed-rank test (if issues with normal distribution) A2. Descriptive statistics B1. Paired t-test or Wilcoxon signed-rank test (if issues with normal distribution) B2. Descriptive statistics	Statistical and/or Clinical significance (as evidenced by percentage of patients who reduce PSS/GAD levels)

Appendix G: Data Collection Forms

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Code _____ Date _____

Age _____ Gender (*Circle*): **M F** Other _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

	0	1	2	3	4
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 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?	☐	☐	☐	☐	☐

Please feel free to use the *Perceived Stress Scale* for your research.

Mind Garden, Inc.
info@mindgarden.com
www.mindgarden.com

References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.

General Anxiety Disorder (GAD-7)

NAME DATE

1. Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all sure	Several days	Over half the days	Nearly every day
• Feeling nervous, anxious, or on edge	☐ 0	☐ 1	☐ 2	☐ 3
• Not being able to stop or control worrying	☐ 0	☐ 1	☐ 2	☐ 3
• Worrying too much about different things	☐ 0	☐ 1	☐ 2	☐ 3
• Trouble relaxing	☐ 0	☐ 1	☐ 2	☐ 3
• Being so restless that it's hard to sit still	☐ 0	☐ 1	☐ 2	☐ 3
• Becoming easily annoyed or Irritable	☐ 0	☐ 1	☐ 2	☐ 3
• Feeling afraid as if something awful might happen	☐ 0	☐ 1	☐ 2	☐ 3
Add the score for each column				
TOTAL SCORE *(add your column scores)*				
	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	☐ 0	☐ 1	☐ 2	☐ 3

GAD-7 developed by Dr. Robert L. Spitzer, Dr. K. Kroenke. et.al.

Appendix I: Team Mentor Agreement Form

Appendix C: Daniel K. Inouye Graduate School of Nursing
DNP Project Team Mentor (Committee Membership) Agreement Form

DOCTOR OF NURSING PRACTICE PROJECT
DNP Project Clinical Question and Team Mentor (Committee Membership) Agreement Form

Graduation Year: 2022 **Phase 2 Site(s) Name:** United States Air Force Academy

Name(s) of DNP Project Student Team:

1.	Captain John Wilbur	AGCNS ☐ FNP ☐ PMHNP ■ RNA ☐ WHNP ☐
2.	Captain Melissa Anderson	AGCNS ☐ FNP ☐ PMHNP ■ RNA ☐ WHNP ☐
3.		AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐
4.		AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐
5.		AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐
6.		AGCNS ☐ FNP ☐ PMHNP ☐ RNA ☐ WHNP ☐

The tentative title of the DNP Project Proposal for this student group is:

Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)

Committee Approved DNP Project Clinical Question:

In United States Air Force Academy (USAFA) service members with stress and anxiety, does an online 8-week MBSR program improve stress and anxiety when comparing pre-program levels at baseline, to levels at the end of the program?

Names of DNP Project Team Mentors *(type the name and obtain digital signatures)*:

I agree to serve as a member of the DNP Project Team (Team Mentors) for the above DNP Student Project Team. As a Project Team Mentor, I agree to the duties and responsibilities outlined within the DNP Project Manual which include but are not limited to the provision of consultation and guidance supporting the entire DNP project journey and to ensure the DNP project is of sufficient rigor and demonstrates doctoral level scholarship to meet the requirements for USUHS GSN graduation.

NOTE: You may have 3-4 DNP Team Mentors [committee members including your DNP Senior Mentor (Chair)]. The Phase II Site Director may also be a member of the group, as well as other USUHS faculty or others who may serve as content experts. All non-USUHS faculty selected as a Team Mentor must be approved by the DNP Project Director.

Senior Mentor (Chair):	Dr. Regina Owen	Signature:	OWEN.REGINA.D.1253117423 Digitally signed by OWEN.REGINA.D.1253117423 Date: 2021.01.15 09:54:45 -05'00'	Date:
Team Mentor (Member):	Dr. Kellie Bond	Signature:	BOND.KELLIE.DORIS.1282346660 Digitally signed by BOND.KELLIE.DORIS.1282346660 Date: 2021.01.19 10:49:36 -07'00'	Date:
Team Mentor (Member):		Signature:		Date:
Team Mentor (Member):		Signature:		Date:

Form Version: 4 December 2020

Appendix J: CITI Certificates

CITI PROGRAM

Completion Date 30-Mar-2021
Expiration Date 29-Mar-2024
Record ID 41881235

This is to certify that:

melissa anderson

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Basic Course - Human Subjects Research
(Curriculum Group)
Air Force Research Laboratory (AFRL)
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

U.S. Air Force Research Laboratory

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w565dad02-b7a2-442d-92bc-a6bd0c36b75c-41881235

CITI PROGRAM

Completion Date 27-Mar-2021
Expiration Date 26-Mar-2024
Record ID 41833819

This is to certify that:

John Wilbur

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Basic Course - Human Subjects Research
(Curriculum Group)
Air Force Research Laboratory (AFRL)
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

U.S. Air Force Research Laboratory

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w580a0ce8-32de-430d-aa30-e064be0c8dc2-41833819

Appendix K: USU Form 3202N

USU
Uniformed Services University

OFFICE OF RESEARCH
4301 JONES BRIDGE ROAD
BETHESDA, MAYLAND 20814
PHONE: (301) 295-3303; FAX: (301) 295-6771

NOTICE OF PROJECT APPROVAL

Change Number: Original

VPR Site Number:	GSN-61-11981
Principal Investigator:	Anderson, Melissa
Department:	Graduate School of Nursing
Project Type:	Student
Project Title:	Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)
Project Period:	6/30/2021 to 6/30/2022

Assurance and Progress Report Information:

Name	Sup	Approval Type	Status	Approved On	Forms Received
Progress Report	0			To be Submitted	N/A

Remarks:
This Notice Of Project Approval has been reviewed and approved. Please remember that you must submit a final Progress Report (Form 3210) upon completion of this project.

Questions regarding this approval should be directed to the following person in the Office of Research: Sharon McIver, (301) 295-9814.

RANDOLPH.TOY.A.V.1242107698 Digitally signed by RANDOLPH.TOY.A.V.1242107698 Date: 2021.07.12 16:18:11 -04'00'

Mark G. Kortepeter, MD, MPH Date
FACP, FIDSA, FASTMH
COL (R) MC US Army
Vice President for Research
Uniformed Services University of the Health Sciences

cc: File
Dr. Kennett Radford
Laura Taylor

Appendix L: IRB and MTF Approval

DEFENSE HEALTH AGENCY
WALTER REED NATIONAL MILITARY MEDICAL CENTER
8901 WISCONSIN AVENUE
BETHESDA, MD 20889-5600

DATE: August 06, 2021

MEMORANDUM FOR: Maj Kellie Doris Bond, DNP, NC

SUBJECT: Determination of Not Research, for submission, WRNMMC-EDO-2021-0795,

1. Thank you for your submission of the above referenced project and supporting materials. This project **DOES NOT** meet the definition of **RESEARCH** in accordance with (IAW) 32 Code of Federal Regulation 219.102 and DoDI 3216.02.

2. You must register your project with the WRNMMC Quality Management Division. Please contact Mr. Victor Mosley at **victor.c.mosley.civ@mail.mil**.

3. You are reminded that it is your responsibility to ensure all members of your team, including those listed on the protocol and/or a delegation of authority log are properly trained (to include current CITI training appropriate to their role in the study) and appropriately credentialed for the procedures they will perform.

4. Any changes to this project must be reviewed by the WRNMMC Department of Research Programs (DRP) Determinations Official to ensure that the changes do not impact this determination. All amendments, deviations, adverse events, or any other pertinent information must be submitted to DRP using the Electronic IRB System (EIRB) as a submission within this protocol.

5. Any publication resulting from this work must be cleared through the publication clearance process. See the DRP Intranet webpage for publication clearance guidance.

6. You are reminded that, IAW DoDI 8910.01 and DoDI 1100.13, information collection forms (i.e. surveys) must be reviewed by the designated Information Management Control Officer prior to use.

7. This is a Determination only. Please check with your local command and local Department of Research Programs to ensure you have met all command requirements prior to study initiation.

8. If you have any questions, the POC is David Evers, EDO at (301) 295-9316 or david.l.evers2.civ@mail.mil. Please include your project title and IRB number in all correspondence(s) with the Department of Research Programs.

This document has been electronically signed in accordance with all applicable regulations, and a copy is retained within our records.

DEPARTMENT OF THE AIR FORCE
10TH MEDICAL GROUP
USAF ACADEMY COLORADO

8 Sept 2021

MEMORANDUM FOR RECORD

FROM: 10 MDG/CC
4102 Pinion Drive
U.S. Air Force Academy, CO 80840

SUBJECT: Review of proposed evidence-based practice project: Mindful Based Stress Reduction (MBSR)

1. The Uniformed Services University of the Health Sciences DNP Phase II students, Captains Melissa Anderson and John Wilbur will be principal investigators. The intent of the project is to measure stress and anxiety levels in service members who self-identify as having stress and anxiety. Objective measures of stress and anxiety will be collected pre and post an MBSR online program intervention. Voluntary participants will be referred from mental health and primary care providers after a safety assessment is completed to ensure no risk for safety concerns.

2. MBSR is an eight week, online, self-paced program. Jon Kabat-Zinn is the creator of the program, and the program being delivered virtually at USAFA, is based solely on the original product. The online program is free to use and has been shown to reduce anxiety, stress, and a multitude of other positive benefits. However, this project will focus on stress and anxiety.

3. The project will not interfere with Mental Health Clinic's primary mission of providing mental health care. There are no costs to the 10th MDG and USAFA for completing this educational intervention.

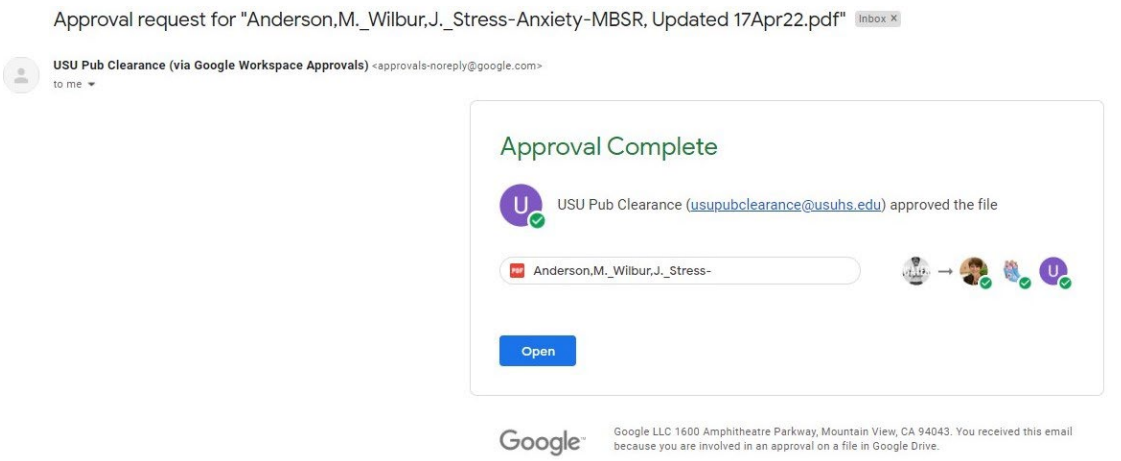
4. This evidence-based practice project proposal has been reviewed, and 10 MDG leadership is in support of submitting the study for IRB approval.

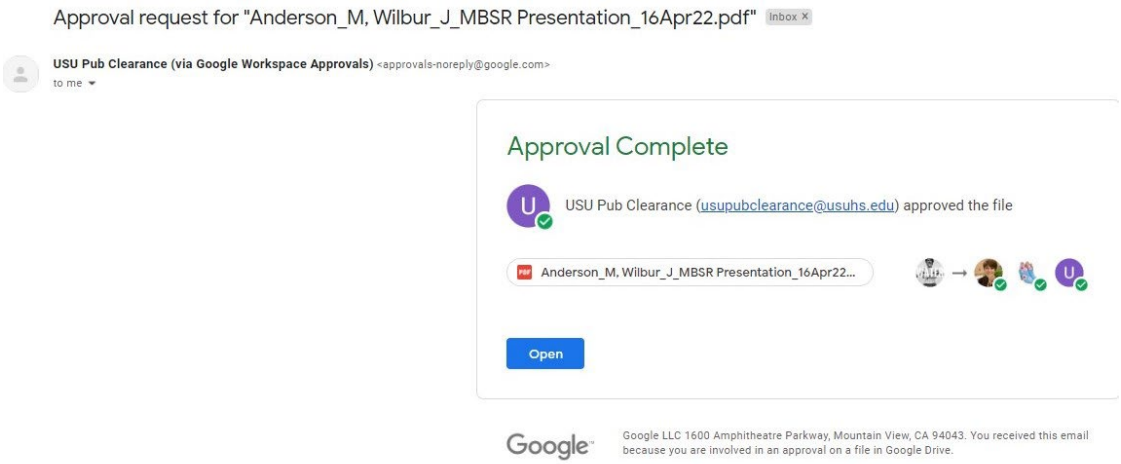
ANDRUS.DAVID.EARL.1101452359
Digitally signed by ANDRUS.DAVID.EARL.1101452359
Date: 2021.09.13 16:00:57 -06'00'
DAVID E. ANDRUS, Col, USAF, MC, SFS
Commander

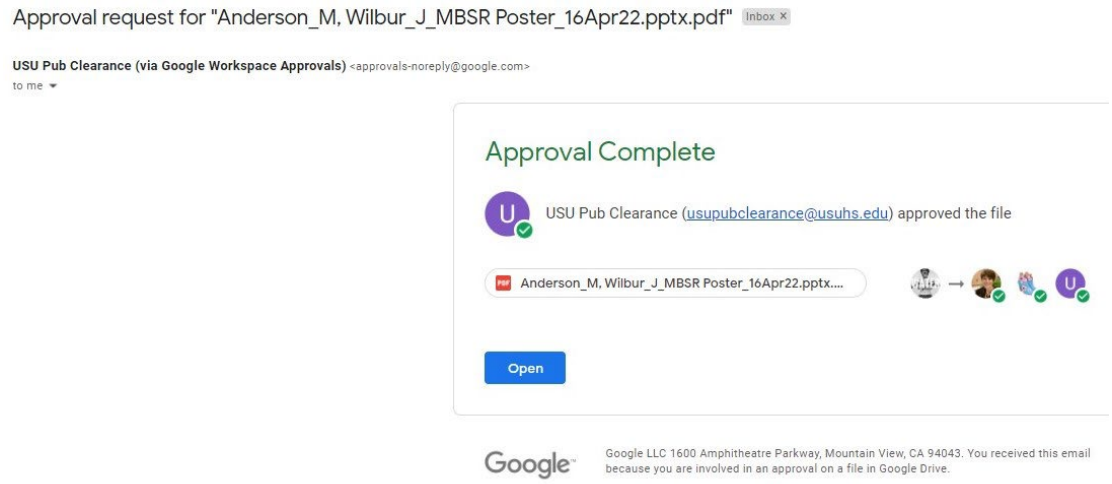
GRUSSENDORF.CHRISTOPHER.M.1237670988
Digitally signed by GRUSSENDORF.CHRISTOPHER.M.1237670988
Date: 2021.09.14 11:23:18 -06'00'
CHRIS GRUSSENDORF, Col, USAF, MC, SFS
Commander

People – Mission – The Future

Appendix M: PAO Clearance







Appendix N: DNP Project Completion Verification Form

Appendix G: Daniel K. Inouye Graduate School of Nursing
DNP Project Completion Verification Form

DOCTOR OF NURSING PRACTICE PROJECT
Completion Verification Form

The DNP Project titled: Stress, Anxiety, and Mindfulness-Based Stress Reduction (MBSR)

was completed at The United States Air Force Academy Mental Health Clinic by the following student(s):

(type student name)	*(signature)*	*(date)*
John L. Wilbur Jr.	WILBUR.JOHN.LEE.JR.1408350499 Digitally signed by WILBUR.JOHN.LEE.JR.1408350499 Date: 2022.04.09 13:32:22 -06'00'	03 Jan 2022
Melissa G. Anderson	ANDERSON.MELISSA.G.1411609959 digitally signed by ANDERSON.MELISSA.G.1411609959 Date: 2022.04.11 07:42:03 -06'00'	03 Jan 2022

The DNP Practice Project Team verifies that the following components of the DNP project, accomplished by the above students, is of sufficient rigor and demonstrates doctoral level scholarship to meet the requirements for USUHS GSN graduation:

- Presentation to the DNP Project Team,
- Presentation of DNP project to the leadership at the Phase II Site,
- Abstract/Impact Statement *(Appendix I)*, and
- DNP Project Written Report.

Verified by:

(type name)	*(signature)*	*(date)*	
Regina Owen	OWEN.REGINA.D.1253117423 Digitally signed by OWEN.REGINA.D.1253117423 Date: 2022.04.12 19:48:39 -04'00'		Senior Mentor
			Team Mentor
			Team Mentor
Kellie Bond	BOND.KELLIE.DORIS.1282346660 Digitally signed by BOND.KELLIE.DORIS.1282346660 Date: 2022.04.10 06:12:22 -06'00'		Team Mentor & Phase II Site Director

Form Version: 1 June 2016