

**Correlation of Increased Stress with Depression and Suicidal Thoughts Experienced by
Student Registered Nurse Anesthetist (SRNAs)**

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Date of Submission: 3/17/23

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Correlation of Increased Stress with Depression and Suicidal Thoughts Experienced by Student Registered Nurse Anesthetists (SRNAs)

Abstract

This DNP project's significance is to help SRNAs self-recognize psychological and physical manifestations of negative stress, manifested as anxiety, depression, and suicidal thoughts during anesthesia training. The objective is to supply education to promote mental health awareness and resilience, overcome mental health stigma, screen SRNAs for early signs of depression and anxiety, and identify students at risk. SRNAs have displayed an increased risk for depression and suicidal thoughts due to additional stressors stemming from the program, including a lack of a paycheck. Other factors exacerbating the issue are exhaustion, despair, and substance abuse which can steer students to a mental health crisis. The population selected includes all SRNAs currently enrolled in the program (n=88). Educational information to promote wellness and tools for students to reach out for help if necessary was provided via Canvas. Qualtrics software was used to disseminate and collect data. The data consisted of 3 anonymous surveys that included the GAD-7, PHQ-9, and an additional survey of general questions based on the student's perceptions of their mental health status. Students' participation was voluntary and anonymous. Students received instructions on interpreting their survey results and information to follow up with counseling if needed. Utilizing qualitative statistical analysis, the GAD-7 showed 23.3% of students with severe anxiety. The PHQ-9 identified 14% with severe depression; 11% stated having thoughts of quitting, and 11.6% reported having suicidal thoughts during the anesthesia program. The parameters estimated on the regression model test confirmed that when depression, anxiety, and high levels of stress were combined significantly contributed to the outcome variable

of suicidality. There is an increased need to incorporate a systematic protocol to screen students for early signs of depression, anxiety, and burnout. Nurse anesthesia programs must find ways to accelerate interventional efforts to help decrease and manage distress among students and build an atmosphere that restores resilience and well-being to the students.

Keywords: suicide prevention, nurse anesthesia students, depression, suicide and nurses, suicide ideation and graduate students, suicide ideation, suicide prevention program for nurses, suicide awareness.

Introduction

Stress is an inevitable response from our bodies to different reactions. Positive stress is the healthy way to cope with environmental stressors; negative stress or distress is the one we will want to avoid or prevent. Anesthesia training is very competitive and challenging to complete. SRNAs are described as having a substantial percentage of depression compared to non-student individuals with similar characteristics (Hoying et al., 2020). Stress has been linked to many physical manifestations, such as high blood pressure, heart disease, headaches, digestive problems, and weakened immune systems. Some psychological manifestations include irritability, sadness, anxiety, depression, and suicidal thoughts. If we integrate ways to increase awareness, screening, and referrals as interventions, suicide may be preventable.

The standard should be to identify symptoms and behaviors of stress and provide the necessary tools to help students cope positively against the program's demands. The project's significance is to recognize those nurse anesthesia students who experience distress and suicidal thoughts and are at risk for depression. This project aims to provide an interactive screening risk

tool, evidence-based coping skills, stress-relieving activities, and educational information to promote mental health resilience and overall well-being among SRNAs.

Background

Researchers estimate that by the year 2030, depression will be the principal basis of illness. (Hoying et al., 2020). Currently, anxiety disorders are the most common psychological conditions in the United States, affecting 1 in 3 adults. Suicide is the second top cause of death among individuals ages 15–34, with a calculated 9.3 million adults registering to have suicidal ideation last year alone (Hoying et al., 2020). The American Foundation for Suicide Prevention listed suicide as the 10th highest reason of death in the United States. Overall, 90% of all people who died were diagnosed or suffered from major depression (AFSP, 2022).

Student registered nurse anesthetists (SRNAs) as well as CRNAs have reported high levels of depression and stress which can be a threat for suicide (Downs et al., 2014). Hoying et al., (2020) added that graduate students, especially nurse anesthesia students, are at unique chance for depression, anxiety, and mental health issues due to increased stress and burnout and the difficulty of their academic programs. As we know, nurse anesthesia training is inherently stressful, and SRNAs are compelled to display a heightened grade of resilience. Previous studies have revealed that high stress and anxiety can guide students to mental health crises; some factors include exhaustion, despair, substance misuse, and suicidal thoughts (Horvath & Grass, 2021).

Universities may focus on having mental health and academic support services available to all students, lacking accessibility, receptiveness, and specificity for graduate students. This population of students is at an increased risk for depression and suicidal thoughts due to the added stressors from the program, work, family, children, and lack of a paycheck due to the majority of

SRNAs not working during the program. These external stressors, financial and social concerns increase the risk among nurse anesthesia students considerably.

A study in 2014 screened a population of 34% students. Ultimately, 10 out of 13 who conversed with a therapist were not obtaining treatment, suggesting that the questionnaire recognized an elevated sample of untreated learners at-risk of committing suicide (Downs et al., 2014). A study revealed that almost 60% of health care students researched screened positive for depression, and almost 10% had suicidal thoughts in the last year (Hoying et al., 2020).

Davidson et al (2018) pointed out in his study that students have access to drugs, increasing the capacity of overdose attempts coupled with school-related stress, long hours of study, absence of independence, social isolation, lateral violence, bullying, absence of positive feedback, and problems with work-life balance. A retrospective quantitative study done in 2021 obtained data from the CDC and the National Prevention Violent Death Reporting System (NPVDRS) concluded that a unique relationship between substance use and issues with mental health exists between students who completed a suicidal act versus the regular population (Choflet et al., 2021). A retrospective cohort study demonstrated the incidence of suicide among nurses compared to general population was significantly higher of 17.1 per 100,000 Vs 8.6 per 100,000. Clinicians were more likely to use antidepressants, benzodiazepines, barbiturates and opiates than regular population (Davis et al., 2021).

Another study by (Chipas et al., 2012) uncovered that 47.3% (n=554) of SRNAs documented living with depression during school. 21.2% (n=245) reported suicidal thoughts. Comparing the means, they were statistically significant at the 99% confidence interval (stress vs depression: $p < .05$; stress vs suicidal thoughts: $p < .01$). The majority of the students (n=60, 6.3%)

reported knowing about someone who was at risk or achieved suicide during anesthesia training (Chipas et al., 2012).

Problem Statement

This analysis considers the prevalence of depression and suicidal thoughts in student nurse anesthesia programs. Some prominent factors include continuous exposure to a high-stress environment and the lack of students utilizing the university's current academic, spiritual, and mental health support services.

Nurse anesthesia students should be screened for depression, anxiety, healthy habits, and the use of stress-relieving techniques regularly. Suppose universities screen for the risk of depression/suicidal ideation and provide educational information concerning mental health awareness. They would have current data to determine whether first-year students, second-years, or third-years SRNAs are more at risk. It is urgent to provide students with educational information to increase mental health awareness tailored to the specific needs of the nurse anesthesia students.

This DNP project aims to increase awareness and identify students experiencing depression, anxiety, and suicidal thoughts. Also, to provide educational information to all SRNAs during their anesthesia training to increase awareness about how stress can profoundly affect mental health and what to do with it.

The following PICOT question was formulated to guide the research in this project: By screening for risk of depression and suicidal ideation and providing educational information concerning mental health awareness can we determine whether first-years, second-years or third years are more at risk?

The approach utilized in this project consisted of 1) Provided educational information to increase mental health awareness and promote students' participation in stress-relieving techniques during their free time. 2) Screened students to determine depression, anxiety, and suicidal thoughts predictors. 3) Supplied students with instructions on evaluating their screening results and the steps to follow up for a referral. 4) Supplied tools to help foster mental health resilience, overcome mental health stigma, and increase overall well-being among SRNAs.

Needs Assessment & Organizational Gap Analysis of Project Site

A recognized area needs improvement at Marian University Nurse Anesthesia Graduate program specific to supporting SRNAs mental and physical well-being. Marian University does not currently provide a dedicated resource for nurse anesthesia students. The university's website outlines student support services for all undergraduate and graduate students. These services include mental, physical, academic, and spiritual health services. SRNAs are limited to accessing these benefits, considering their varied locations throughout campus and the little time-free SRNAs possess. These services are available in-person or online but often do not accommodate the hectic lifestyle of the nurse anesthesia student population. Some of these services require different bureaucracies, such as having students fill out forms and wait for appointments. All these hurdles take away the student's motivation to follow thru, leading to isolation and hopelessness.

Every student received quarterly emails from student support services as a reminder to use these resources. The biggest issue is that there are no currently established guidelines from the department of student affairs to follow up with the students and their concerns. The nurse anesthesia program does not provide additional resources to explore the predominance of depression, suicidal thoughts, and healthy behaviors among SRNAs. This project plans to foster

SRNAs well-being by providing an interactive screening questionnaire to identify at-risk students and offer the necessary tools for referrals and knowledge to decrease suicide risk.

A needs assessment can identify a gap between offered resources to help promote mental health, learning performance, and productivity and SRNAs not utilizing and benefiting from those resources leading to burnout, fatigue, increased stress, depression, and decreased academic performance. This project's goal is to help decrease this gap.

Literature Review

Mental health and a decline in well-being are significant problems for SRNAs. They are the subject of increased stress and anxiety levels during their doctoral program. Increased stress levels unravel a series of symptoms and dysfunctions that hinder students from developing their full potential. Unmanaged symptoms can lead to burnout, decreased motivation, depression, substance abuse, and suicidal ideation. According to Wang et al. (2021), the anesthesia specialty has scored exceptionally high compared to other medical specialties. Students suffer from sleep deprivation, high workload, school responsibilities, and lack of a salary during their anesthesia residency, making them vulnerable to burnout and depression. A literature search demonstrated that it is imperative to consistently work on prevention and screen anesthesia residents to measure their suicide risk while providing activities to help decrease stress and keep students motivated.

Methods

This literature search seeks research studies that identify graduate college health sciences students, SRNAs, and anesthesia residents that may be at risk of major depression and suicide. In this search, the studies selected intend to find the etiology of increased burnout, suicidal thoughts, and depression among graduate students, particularly anesthesia residents. The search does not

include treatment and evaluation of students who screened positive for mental health illness. Due to the limited studies, the search was extended to any article published between 2014 and 2022, peer-reviewed, written in English, expert opinions papers, and classified as primary sources studies.

The search was conducted using different databases: CINAHL, PUBMED, and GOOGLE SCHOLAR. Under the CINAHL database, the search bar was used to type in Boolean phrases such as “suicide prevention and nurse anesthesia students,” “depression and anesthesia residents,” “suicide and nurses,” and “suicide ideation and graduate students.” The keywords used were SRNAs, and suicide prevention programs. Using the PUBMED database, Boolean phrases that were used: “suicide prevention and nurse anesthesia students,” suicide ideation and anesthesia students,” “depression and nurse anesthesia students,” “depression and anesthesia residents,” “suicide prevention and graduate students,” and “suicide and nurses.” Keywords: suicide prevention program for nurses, and SRNAs. Similar articles from the previous search were also utilized. Employing GOOGLE SCHOLAR database Boolean phrases used: “suicide prevention and nurse anesthesia students,” “suicide awareness and anesthesia residents,” “depression and health science graduate students.” Similar articles from previous searches were used.

There were 577 articles identified through database searching, and 12 articles were found through other sources, such as similar articles from previous searches. After duplicated items were removed, they were 552 articles. Records that met the primary screening were 89 articles. Full-text articles assessed for eligibility were 21 articles. After inclusion/exclusion criteria was applied, only 12 articles met the criteria.

Articles that compose the inclusion criteria were those studies that were relevant to the PICOT question and directed explicitly toward graduate health science students and anesthesia

residents. The exclusion criteria were defined as studies from secondary sources, literature reviews not suitable for the topic, anesthesiologists, CRNAs, and nurses. Other studies that met the exclusion criteria were studies with the intent to assess interventions for treatment, follow-ups, and evaluation of treatment to diagnose or cure a particular illness. This research search was conducted until March 2022. A PRISMA diagram of this search can be found in Appendix A.

Research Samples

Most of the studies in this literature review involved anesthesia residents, medical students, and graduate health students. Two studies focused on promoting awareness of depression and suicide among SRNAs (Horvarth & Grass, 2021; Melnyk et al., 2020). Few other studies involved anesthesia residents (Jaulin et al., 2021; Sun et al., 2019). Several articles involved medical students, including anesthesia students, who completed an online questionnaire (Davidson et al., 2018; Downs et al., 2014; Wang et al., 2021). Other researchers expanded their hypothesis to screen a more significant proportion of students, including health sciences undergraduates (Drum et al., 2017; Horwitz et al., 2020; Hoying et al., 2020; Rubanovich et al., 2022).

Factors contributing to an increased risk of suicide behavior as a graduate student enrolled in an anesthesia program.

All the studies in this review agreed that screening and counseling are the best ways to prevent suicidal behavior among students. According to Davidson et al. (2018), individuals not receiving previous treatment agreed to receive counseling and further treatment. Davidson et al. (2020) concluded that most participants who received a referral to seek treatment endorsed suicidality and benefited from preventive treatment.

Another study concluded that 10 out of 13 students who dialogued with a counselor mentioned receiving mental health assistance their first time, indicating the screening method identifies untreated, potentially suicidal students (Downs et al., 2014). Healthy lifestyle behaviors, such as physical and healthy dietary habits, increase motivation among students (Melnik, 2020). Several studies recommended fostering students' well-being by advancing education, counseling, social support, relaxation, physical activity, and wellness interventions to reduce burnout (Horvath & Grass, 2021).

Methods to identified students at risk of suicidal behavior and to promote overall well-being of the SRNAs

It is vital to adopt efficient methods to promote resiliency and mental health awareness among SRNAs. The Healer education assessment and referral program (HEAR) is an encrypted anonymous web-based program assessment to proactively recognize and direct individuals at risk of depression and suicide. It also combines a sequence of didactic exhibitions to provide teaching about suicide and depression (Davidson et al., 2018; Downs et al., 2014).

Other researchers have used a variety of online assessments questionnaires commonly used by healthcare professionals, such as the Healthy lifestyle behaviors scale (HLBHS), the Patient health questionnaire (PHQ-9) (PHQ-2), the General anxiety disorder scale (GAD-7), the Perceived stress scale (PSS), the Copenhagen burnout inventory (CBI), the Harvard depression screening day, depression, anxiety, and stress scale (DASS) and the Maslach burnout inventory (MBI) (Downs et al., 2014; Jaulin et al., 2021; Horvitz et al., 2020; Hoying et al., 2020; Sun et al., 2019; Wang et al., 2021).

Discussion

Study findings show high stress, anxiety, and burnout among SRNAs and graduate students, with females at more risk than males (Davidson et al. (2020). The recommendation is to screen students consistently throughout their anesthesia residency. A cross-sectional study concluded that 50% of the student's experienced burnout during anesthesia residency, a third suffered, and one-eighth screened positive for depression (Sun et al., 2019). Education and mental health awareness need to be incentivized, and the harmful effects of long-term stress need to be emphasized. A standard variable in the literature correlates with worrying about stigma for seeking mental health screening and possibly positive outcomes and findings. It is concerning that these students with increased worry are in more danger of suicide action than general suicide risk (Rubanovich et al., 2022). The articles that utilized the HEAR program aimed to identify and reduce suicidal behaviors in high-risk students. Most importantly, the HEAR program discovered students who were suicidal and were not receiving treatment at the time; this finding was lifesaving for those students. Therefore, it is essential to implement psychological interventions and awareness for SRNAs to help facilitate lifestyle transformations, social support, and psychological guidance.

Limitations in the Literature

The lack of validation of the interactive survey program and the relatively low response rate were some of the limitations found in the studies. To maintain the study anonymous to keep confidentiality and restricted to one institution confined the capability to generalize the results to other universities (Davidson et al., 2018; Downs et al., 2014). Other limitations found were decreased sample sizes and response rates due to questionnaires not being mandatory. Researchers

also found it challenging to compare samples with the general population or even other institutions and impossible to track individuals' responses over time. Few researchers opted to maintain anonymity to increase the response rate (Rubanovich et al., 2022; Sun et al., 2019). The MBI questionnaire seems to have weaknesses due to inconsistencies with the definitions of burnout. The CBI is partially consistent with the MBI but diverges for measurements of student depersonalization. Responses may be biased, indicating that students experiencing burnout might be more or less likely to respond to the survey (Jaulin et al., 2021; Wang et al., 2021).

Future Research Implications

Translation of evidence-based interventions to practice needs to be accelerated, emphasizing the prevention of mental health illness (Horvath & Grass, 2021; Hoying et al., 2021; Wang et al., 2021). Additional research is required to demonstrate whether the HEAR program reduces burnout and its repercussion among students. More research will be needed to track the students' responses over time (Davidson et al., 2020; Sun et al., 2019). Institutions must sponsor additional research on this matter; randomized controlled trials are wanted to direct the effectiveness of interventions to stop depression and suicide among learners. There is a need to change the student's physical, interpersonal, and social ecology (Drum et al., 2017; Melnyk, 2020). Future directions in this line of research are needed to include direction for marginalized groups and to develop programs that target mental health (Horvitz et al., 2020).

Implications for Future Practice

Most of these novel studies reveal an elevated rate of anxiety, hopelessness, and burnout among students laboring during clinicals and learning didactics on the days off from the hospital to identify potential suicidal students (Downs et al., 2014; Jaulin et al., 2021). The recommendations include providing a wellness initiative and additional strategies to reduce the

risk of burnout and increase the standard of the student's life. Anesthesia residents need more psychological consultation and guidance to prevent stress-related problems. (Horvath & Grass, 2021; Hoying et al., 2021; Wang et al., 2021). Even though some of the responses were low, the expectation is to increase the response rate to encourage untreated at-risk students to get help (Davidson et al., 2018). Nurse anesthesia programs must research ways to nurture students' well-being, decrease burnout and depression, and restore resiliency and joy (Horvath & Grass, 2021; Melnyk, 2020).

Conclusion

Systematic screening of learners for depression, burnout, and anxiety is desired to preserve the student's mental health and well-being. The literature recommends screening SRNAs every year during their training. Despite the recommendations, a small amount of current literature shines a light on this issue. Researchers have a common suggestion for directors of anesthesia programs to improve mental health outcomes by providing attention to mental health prevention, counseling guidance, wellness culture, and social support. To sustain improvements in mental health outcomes among the student population, we must concentrate on prevention. Raising an understanding of students' distress can change negative symptoms and ideas concerning emotional health.

A literature matrix can be found in Appendix B.

Theoretical Framework

The theory of Moral Reckoning will be used as a theoretical framework to guide this project. This theory captures the process where nurses or individuals analyze and reminisce on motivation, preferences, measures, and outcomes in a particular situation. The middle-range theory of Moral Reckoning concepts includes ease, situational binds, resolution, and reflection (Smith & Liehr, 2018).

A diagram of this theoretical framework is found in appendix C.

State of Ease

A state of ease is a state of naturalness, a sense of comfort, free of agitation; ease denotes readiness and skillfulness. Nurses who experience ease are comfortable; individuals feel competent and confident (Smith & Liehr, 2018). The state of ease is the concept that describes the goal of emotional state for all students throughout their training. The use of this theory helped to assist students in achieving this emotional state and remaining in this state if possible. It also helped to examine at what stage the SRNAs felt more at ease in the program.

Situational Binds

Situational binds are severe and complex conflicts within individuals and others that lead to life-turning points. These conflicts lead to increased anxiety, tension, and self-questioning. (Smith & Liehr, 2018). Due to the program's rigor, SRNAs experience increased anxiety, burnout, stress, fatigue, and tension, all of which can lead to depression and suicidal thoughts. This concept helped identify students experiencing psychological symptoms and determine at what stage of the CRNA training situational binds were an issue.

Resolution

Resolution is a move to set things right, resolve the turmoil, and relieve the tension. It occurs when a person terminates the intolerable condition by finding a solution to the problem and deciding on a course of action. The person might make a declaration or carry out a plan (Smith & Liehr, 2018). This concept will guide students toward the resolution of a conflict. It will help validate those students that decided to follow up with a referral or those that take action to decrease stress.

Reflection

Reflection occurs when a person, having made and acted upon a decision, reflects as they reckon past behavior and actions. Reflection raises questions about previous judgments, acts, and the essential self. It may extend over a lifetime. (Smith & Liehr, 2018). Even though the concept of reflection is difficult to measure, hopefully, students will reflect upon completing the screening questionnaire and reflecting on the educational information provided and their current emotional state. Reflection will vary per individual and will end with the individual returning to a state of ease.

Project Aim & Objectives

This DNP project strives to increase mental health awareness among SRNAs throughout their nurse anesthesia training. To identify SRNAs at risk or those experiencing symptoms and behaviors of increased stress, irritability, anxiety, depression, or suicidal thoughts and provide the necessary tools for referral to counseling services. Another aim is to provide students with evidence-based coping skills, a screening risk tool during anesthesia training, stress-relieving activities, and educational information to promote mental health resilience and overall well-being among SRNAs.

The objectives of the project are as follows:

- 1- To help SRNAs self-recognize students' psychological and physical manifestations of negative stress.
- 2- To illustrate, a PowerPoint presentation as an educational intervention available to all SRNAs promoting mental health awareness.
- 3- To identify SRNAs at moderate to high risk for depression and suicide.
- 4- To analyze the incidence of increased distress among students during their first, second, or third year of nurse anesthesia training.

- 5- To provide a screening questionnaire of open-ended questions specific to SRNAs during their training.
- 6- To provide the tools to guide students to interpret their questionnaire results and provide the resources for those who would want to get help.

SWOT Analysis

Key stakeholders in this project include:

- Marian University CRNA program
- Faculty and Director
- Student Services at Marian
- SRNAs from each cohort

The benefit of this project, considered one of its biggest strengths, is that it will directly impact the CRNA program and its students if the results prove valuable to the individuals involved. Other strengths of the project include disseminating an educational presentation via canvas to all students. Since the research topic contains sensitive and private information from the students, to prevent a conflict of interest or ethical dilemmas, the students received information on how to interpret their questionnaire results and the tools to follow up with a referral for initial intervention.

This project may foresee a weakness of not having enough participants because it is voluntary. Obtaining data with "at-risk" students and follow-ups may prove challenging. The participants may respond poorly to the project due to the stigma and the subject's sensibility.

This project's great opportunity is that Marian University has an on-campus counseling department to serve students' needs. Another possibility is that the faculty from the CRNA program can continue screening SRNAs more frequently and encourage students to increase participation.

A concern that may be deemed a threat is any malfunction of the Canvas technology. The students may not want to participate in the surveys because they are busy and stressed with their current academic requirements. Another consideration will be students facing more requirements from the counseling department, making it more time-consuming for those students to receive initial help.

A detailed table of the SWOT analysis is available in Appendix D.

Project Design / Methods

In this study, the investigator utilized a cross-sectional observational study design. This method provided an educational intervention and measured the prevalence of the participants to depression and suicide. It also helped to obtain information about the preponderance of anxiety, depression, and suicidal thoughts among SRNAs. The participants were selected based on the inclusion criteria and PICOT question set for this study. The chosen data was obtained using qualitative methods (surveys). This type of design is an excellent match for a one-time measurement of outcomes and exposures, and because of this, it was executed accurately within a short time frame with minimal cost.

Project Site and Population

The selected population for this study includes all SRNAs currently enrolled in the nurse anesthesia program. The setting took place at a private liberal arts university in the Midwest located in a vibrant city, offering an entry-level nurse anesthesia doctoral program. The fully accredited program offers a 36-month front-load curriculum requiring students to complete 87 credits of didactic courses. In addition to the didactic coursework, students are needed to complete a minimum of 2000 hours of clinical practice at different hospitals throughout the state and neighboring states. The program has approximately 29 students per cohort. The SRNA sample

comprises first-year students (n=33), second years (n=33), and third-years (n=22). The demographic data collected included age range, gender, and the current year in the program.

It is pertinent to note the existing vulnerability of the participants. First-year students are enrolled in full-time didactic anesthesia doctoral coursework and sim lab simulation to prepare for entry into the clinical setting. Second-years are enrolled in part-time clinical rotations (2 days/week) plus didactic coursework along with sim lab simulation experience. Second-years initiate their doctoral research project and anesthesia reviews during their second year in preparation for the Self Evaluation Exam. Third-years students are enrolled in full-time clinical experience (4 days/week), including specialty anesthesia rotations. They are also working on finalizing their DNP project and self-review study in preparation for licensing exams. Seniors take supplemental seminar online coursework.

Inclusion criteria consist of all anesthesia students enrolled in the institution's nurse anesthesia program from May 2020 until 2022.

Exclusion criteria include the principal investigator (myself), CRNAs, other graduates and undergraduates from other specialties, medical students, CRNAs, and students lost in their program due to attrition or other personal reasons.

Spending time at the school during the implementation phase was considered a barrier due to the constraints in clinical practice. A weekly reminder email to all participants was sent to overcome this barrier. The educative portion of the study was available to all participants thru the online canvas platform for the entire time if their institution's credentials were active. A close communication with the content expert and the participants that reached out with any technical issues accessing the course was maintained.

A letter of site approval from the program director can be found in appendix E.

Measurement Instruments / Data Collection

An informative PowerPoint promoting mental health awareness was made available to all students via canvas. Qualtrics software program was used to disseminate and collect survey data. The data were collected utilizing a one-time survey. 2-established tools were utilized to ensure the validity of the results according to findings found in the literature. Within the canvas course, I provided detailed instructions on grading and scoring interpretation of the results and the tools for follow-up if needed. Once the participants signed the informed consent, they could proceed to the survey. An external window appeared, sending the participants to an anonymous Qualtrics platform. All the data from the surveys were collected utilizing Qualtrics software.

The investigator used different instruments to distribute and measure the outcomes of this DNP project. To assess for anxiety, The General Anxiety Disorder Scale (GAD-7), and to assess for depression, The Patient Health Questionnaire 9 (PHQ-9) were used (Hoying et al., 2020). Based on the literature, The PHQ-9 (Spitzer et al., 1999) is a 9-item tool that assesses depressive symptoms. Participants will rank their depressive symptoms on a 0 to 3 scale grading for the previous two weeks. The literature has found this tool to have a good sensitivity of .88 and specificity of .88, with Cronbach alphas above .87 (Hoying et al., 2020).

The GAD-7 (Spitzer et al., 2006) is a 7-item tool that assesses participants' anxiety levels for the previous two weeks from 0 to 3. The literature has demonstrated good sensitivity of .89, specificity of .89, and social anxiety of .72 (Hoying et al., 2020).

A third tool utilized was a survey developed by the principal investigator. This survey contained supplemental questions, including general open-ended questions, student performance, and perceptions of the program's support regarding mental health and how it affects clinical and academic performance.

Copies of the assessment tool can be found in the appendix F.

Ethical Considerations/Protection of Human Subjects

Due to the nature of this study, the confidentiality of the participants remained a priority. Marin University's Internal Review Board (IRB) approval was obtained before initiating the implementation phase of this DNP project. The surveys opened in an untraceable new window, and the results were collected anonymously. Demographically identifiable information from the participants was not collected. Clear information confirmed that the questionnaires were anonymous and voluntary.

Before participants completed the survey, implied consent was needed as a pre-requisite for the experimenter to receive the results anonymously. All the data collected using Qualtrics did not include any potential identifiers of the participants, the option to anonymize data was selected. The data results were kept digitally in a password-protected private computer with only access to the primary investigator. Students received instructions and provided detailed information on how to read their scores from each survey to preserve participants' privacy. Recommendations were given for each student to follow up with either in-campus counseling, out-of-campus counseling, or other resources where they can reach out for help.

IRB Determination Form Letter of Approval can be found in Appendix G.

Data Analysis

A method used for data collection in this cross-sectional study consisted of surveys sent to all SRNAs (N=87) currently enrolled in the nurse anesthesia program. The demographic data collected were age range and gender. To further describe the sample, we asked participants to specify their year of enrollment in the program. Supplementary general questions about students'

perceptions and development in academic and clinical performance were included and developed by the principal investigator (H. Urbaez) for a qualitative description of the data.

The investigator considered the PICO question to propose the following research questions and hypotheses:

RQ1: What is the relationship between depression level and year of training for SRNAs currently enrolled in the nurse anesthesia program?

H1₀: There is no significant difference in depression level and year of training for SRNAs currently enrolled in the nurse anesthesia program.

H1_a: There is a significant difference in depression level and year of training for SRNAs currently enrolled in the nurse anesthesia program.

RQ2: What is the relationship between anxiety level and year of training for SRNAs currently enrolled in the nurse anesthesia program?

H2₀: There is no significant difference in anxiety level and year of training for SRNAs currently enrolled in the nurse anesthesia program.

H2_a: There is a significant difference in anxiety level and year of training for SRNAs currently enrolled in the nurse anesthesia program.

RQ3: What is the relationship between depression level, anxiety level, year of training, and suicidality of SRNAs currently enrolled in the nurse anesthesia program?

H3₀: Depression level, anxiety level, and year of training do not significantly predict suicidality of SRNAs currently enrolled in the nurse anesthesia program.

H3_a: Depression level, anxiety level, and year of training significantly predict suicidality of SRNAs currently enrolled in the nurse anesthesia program.

All statistical analysis was conducted using SPSS software version 26. Before running the analysis, a data cleaning procedure was performed to ensure data quality. Listwise deletion was applied to cases with missing values. Descriptive statistics were performed to characterize the collected sample. A descriptive analysis was run to describe the continuous variables. Frequency analyses were conducted to interpret the scores on the PHQ-9 and GAD-7 using the scoring guidelines provided for these instruments.

The researcher executed two one-way ANOVAs to address the first and second research questions and conducted a logistic regression analysis to address the third research question. The dependent variables in the one-way ANOVAs are depression level and anxiety level; the independent variable in both these analyses is the year of training. Furthermore, the dependent variable in the logistic regression analysis is suicidality as measured by the survey question ‘Any thoughts of quitting during the anesthesia program?’, and the predictor variables are anxiety level, depression level, and years of training.

Before conducting these analyses, the investigator needed to evaluate their parametric assumptions. The assumptions of the one-way ANOVA assessed were: 1) the dependent variable is measured on a continuous scale, 2) the independent variable is measured on a categorical scale, 3) there are no significant outliers in any levels of the independent variable, 4) the data are normally distributed for each level of the independent variable, 5) there is the homogeneity of variances meaning that the variances of the dependent variable are approximately the same across the levels of the independent variable (Lund, 2021).

The first assumption is deemed reasonable as both the dependent variables of anxiety level and depression level are assumed to be measured on an interval scale. The second assumption is also valid as the independent variable of years of training is categorical with the three levels of

first-year, junior, and senior. The third assumption was tested by calculating standardized scores for the dependent variable for each category of the independent variable. Standardized values outside the range of -3.29 to 3.29 are considered significant outliers (Tabachnick & Fidell, 2013). Hence, to consider this assumption valid, all standardized values should be less than ± 3.29 . The fourth assumption was checked using Shapiro-Wilk's test of normality. Shapiro-Wilk test evaluates the null hypothesis that the data are normally distributed. Lastly, Levene's test of equality of variances was also conducted to assess the homogeneity of variances assumption. This test examines the null hypothesis that the variances are equal across the grouping variable. The significance level for both Shapiro-Wilk's and Levene's tests was determined at .05.

The assumptions of the logistic regression analysis were evaluated as follows: 1) the dependent variable is dichotomous, 2) there are one or more predictor variables measured at either a categorical or continuous level, and 3) the relationship between any continuous predictor variable and the logit transformation of the outcome variable should be linear (Lund, 2021).

The logistic regression model's first assumption is to be met as the outcome variable of suicidality measured using a survey item with two answer options of 'Yes' and 'No.' The second assumption is also valid as the continuous variables of anxiety level and depression level, the categorical variable of the year of training, are included in the model as the predictor variables. The third assumption of this model will be assessed using the Box-Tidwell test. This procedure includes the interaction term between each continuous variable and its natural *log* transformation in the logistic regression model. This assumption is assumed to be met if all interaction terms are found to be non-significant (Zeng, 2022).

Results

The surveys were distributed utilizing different links to maintain the integrity and validity of the surveys. Out of the 87 students that received the invitation, 45 participated in this project initially, with an overall response rate of 50.7%. Most participants reported being female, 23.4% (n=27), and male 14.7% (n=17). According to their year of training, the following participated: first-year n=20, second years (juniors) n=14, and third-years (seniors) n=11. The predominant age range among participants was 26-35 n= 33, 20-25 n= 3, 36-45 n= 7, 46-55 n= 2.

Descriptive Statistics

The initial sample contained information from 45 students. A data screening revealed that two participants did not respond to the Generalized Anxiety Disorder (GAD) and Parent Health Questionnaire (PHQ) questions. These participants were excluded from the analysis, resulting in a sample size of 43. Table 1 displays the frequency table for the categorical characteristics of the study sample. Of the 43 participants, 46.5% were first-year, 30.2% were junior, and 23.3% were senior students. Most of the students were female (58.1%). Nearly half of the students (53.5%) were aged 20-30 years old. Based on the participants' scores on the GAD, 27.9% indicated minimal anxiety, 20.9% indicated mild anxiety, 27.9% indicated moderate anxiety, and 23.3% indicated severe anxiety symptoms. In addition, using the PHQ, 25.6% were identified with minimal depression, 30.2% were identified with mild depression, 20.9% were identified with moderate depression, and 14.0% were identified with severe depression symptoms. Moreover, 95.3% indicated having signs of depression, or increased anxiety during the program, and 11% stated having thoughts of quitting during the anesthesia program. When asked whether they had ever felt the need to reach out for help during the program, 48.8% stated 'Yes'; among these respondents, only 9.3% said that the help available on campus had met their expectations. In addition, 16.3%

stated that the school did well reaching out and recognizing at-risk students throughout the program. 95.3% reported that SRNAs should be periodically screened for early signs of depression and increased anxiety throughout the program. 23.3% indicated that the school did a good job fostering SRNAs mental health throughout the program. 95.3% believed that SRNAs would benefit from a protocol that promotes mental health awareness and assists students at risk, and 90.7% said that the curriculum needed to include more time off for students between semesters.

Table 1

Frequency Table for Categorical Characteristics of the Sample (N = 43)

Categorical Characteristic		Frequency	Percent
Year of Training	First-years	20	46.5
	Second-years	13	30.2
	Third-years	10	23.3
Gender	Female	25	58.1
	One	17	39.5
Age	20-30	23	53.5
	31-40	15	34.9
	41-55	5	11.6
Anxiety Symptoms	Minimal	12	27.9
	Mild	9	20.9
	Moderate	12	27.9
	Severe	10	23.3
Depression Symptoms	Minimal	11	25.6
	Mild	13	30.2
	Moderate	9	20.9
	Moderately Severe	6	14.0
	Severe	4	9.3
Signs of depression, or increased anxiety during the program	No	2	4.7
	Yes	41	95.3
Suicidal thoughts during the program	No	38	88.4
	Yes	5	11.6
Thoughts of quitting during the anesthesia program	No	23	53.5
	Yes	20	46.5

Ever felt the need to reach out for help during the program	No	22	51.2
	Yes	21	48.8
The help available on campus meet their expectation	No	39	90.7
	Yes	4	9.3
The school does well reaching out and recognizing at-risk students throughout the program	No	36	83.7
	Yes	7	16.3
SRNAs should be periodically screened for early signs of depression, increased anxiety	No	2	4.7
	Yes	41	95.3
The school does a good job fostering SRNAs mental health throughout the program	No	33	76.7
	Yes	10	23.3
SRNAs will benefit from a protocol that promotes mental health awareness and assists students at risk	No	2	4.7
	Yes	41	95.3
The curriculum needs to include more time off for students between semesters	No	4	9.3
	Yes	39	90.7

Table 2 displays the descriptive statistics for the continuous variables. The seven items on the GAD were used to measure anxiety level, and the nine items on the PHQ were used to measure depression level. All these items were measured on a 4-point Likert scale with scores ranging from 0 = ‘Not at All’ to 3 = ‘Nearly Every Day’. The overall score for each of these variables was calculated as the sum of the scores for their respective items. Higher scores represent more severe symptoms. Anxiety scores ranged from 0 to 21 and had a mean of 9.51 ($SD = 6.13$). Depression scores ranged from 1 to 27 and had a mean of 9.58 ($SD = 6.18$). The skewness and kurtosis values suggested that the data distribution for these variables were not too skewed nor too peaked.

Table 2

Descriptive Statistics for the Continuous Variables

Variable	Min	Max	Mean	SD	Skewness	Kurtosis
Anxiety	0	21	9.51	6.13	0.26	-1.03
Depression	1	27	9.58	6.18	0.89	0.21

Assumption Testing

The researcher intended to use two one-way ANOVAs to evaluate the first and second research questions and logistic regression analysis to address the second research question. The dependent variable in the first ANOVA was depression level and in the second ANOVA was anxiety level. The independent variable in both analyses was the year of training with three levels first-year, junior, and senior. In addition, the dependent variable in the logistic regression analysis was suicidality, and the predictor variables were depression level, anxiety level, and year of training. The results of tests of assumptions for the one-way ANOVAs are detailed as follows.

The first assumption to evaluate was the absence of significant outliers in the data for each independent variable level. Z-scores were calculated for depression and anxiety levels for first-year, junior, and senior students separately (see Table 3). The values of ± 3.29 were used as the thresholds for identifying significant outliers. It was found that all standardized scores were between -3.29 and 3.29, suggesting that there were no significant outliers in the data. Thus, the absence of significant outliers' assumption was reasonable.

Table 3

Assessment of the Absence of Significant Outliers Assumption for the One-Way ANOVAs

Variable	Year of Training	N	Minimum Z-Score	Maximum Z-Score
Anxiety Level	First-years	20	-1.10	2.15
	Second-years	13	-1.72	1.62
	Third years	10	-1.34	1.11
Depression Level	First-years	20	-1.27	3.095
	Second-years	13	-1.29	1.48
	Third years	10	-1.15	1.85

Another assumption of the one-way ANOVAs was the normality of data for each level of year of training. The Shapiro-Wilk test of normality was utilized for this purpose. As shown in Table 4, there were significant departures from the normality assumption of anxiety level for the first-year ($SW(20) = .879, p < .05$) and senior students ($SW(10) = .838, p < .05$). In addition, the normality assumption of depression level was violated for the first-year students ($SW(20) = .860, p < .05$). These results indicated that the normality assumption of both one-way ANOVAs was violated as the data were not normally distributed across all levels of the independent variable. Thus, one-way ANOVA was not appropriate analysis for addressing the first and second research questions. Given that the assumption of normal was violated, the conducting of Levene's test of equality of variances to examine the homogeneity of variances assumption was not necessary. The Kruskal-Wallis H test, as a nonparametric alternative to one-way ANOVA, was utilized to evaluate these questions. This nonparametric procedure does not make any assumptions about the data distribution and therefore is robust to departures from normality.

Table 4

Results of Shapiro-Wilk Test of Normality for the One-Way ANOVAs

Variable	Year of Training	Shapiro-Wilk		
		Statistic	<i>df</i>	<i>Sig.</i>
Anxiety Level	First-years	.879	20	.017
	Second-years	.963	13	.799
	Third years	.838	10	.042
Depression Level	First-years	.860	20	.008
	Second-years	.919	13	.246
	Third years	.915	10	.318

After checking the assumptions of the one-way ANOVAs, the linearity assumption of the logistic regression model was also evaluated. This assumption was tested using the Box-Tidwell test by including the interaction term between each continuous variable and its natural *log* transformation in the logistic regression model. To consider this assumption valid, all interaction terms should be non-significant. The results of evaluating this assumption are provided in Table 5. Both interaction terms were non-significant; thus, the linearity assumption was supported.

Table 5

Evaluating the Linearity Assumption of the Logistic Regression Model

Variable	<i>B</i>	<i>S.E.</i>	Wald	<i>df</i>	<i>Sig.</i>
Anxiety	99.681	151.764	.431	1	.511
Depression	-52.726	80.103	.433	1	.510
Year of Training			.001	2	1.000
Year of Training: First Year	-92.744	12829.890	.000	1	.994
Year of Training: 2 nd -years	28.689	12157.647	.000	1	.998
Anxiety*LnAnxiety	-31.978	48.675	.432	1	.511
Depression*LnDepression	18.279	27.659	.437	1	.509

Research Question 1

The first research question was developed to determine whether there was a relationship between depression level and year of training for SRNAs currently enrolled in the nurse anesthesia program. Null Hypothesis 1 shows no significant difference in depression level and year of training for SRNAs currently enrolled in the nurse anesthesia program. To test this hypothesis, a Kruskal-Wallis *H* test was utilized with depression level as the dependent variable and year of training as the independent variable. This test showed no significant difference in the mean rank of depression level by year of training ($H(2) = 1.706, p = .426$). It can be concluded from these results that the

mean ranks of depression did not significantly vary between first-years ($M = 19.80$, $N = 20$), second-years ($M = 25.62$, $N = 13$), and third-years ($M = 21.70$, $N = 10$) students. Hence, these results did not provide evidence to reject Null Hypothesis 1.

Research Question 2

The second research question asked whether there was a relationship between anxiety level and year of training for SRNAs currently enrolled in the nurse anesthesia program. Null Hypothesis 2 shows no significant difference in anxiety level and year of training for SRNAs currently enrolled in the nurse anesthesia program. A Kruskal-Wallis H was performed to evaluate this hypothesis. In this analysis, the anxiety level was entered as the dependent variable, and the year of training was entered as the independent variable. This test showed no significant difference in the mean rank of anxiety by year of training ($H(2) = 1.754$, $p = .416$). These results indicated the mean ranks of anxiety did not significantly differ between first-years ($M = 19.80$, $N = 20$), second-years ($M = 25.69$, $N = 13$), and third-years ($M = 21.60$, $N = 10$) students. Hence, no support was provided to reject Null Hypothesis 2.

Research Question 3

The third research question asked whether there was a relationship between depression, anxiety, year of training, and suicidality of SRNAs currently enrolled in the nurse anesthesia program. Null Hypothesis 3 is that depression, anxiety, and year of training do not significantly predict the suicidality of SRNAs currently enrolled in the nurse anesthesia program. A logistic regression analysis was conducted to test this hypothesis. In this analysis, suicidality was entered as the outcome variable, and depression, anxiety, and year of training were entered as the predictor variables. Year of training was included as a categorical variable, and its reference category was senior.

The omnibus test results of model coefficients showed that the model provided a significantly better fit than the null model with no predictors (the intercept-only model), $\chi^2(4) = 17.646$, $p = .001$. Nagelkerke R square value of .656 and Cox & Snell R square value of .337 were calculated for this model. The Hosmer and Lemeshow test results suggested that the model fit the data well, $\chi^2(8) = 2.915$, $p = .940$. The classification table for this model is provided in Table 6. The model correctly predicted all 38 ‘No’ responses. The model also correctly predicted three (60.0%) out of the five ‘Yes’ responses. Overall, the model correctly predicted 95.3% of the responses.

Table 6

Classification Table for the Logistic Regression Model

		Predicted		
		Suicidality Thoughts		Percentage Correct
		No	Yes	
Observed				
Suicidality	No	38	0	100.0
Thoughts	Yes	2	3	60.0
Overall Percentage				95.3

The parameter estimates for this regression model are reported in Table 7. Even though the model provided a good fit to the data, none of the predictor variables significantly contributed to the model ($p > .05$). Overall, these results suggest that the three predictor variables of anxiety level, depression level, and year of training combined significantly contribute to the model, but none of these predictor variables independently predicted the outcome variable. These results provided

support to reject Null Hypothesis 3, showing that depression level, anxiety level, and year of training combined significantly contributed to the outcome variable of suicidality.

Table 7

Parameter Estimates for the Logistic Regression Model

Variable	<i>B</i>	<i>S.E.</i>	Wald	<i>Df</i>	<i>Sig.</i>
Anxiety	-0.388	0.269	2.079	1	.149
Depression	0.486	0.277	3.070	1	.080
Year of Training			1.208	2	.547
Year of Training: First Year	-20.476	7365.576	0.000	1	.998
Year of Training: Junior	2.112	1.921	1.208	1	.272

Discussion

This study assessed the incidence of increased stress, anxiety and their correlation with depression and suicidal thoughts for students enrolled in a doctoral nurse anesthesia program. The qualitative analysis helped to attain a more profound knowledge of the student's perceptions of their mental well-being. Second-year students and seniors are involved in direct patient care during their anesthesia practice. Studies have shown that increased stress, anxiety, and burnout are direct factors that can hinder safe anesthesia delivery, placing patients at risk. Promoting SRNAs to be at their best physical and mental well-being throughout their training is imperative. The results of this study indicated that 27.9% and 23.3% scored moderate to severe anxiety utilizing the GAD-7. Additionally, 20.9% and 14% were identified with moderate to severe depression using the PHQ-9 tool. More disturbing is that 95.3 % indicated having signs of depression or increased anxiety, and 11% had thoughts of quitting the program. These results are alarming, suggesting that in this program, students encounter a low level of well-being and high levels of distress, potentially

affecting their mental health. Most participants implied they would benefit from periodical screening for early signs of depression and anxiety.

Even though the common expectation is to abide that a high-stress career such as nurse anesthesiology is expected to be stressful, it is seen as the norm; in reality, it should not be overlooked. This study's results implore changes in the program and the incorporation of resources to give the students the essential tools to cope with increased stress and burnout. 95.3% of the participants stated that they would benefit from a protocol encouraging mental health awareness. Reinforcing a culture of support and guidance will be a vital component in SRNAs education. It is important to know that students' wellness should begin with the implementation of ideas. Anesthesia programs need to start building a safe space where students can connect with classmates at another level on those so-called periodical wellness days. As we continue learning more about the consequences of distress among students, we must promote a safety culture starting today.

Research questions and hypotheses that addressed the aims of the project were developed. The results of the tests showed no significant differences between depression and anxiety levels and year of training. What was demonstrated is the relationship that exists when all the variables live in combination, then there is an increased risk of suicidality.

The investigator found some limitations to this study. The sample size was limited to a single academic organization. To further reduce the sample size, participation was voluntary, which further reduced the sample number. Although the response was low, the expectation is to continue expanding participation.

95.3% of the participants remarked that SRNAs should be periodically screened for early signs of depression and anxiety. Hence, further research is advised on this subject. Future

recommendations must be enforced in anesthesia programs to assess the progression of well-being among first-years, juniors, and seniors. It will be intriguing to conduct more research, including the entire sample size of participants for results comparison. Additional research will be needed to find ways how to track the student's responses over time.

A systematic protocol needs to be created to assist those that are having suicidal thoughts and are at imminent risk of a mental crisis. There was an overwhelming reaction to increasing distress among students, and implications for future practice urge the school program director to research ways to encourage mental health awareness and screenings to promote student well-being. A wellness initiatives program, psychological consultation, and guidance tailored to the student's needs are explicitly recommended.

Conclusion

Increased stress can lead to a myriad of physical and psychological manifestations. Graduate students in anesthesia are exposed to physical, emotional, and financial stressors. The results of this study emphasized the heightened levels of anxiety, depression, and suicidal thoughts some students are experiencing. These results showed the need for interventions to help students deal with these stressors. Suicide can be preventable. Awareness is the key to building an inclusive culture to encourage students to learn and manage their stress positively. One student that responded positively to experiencing suicidal thoughts should be enough for anesthesia programs to shift their focus on making changes and finding ways to reach out at a personal level. Implementing wellness activities, a robust screening program, and providing students with the necessary tools to promote a healthy experience during anesthesia training should be a priority and a critical suggestion.

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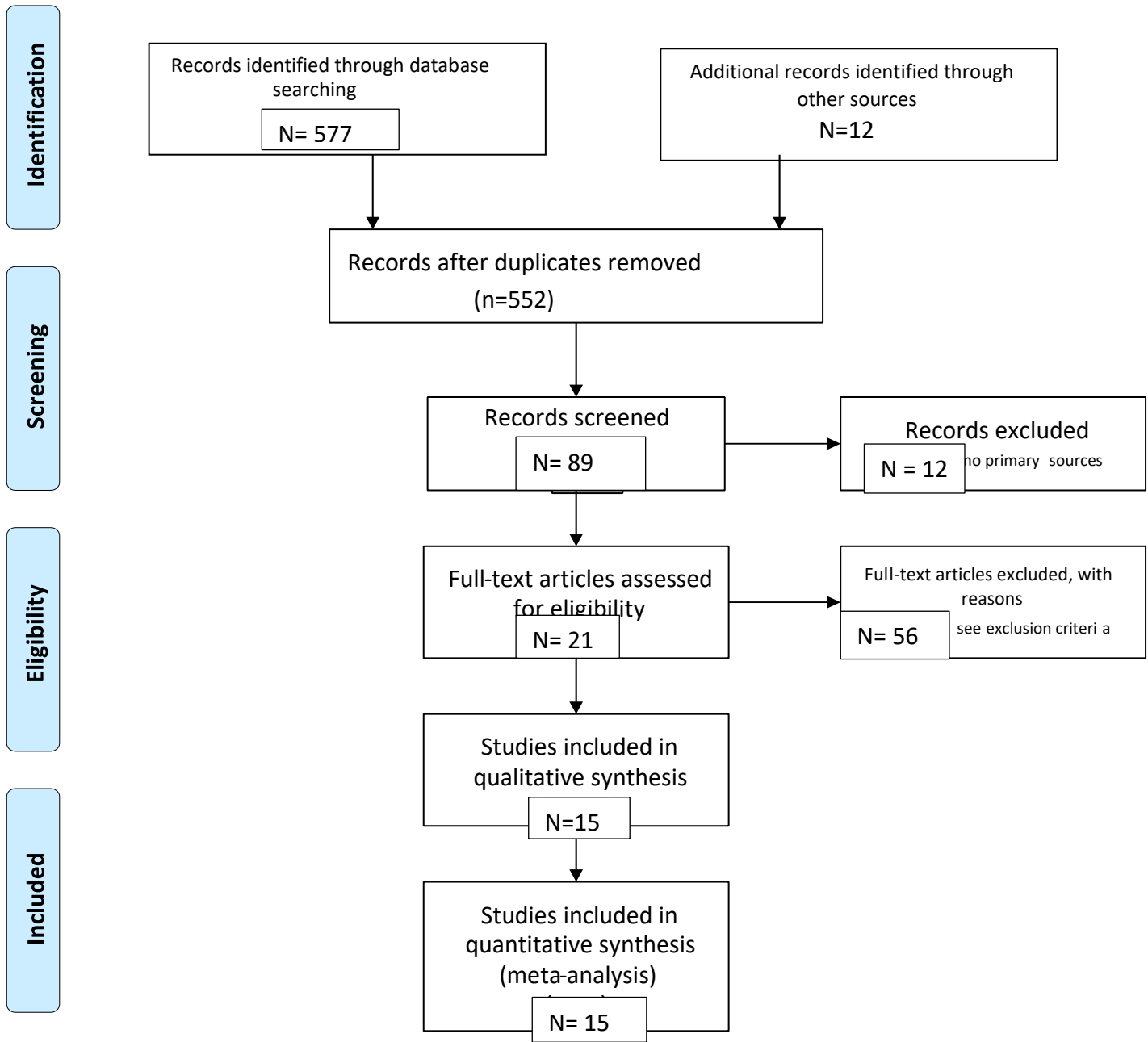
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Appendix A – PRISMA Diagram

Appendix B – Literature Matrix

Reference	Design Level of Evidence	Purpose / Aim	Population Sample n=x	Instrument Data Collection	Results	Implications for Future Research	Implications for Future Practice
Hoying, J., Melnyk, B. M., Hutson, E., & Tan, A. (2020). Prevalence and Correlates of Depression, Anxiety, Stress, Healthy Beliefs, and Lifestyle Behaviors in First-Year Graduate Health Sciences Students. <i>Worldviews on evidence-based nursing</i> , 17(1), 49–59. https://doi.org/10.1111/wvn.12415	Descriptive correlational study	The purpose is to analyze the preponderance of depression, anxiety and increased stress in first-year science-based students & to determine predictors of depression and anxiety (Hoying et al., 2020).	N= 197 first year graduate health sciences students (Hoying et al., 2020).	Participants completed a personal wellness assessment survey including healthy lifestyle behaviors scale (HLBHS), patient health questionnaire 9 (PHQ-9) and general anxiety disorder scale (GAD-7) (Hoying et al., 2020).	Mild depressive symptoms 84.8%, moderate 13.2%, severe 1%, moderate anxiety 7.65, severe 6.6%. Lastly, 6.6% responded positively to suicidal thoughts (Hoying et al., 2020).	Translation of evidence-based interventions to practice needs to be accelerated. We must place more emphasis on prevention to sustained improvements in mental health outcomes (Hoying et al., 2020).	Graduate-level learners should be screened for mental health wellness following admission into their programs, and universities should integrate CBT based interventions in their curriculum to enhance health outcomes (Hoying et al., 2020).
Davidson, J. E., Zisook, S., Kirby, B., DeMichele, G., & Norcross, W. (2018). Suicide Prevention: A Healer Education and Referral	Quality improvement project	The aim of this study is to detailed a suicide prevention program created for nurses	Between 2009-2016, n=1558 medical students completed the online questionnaire	Healer education, assessment, and referral program (HEAR) has 2 approaches: the 1 st a series of didactic	Out the individuals that completed the interactive survey program (ISP)	Deficiency validating the complete ISP and low response rate. Plan to provide continuing education	Although the response was low, the expectation is to grow response rate to encourage nurses not receiving

Program for Nurses. <i>The Journal of nursing administration</i> , 4 8(2), 85–92. https://doi.org/10.1097/NNA.0000000000000582		(Davidson et al., 2018).	(Davidson et al., 2018).	displays supplying education about depression, suicide, and function of the program. The 2 nd is an encrypted, anonymous web-based screening assessment to proactively recognize and direct students in danger of developing depression (Davidson et al., 2018).	containing the 9-item Patient Health Questionnaire (PHQ-9), n=112 dialogued with the program counselor for formal health evaluation. N=172 nurses, 44 received counseling, 17 accepted referrals for further treatment (Davidson et al., 2018).	and shifting the focus to resiliency with the hopes to draw larger audiences (Davidson et al., 2018).	treatment and in a great need for help (Davidson et al., 2018).
Jaulin, F., Nguyen, D. P., Marty, F., Druette, L., Plaud, B., Regional coordinators of teaching in Anaesthesia and Intensive Care, Duret, C., & Fletcher, D. (2021). Perceived stress, anxiety and depressive symptoms among anaesthesia and intensive care residents: A French national survey. <i>Anaesthesia, critical care & pain medicine</i> , 40(3), 100830.	Observational study	To support the efforts at managing operational time and schedules. Enhancing detection and care of anguish anesthesia residents (Jaulin et al., 2021).	2,302 French Anesthesia residents. 22.5% responded the survey (Jaulin et al., 2021).	A national online observational study used validated questionnaires (hospital anxiety and depression scale HADS), depression scales (perceived stress scale PSS), burnout (Copenhagen burnout inventory CBI) and work-related questions to assess mental health and well-being (Jaulin et al., 2021).	19.8% described symptoms of anxiety, 7.8% depressive symptoms. A high stress was identified for 55.7%, 38.9% burnout and depression (Jaulin et al., 2021).	Further studies are recommended where a comparison with other data can be allowed. The limits of the study are linked to declarative questionnaire without an approval by clinical exam. A larger student response is needed (Jaulin et al., 2021).	The study inform an elevated frequency of anxiety, depressive symptoms and burnout among students that are working and studying (Jaulin et al., 2021).

https://doi.org/10.1016/j.accpm.2021.100830							
Davidson, J. E., Accardi, R., Sanchez, C., Zisook, S., & Hoffman, L. A. (2020). Sustainability and Outcomes of a Suicide Prevention Program for Nurses. <i>Worldviews on evidence-based nursing</i> , 17(1), 24–31. https://doi.org/10.1111/wvn.12418	PDSA model	The purpose is to report the three-year sustainability and results from a program to hinder suicide among nurses (HEAR) (Davidson et al., 2020).	527 nurses In the span of 3 years. 48% high risk, 51.2% moderate risk, 9% suicide risk (Davidson et al., 2020).	The HEAR program was utilized. The PDSA model of improvement was used to organize the project. The anonymous screening portion was used to identify compromised individuals at through online screening (9-item patient health questionnaire PHQ-9) (Davidson et al., 2020).	In the span of 3 years 53-56% of nurses' reports feeling burned out. 49-60% felt emotionally drained. An average of 155-187 per year completed screening. 26-40 referrals were made per year and most individuals referred ratified suicidality (Davidson et al., 2020).	Additional research is required to establish whether the HEAR program attenuates burnout and its repercussion (Davidson et al., 2020).	Reproduction of the program is suggested due to the conclusion that job stressors compromise nurses. Dissemination would enhance the general health of the nurses (Davidson et al., 2020).
Sun, H., Warner, D. O., Macario, A., Zhou, Y., Culley, D. J., & Keegan, M. T. (2019). Repeated Cross-sectional Surveys of Burnout, Distress, and Depression among Anesthesiology Residents and First-year Graduates. <i>Anesthesiology</i> , 131(3), 668–677. https://doi.org/10.1016/j.anes.2019.05.010	Cross sectional survey study	The goal of this study is to measure the popularity of burnout, anxiety, and depression in anesthesia residents and identify their associated factors	Sample size of Anesthesia residents 36% 5,295 out of 14,529 invitations sent (Sun et al., 2019).	Annually online surveys to students attending clinical up to a year after graduation. The Maslach burnout inventory, the physician well-being index and the Harvard depression screening day scale were used (Sun et al., 2019).	Prevalence of burnout 51%, distress 32% and depression 12% (Sun et al., 2019).	More research is needed to possible track individual responses over time (Sun et al., 2019).	Burnout, distress, and depression are common among anesthesia residents. Perceived institutional support, workload, student debt impacts the anesthesia student well-being (Sun et al., 2019).

.1097/ALN.00000000002777		(Sun et al., 2019).					
Downs, N., Feng, W., Kirby, B., McGuire, T., Moutier, C., Norcross, W., Norman, M., Young, I., & Zisook, S. (2014). Listening to depression and suicide risk in medical students: the Healer Education Assessment and Referral (HEAR) Program. <i>Academic psychiatry: the journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry</i> , 38(5), 547–553. https://doi.org/10.1007/s40596-014-0115-x	Observational study	The use of a 4-year trial of the HEAR program, to increase mental health services application and reduce suicide danger at one US medical school (Downs et al., 2014).	Out of 1,008 medical students 34% (343/1,008) completed the online screening portion (Downs et al., 2014).	Over four years, medical students were occupied attending in-person educational programs. An online survey, including the 9-item patient health questionnaire (PHQ-9), was used to evaluate for depression and suicidal ideation (Downs et al., 2014).	8% met the criteria for high suicidal risk; 10 out of 13 students who interviewed with a counselor were not getting mental health treatment (Downs et al., 2014).	The authors recommend that future multisite analyses are required to include a comparison group, formulate a baseline, and use an anonymous identification system to gauge changes in participants' mental health status (Downs et al., 2014).	This novel interventional program identifies at risk, potentially suicidal medical students (Downs et al., 2014).
Rubanovich, C. K., Zisook, S., & Bloss, C. S. (2021). Associations Between Privacy-Related Constructs and Depression aSuicide Risk in Health Care Professionals, Trainees, and Students. <i>Acade</i>	Observational study	This study evaluated the relationship between privacy-related constructs and self-rates depression and suicide risk	N=1,224 respondents were included (Rubanovich et al., 2021).	Utilizing linear and logistic regression models. An anonymous online screening with the choice to provide personal demographic was used	43% reported moderate depression; 1 in 5 reported worries about stigma for seeking mental health services (Rubanovich	New researchers need to assume privacy-related constructs may help pinpoint health care professionals and students undergoing	Privacy-related constructs correlations of mental health as a respondent who endorsed these constructs had increased probabilities of more threatening

<i>mic medicine: journal of the Association of American Medical Colleges.</i>		among healthcare professionals, trainees, and students (Rubanovich et al., 2021).		(Rubanovich et al., 2021).	h et al., 2021).	distress and in need of imminent mental health resources (Rubanovich et al., 2021).	depression and suicidal ideation and behaviors (Rubanovich et al., 2021).
Horvath, C., & Grass, N. (2021). Pandemic, Economic Uncertainty, and Protests: What Will Happen to Student Registered Nurse Anesthetists--Resiliency or Burnout?. <i>AANA journal</i> , 89(5), 413–418.	Meta-Analysis is Expert opinion	The aim is to control burnout, foster resilience, and reduce the risk of severe mental health conditions in nurse anesthesiology programs (Horvath & Grass, 2021).	Data reports of 47% of SRNAs with depression and 21% had suicidal ideation (Horvath & Grass, 2021).	Other sources	A meta-analysis reviewed a 22.8% depression, 38.9% insomnia among healthcare professionals. Another systematic review found SRNAs with risk factors for burnout, heightened emotional requirements, economic uncertainty, and social isolation (Horvath & Grass, 2021).	The recommendations consist of to provide a wellness initiative and additional strategies to decrease the risk of burnout and foster quality of life (Horvath & Grass, 2021).	SRNAs have a higher chance of mental health problems such as anxiety, depression, and post-traumatic stress. Nurse Anesthesia programs must research ways to encourage students' well-being by reducing risks. (Horvath & Grass, 2021).
Melnyk, B. M. (2020). Burnout, Depression and Suicide in Nurses/Clinicians and Learners: An Urgent Call for Action to Enhance Professional Well-being and	Editorial article Expert opinion	To bring awareness for the alarming rise of depression and burnout among nurses, physicians	None	Data obtained by reviewing pertinent literature	Depression ranges from 25-43% of nurses. Learners experienced high incidences of stress, burnout, and depression	Organizations must sponsor additional research on this issue. Randomized controlled trials are required to define the	The death of a student to suicide is irreparable. We must overcome the current barriers and translate evidenced-based

Healthcare Safety. <i>Worldviews on Evidence-Based Nursing</i> , 17(1), 2–5. https://doi.org/10.1111/wvn.12416		, and nurses' learners (Melnyk, 2020).			(Melnyk, 2020).	usefulness of these guidelines to dissuade depression and suicidal ideation among students (Melnyk, 2020).	interventions quickly into interventions to reduce burnout, depression and revive joy (Melnyk, 2020).
Wang, J., Song, B., Shao, Y., & Zhu, J. (2021). Effect of Online Psychological Intervention on Burnout in Medical Residents From Different Majors: An Exploratory Study. <i>Frontiers in psychology</i> , 12, 632134. https://doi.org/10.3389/fpsyg.2021.632134	Exploratory study	This study aimed to analyze the incidence of burnout, anxiety, depression in medical residents from different majors (Wang et al., 2021).	N= 210 medical residents (Wang et al., 2021).	They conducted an online survey utilizing the depression, anxiety, and stress scale (DASS), the Maslach burnout inventory (MBI). SPSS 20.0 statistical software was used for data analysis (Wang et al., 2021).	Anesthesia residents produced the highest level of depression, anxiety, stress, higher emotional status, lower sense of personal accomplishment and higher depersonalization (Wang et al., 2021).	The authors recommend more research studies aim to anesthesia residents with the hopes to increase psychological consultation and guidance to prevent manage stress-related problems (Wang et al., 2021).	The online psychological intervention utilized effectively improved the psychological problems in medical residents (Wang et al., 2021).
Horwitz, A. G., McGuire, T., Busby, D. R., Eisenberg, D., Zheng, K., Pistorello, J., Albucher, R., Coryell, W., & King, C. A. (2020). Sociodemographic differences in barriers to mental health care among	Descriptive study	The purpose is to directly compare barrier classifications as a role of gender, race, school status, a high chance for suicide,	n=3,358 college students from 4 US universities who screened positive for high suicide risk (Horwitz et al., 2020).	Confidential online screening. The patient health questionnaire-2 (PHQ-2) to screen for depression and the PHQ-9, The alcohol use disorder identification test (AUDIT). Data analysis	Depression (75%), suicidal ideation (87%), heavy alcohol (26%) (Horwitz et al., 2020).	Future indications in this line of research are needed to add direction for marginalized groups and to establish and evaluate interventions and programs	Financial concerns are more outstanding for women, minorities; privacy and stigma for men and young; cultural sensitivity for minorities (Horwitz et al., 2020).

college students at elevated suicide risk. <i>Journal of Affective Disorders</i> , 271, 123–130. https://doi.org/10.1016/j.jad.2020.03.115		and not taking mental health treatment (Horwitz et al., 2020).		using SPSS 24 (Horwitz et al., 2020).		that target mental health (Horwitz et al., 2020).	
Drum, D. J., Brownson, C., Hess, E. A., Burton Denmark, A., & Talley, A. E. (2017). College Students' Sense of Coherence and Connectedness as Predictors of Suicidal Thoughts and Behaviors. <i>Archives of Suicide Research</i> , 21(1), 169–184. https://doi.org/10.1080/13811118.2016.1166088	Peer-reviewed research article	This structural equation modeling analysis strived to examine the association between college student's understanding of coherence and connectedness and their development of suicidal ideas and actions (Drum et al., 2017).	N=26,742 undergraduate and Graduate students at 74 universities (Drum et al., 2017).	To analyze a questionnaire containing 79-items a model of structural equation was used. The followed variables such as vulnerability, coherence, connectedness distress and suicidality were used (Drum et al., 2017).	Findings suggest that by adding connectedness and coherence to deter suicidal ideation, structural programs will raise the effectiveness of the preventive program (Drum et al., 2017).	To rescue existing conditions of health and to facilitate well-being, institutions need to create more research studies to make changes to student's physical, interpersonal and social ecology (Drum et al., 2017).	Heightening ecological contributions to experiences that improve self-confidence and transform negatives into positives will enhance individuals' strength and stability (Drum et al., 2017).

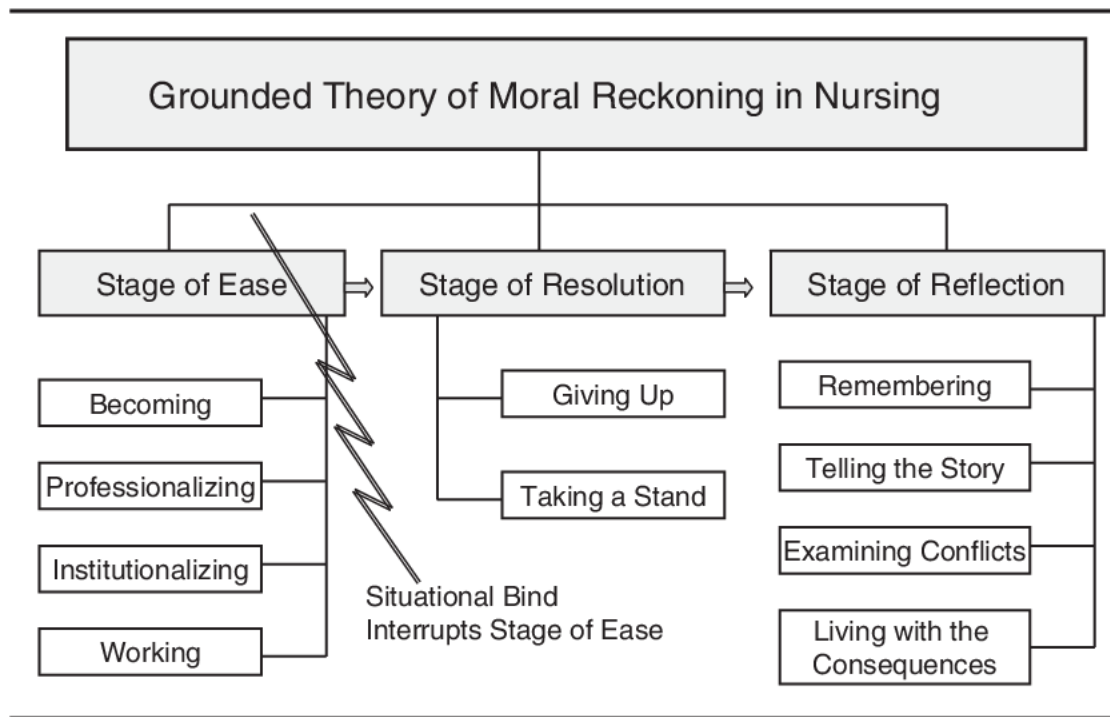
Appendix C – Theoretical Framework

Figure 1. Depicts a visual presentation of the Theory of Moral Reckoning framework. (Nathaniel, A.K. 2006).

Appendix D – SWOT Analysis

SWOT ANALYSIS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
• The project will be implemented at Marian University • An educational presentation will be disseminated via canvas currently accessible to every student • There is a counseling department available on campus to assist with referrals • Students will receive notifications via school email and canvas • The health questionnaire will be accessible at no cost for students • Survey will be anonymous to preserve privacy for the participants	• Since student's participation is voluntary, there may not be enough students participating in the survey. • Participants will pose a resistance and decrease receptivity to the project due to the stigma and sensibility of the subject • Due to the survey results being completely anonymous, following up with "high-risk" students will be challenging. • Students not feeling comfortable filling out the questionnaire	• The on-campus counseling department will have positive feedback for those students at risk • The CRNA program faculty will have an opportunity to continue screening patients consistently • Faculty can encourage students to participate in the project	• Any change in technology may interfere with the dissemination of the presentation into the canvas interface. • The on-campus counseling department will have more requirements to initiate a referral process for those students "at risk," making it more difficult and time-consuming for those students to receive initial help.

Appendix E – Project Site Agreement Letter

To whom it may concern,

Hiranya Urbaez has permission to conduct her DNP project about analyzing the correlation and incidence of increased burnout, stress and anxiety with depression and suicidal ideation among first years, juniors and seniors during their progression through the Nurse Anesthesia training program.

Thank you,

A handwritten signature in black ink, appearing to read "Brad Stelflug".

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Appendix F – Measurement Tools

GAD-7				
Over the <u>last 2 weeks</u> , how often have you been bothered by the following problems? (Use "✓" to indicate your answer)	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3
(For office coding: Total Score T___ = ___ + ___ + ___)				

The GAD-7 was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered
by any of the following problems?
(Use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + + +
=Total Score:

If you checked off any problems, 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?

Not difficult at all ☐	Somewhat difficult ☐	Very difficult ☐	Extremely difficult ☐
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Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

General Questions Survey – Developed by the Principal Investigator

- 1- Have you experienced any signs of depression, increased or worsening anxiety, and/or burnout during the program?
- 2- Have you experienced suicidal thoughts at any time during the program?
- 3- Have you had any thoughts of quitting during the anesthesia program?
- 4- Do you ever need to reach out for help during the program?
- 5- Suppose you answered yes to the previous question. Did the help available on campus meet your expectations?
- 6- Do you feel the school does well reaching out and recognizing at-risk students throughout the program?
- 7- Do you agree that SRNAs should periodically be screened for early signs of depression, increased anxiety, and burnout throughout the program?
- 8- Do you feel the school does a good job fostering SRNAs mental health throughout the program?
- 9- Do you think SRNAs will benefit from a protocol that promotes mental health awareness and assists students at risk?
- 10- Do you believe the curriculum needs to include more time off for students between semesters?
- 11- Specify your year of training
- 12- Please Specify your gender
- 13- Choose an Age range: 20-25, 26-30, 31-35, 36-40, 41-45, 46-50, 51-55
20-30. 31-40. 41-55

Appendix G – IRB Approval Letter



Institutional Review Board

DATE: 08-18-2022
TO: Hiranya Urbaez & Dr. Lee Ranalli
FROM: Institutional Review Board
RE: S22.151
TITLE: Analysis for the Correlation of Increased Stress and Burnout with Depression and Suicidal Thoughts Experienced by SRNAs During their Nurse Anesthesia Training
SUBMISSION TYPE: New Project
ACTION: Determination of EXEMPT Status
DECISION DATE: 08-18-2022

The Institutional Review Board at Marian University has reviewed your protocol and has determined the procedures proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol and you are cleared to proceed with your project. The protocol will remain on file with the Marian University IRB as a matter of record. Please be mindful of the importance of reporting only de-identified, HIPPA-compliant information about the patient in any exhibit or publication.

Although researchers for exempt studies are not required to complete online CITI training for research involving human subjects, the IRB **recommends** that they do so, particularly as a learning exercise in the case of student researchers. Information on CITI training can be found on the IRB's website: <http://www.marian.edu/academics/institutional-review-board>.

It is the responsibility of the PI (and, if applicable, the faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project. Please contact me if you are unsure whether your proposed modification requires review. Proposed modifications should be addressed in writing to the IRB. **Please reference the above IRB protocol number in any communication to the IRB regarding this project.**

A handwritten signature in blue ink, appearing to read "Amanda C. Egan", written over a horizontal line.

Amanda C. Egan, Ph.D.

Appendix H – CITI Training Certificate

