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## **Evaluation of Delivery Methods of Chemical Dependency and Wellness Education**

Marissa Coggin

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EVALUATION OF DELIVERY METHODS OF CHEMICAL DEPENDENCY AND  
WELLNESS EDUCATION

by

Marissa Lynn Coggin

A Capstone Project  
Submitted to the Graduate School,  
the College of Nursing,  
and the Department of Advanced Practice  
at The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Nursing Practice

December 2017

EVALUATION OF DELIVERY METHODS OF CHEMICAL DEPENDENCY AND  
WELLNESS EDUCATION

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December 2017

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## ABSTRACT

### EVALUATION OF DELIVERY METHODS OF CHEMICAL DEPENDENCY AND WELLNESS EDUCATION

by Marissa Lynn Coggin

December 2017

Anesthesia practice is learned in a stressful environment, and these stressors may lead to the students' development of maladaptive coping mechanisms. Despite significant improvements in our understanding of addiction and our approaches to combat this problem, the risk of substance misuse remains high in nurse anesthesia students. Education and intervention are imperative when taking preventative measures. The purpose of this Doctor of Nursing Practice (DNP) project was to determine whether delivery method of chemical dependency/wellness educational program effects the level of understanding of anesthesia providers and substance misuse and the development of healthy coping mechanisms.

In determining whether the delivery method of chemical dependency/wellness educational program influences the level of understanding regarding substance misuse and healthy coping mechanisms, a systemic review of literature was conducted. Following the analyzation of the evidence from the review of literature, the goal was to develop, implement, and evaluate an effective classroom setting chemical dependency/wellness educational program at The University of Southern Mississippi's Nurse Anesthesia Program. To evaluate this chemical dependency/wellness program, a pre and posttest was administered before and after the program to students entering the nurse anesthesia program in January of 2017. A retrospective posttest was also

administered to the students who began the program in January of 2015 and January of 2016 after completing the previously established online chemical dependency/wellness program.

The results of these tests were compared to the results of the students who began the program in January of 2017 using. The results indicated that there was a significant improvement in perceived knowledge following chemical dependency and wellness education. However, the results were inconclusive as to whether one method is more effective than another. This project's results indicated only a significance between the first and second year students. Chemical dependency and wellness education is a necessary component of the nurse anesthesia curriculum; however, the results did not conclude that one delivery method was significantly more effective than another.

## ACKNOWLEDGMENTS

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## DEDICATION

I dedicate this DNP project to my parents. Without their continued love and support this journey would not have been possible. I would also like to thank all of my family and friends who have supported throughout the doctorate program.



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## LIST OF ABBREVIATIONS

<i>SRNA</i>	Student Registered Nurse Anesthetist
<i>DNP</i>	Doctorate of Nursing Practice
<i>CINAHL</i>	Cumulative Index to Nursing and Allied Health Literature
<i>CRNA</i>	Certified Registered Nurse Anesthetist
<i>IRB</i>	Internal Review Board

## CHAPTER I – INTRODUCTION

Substance misuse among healthcare providers continues to be problematic.

Despite significant improvements in our understanding of addiction and our efforts to fight this disease, outcomes have not substantially changed. Substance misuse among anesthesia providers is a serious issue affecting patient care and patient outcomes.

Bozimowski, Rouen, & Dosch (2014) conducted a study in which an electronic survey was sent to 111 program directors of accredited nurse anesthesia programs in the United States. “Sixteen incidents of substance abuse were reported for a 5-year prevalence of 0.65%” (Bozimowski, Groh, Rouen, & Dosch, 2014, p. 277). Only seven of the programs studied had chemical dependency/wellness educational offerings. Implementing an effective chemical dependency and wellness educational program into the curriculum of nurse anesthesia programs may significantly decrease the number of anesthesia providers who suffer from substance use disorder. Education and intervention are critical components in the prevention of accidental death by overdose and sentinel events caused by impaired anesthesia providers.

Anesthesia practice is learned in a stressful environment. Student registered nurse anesthetists (SRNAs) often feel overloaded with coursework and the acceptance of no longer being the expert but a novice in a new environment. In the surgical setting, the reality that the actions taken by the SRNA has potential to cause adverse outcomes for the patient may ultimately lead to high stress levels. “Stress can result in disruption in relationships, fatigue, headaches, gastrointestinal disturbances, weight loss or gain, insomnia, depression, even addictive behavior” (Chipas & McKenna, 2011). Obtaining

accuracy and frequency of substance misuse among student nurse anesthetists is a difficult task due to legal concerns, the sensitivity of the subject, and licensure issues.

### Clinical Question

In SRNAs, is chemical dependency and wellness education in the classroom setting compared with online chemical dependency and wellness education more effective in improving substance use disorder knowledge and the development of healthy coping mechanisms? This clinical question involves many variables that were examined independently in regards to the effectiveness of chemical dependency and wellness education curriculum.

### Problem Statement

The practice of anesthesia is learned in a stressful environment. SRNAs often feel overloaded with coursework and struggle with the acceptance of no longer being the expert but a novice in a new environment. Stressors related to nurse anesthesia school may lead to the students' development of maladaptive coping mechanisms. In January of 2013, the Council on Accreditation mandated all nurse anesthesia programs adopt a wellness/chemical dependency program in an attempt to address this issue (The Council on Accreditation, 2015).

At a minimum, nurse anesthesia programs are required to adopt a wellness/chemical dependency program that is evidence-based and includes five components—importance of wellness to healthcare professionals, healthy lifestyles, coping mechanisms, identification and intervention, and reentry into the workplace (The Council on Accreditation, 2015). Despite significant improvements in our understanding

of addiction and our approaches to combat this problem, outcomes have not substantially changed. The risk of substance misuse remains high in nurse anesthesia students.

Determining the effectiveness of various wellness and chemical dependency programs is necessary to identify best practices. Analysis of the programs will assist in defining the most effective program to implement into the nurse anesthesia curriculum. The overwhelming incidence of substance misuse among anesthesia providers and the high risk of adverse outcomes that result from this misuse make it imperative to seek a solution.

### Significance and Background

Substance misuse among anesthesia providers may result in accidental overdose or sentinel events resulting in death or permanent loss of function.

The incidence of addiction in the anesthesia profession is estimated to be 10% to 15% of the population, the same as in the general population. Given that there are approximately 80,000 anesthesia providers in the United States, a 10% to 15% incidence translates to 8,000 to 12,000 anesthesia providers who might be abusing the very drugs they are administering to their patients (Valdes, 2014, p. 95).

Substance abuse among anesthesia providers is a serious professional risk that could potentially be prevented. Unintentional death of either the anesthesia provider or the patient is frequently the first sign of substance misuse (Valdes, 2014, p. 95). Approximately 10-15% of healthcare providers will succumb to chemical dependency at some point in their career (Lord, Magro, & Zwerling, 2010).

SRNAs suffer from a variety of symptoms and illnesses that have been associated with high levels of stress (Chipas et al., 2012). According to Chipas et al. (2012),

agitation, chronic back and neck pain, headaches, obesity, high blood pressure, gastroesophageal reflux disease, compulsions, and substance misuse are not usually experienced by persons younger than 30, but they are experienced in great numbers by SRNAs. “It has been noted that risks for misuse are high for nurse anesthesia students in their formative educational years” (Bozimowski, Groh, Rouen, & Dosch, 2014, p. 277). Many other risk factors increase the incidence of substance misuse among SRNAs, including an excitement-seeking personality, intimate understanding of medications, and enabling of coworkers and/or classmates (Valdes, 2014).

#### Purpose of the Project

The purpose of this Doctor of Nursing Practice (DNP) project was to determine whether method of chemical dependency/wellness educational program effects the level of understanding of anesthesia providers and substance misuse and the development of healthy coping mechanisms. In determining whether the method of chemical dependency/wellness educational program influences the level of understanding regarding substance misuse and healthy coping mechanisms, a systemic review of literature was conducted. Following the analyzation of the evidence from the review of literature, the goal was to develop an effective classroom setting chemical dependency/wellness educational program at The University of Southern Mississippi’s Nurse Anesthesia Program. This program differs from the current program in place in that this program was in a classroom setting rather than online modules. To evaluate this chemical dependency/wellness program, a pre and posttest was administered before and after the program to students entering the nurse anesthesia program in January of 2017. The purpose of the tests was to evaluate the effectiveness of the program. A retrospective



posttest was also administered to the students who began the program in January of 2015 and January of 2016 after completing the previously established online chemical dependency/wellness program. The results of these tests were compare to the results of the students who began the program in January of 2017 using t-tests. The low cost for implementation and potential benefits of the program, makes this an excellent option to improve outcomes. Long term goals include the development of healthy coping mechanisms and a decrease in the incidence of anesthesia providers who suffer from substance use disorder.

#### Needs Assessment

The risk for diversion and abuse of controlled substances by anesthesia providers has been well documented. Over a 5-year period from 2008 to 2012, electronic surveys were sent to 111 program directors of accredited nurse anesthesia programs in the United States with a response rate of 21.7 %. Among these programs, there were data reported regarding 2,439 students. This data included 16 incidents of substance abuse for a 5-year prevalence of 0.65% (Bozimowski et al., 2014). The most common drug of choice was opioids (n = 9). Among 50% of these occurrences, there were no predisposing risk factors. “The reported outcomes included voluntary entry into treatment (n = 10), dismissal from the program (n = 7), loss of nursing license (n = 2), and 1 death” (Bozimowski et al., 2014, p. 277). The most frequently reported prevention strategy was wellness promotion education. The purpose of implementing an effective chemical dependency and wellness program was to determine if this intervention improved chemical dependency knowledge and enhanced the development of healthy coping mechanisms. The increase in knowledge regarding chemical dependency and the

development of healthy coping mechanisms by SRNAs may lead to a decrease in the number of anesthesia providers who suffer from substance use disorder.

### Summary of the Evidence

Chemical dependency and substance misuse among anesthesia providers has long been recognized as a concern. While the Substance Abuse and Mental Health Services Administration projects that the overall percentage for substance misuse among the general population has steadily remained at 8% since 2002, determining the occurrence of substance misuse and chemical dependency among anesthesia providers is challenging (Wright et al., 2012). Nurse anesthetists may likely be grouped into the general nursing profession which has an estimate of 6-8% for incidence of substance abuse (Wright et al., 2012). Chemical dependency and substance misuse among SRNA's should be a concern for anesthesia educators. New SRNAs encounter a substantial rise in the amount of stress they experience. Stress in the educational setting is essential to the positive motivation of an SRNA, but stress beyond that motivational level may lead the SRNA toward maladaptive coping mechanisms (Chipas et al., 2012). A chemical dependency and wellness educational program is an efficient source of primary prevention for this concerning issue.

An extensive review of literature was conducted to guide the design of this project and development of an effective chemical dependency and wellness educational program for the nurse anesthesia program. This project contains a synthesis of literature regarding the following topics: (a) substance misuse among anesthesia providers, (b) chemical dependency and wellness education, (c) stress and SRNAs, and (d) effectiveness of delivery of educational programs. The following databases were utilized for review:

MEDLINE, the Cumulative Index to Nursing and Allied Health Literature, and Google Scholar. Key terms used in the search included: (a) anesthesia provider, (b) anesthesia, (c) substance abuse, (d) chemical dependency, (e) student nurse anesthetists, (f) substance misuse, and (g) education.

The Cumulative Index to Nursing and Allied Health Literature (CINAHL) was queried using the terms “anesthesia” and “substance abuse”. Limiters included publication dates from 2009 to 2016 and full text articles. This search yielded nine results, which was then narrowed to four when non-anesthesia material was eliminated. The CINAHL database was searched the terms “student nurse anesthetists” and “substance abuse”. Limiting criteria included a date range from 2009-2015 and only full text articles. This search returned only one result. The Medline database was queried using the terms “chemical dependency” and “education”. Limiters included publication dates from 2009 to 2016. This search yielded 17 results which was narrowed to 1 after eliminating resources that were not relevant to this project.

#### *Substance Misuse among Anesthesia Providers*

Substance abuse and dependency have been acknowledged as problems among anesthesia providers. Anesthesia is a healthcare specialty with an increased risk for substance misuse and chemical dependency. Numerous factors attribute to the development of substance misuse including access to highly potent opioids (Wright et al., 2012). Substance misuse is not only a problem for CRNAs and anesthesiologists, but “abuse of anesthetic medications can occur in all groups of anesthesia professionals including physicians in practice, residents, CRNA’s, and student anesthetists” (Wright et al., 2012, p. 121-122). Data are insufficient to determine the present prevalence of

substance misuse among anesthesia providers. Accounts of disciplinary actions, mortality statistics, and archives for anesthesia providers who have been identified as substance misusers may provide some evidence; however, the interpretation of these types of data is challenging for the reason that there is no guarantee that all incidences are reported (Bryson & Silverstein, 2008).

### *Stress and the Student Registered Nurse Anesthetist*

Stress is the body's response to change and affects individuals in varying manners. Stress is inevitable and not all stress is harmful to the body. An individual who experiences too little stress may struggle with sleep and boredom, whereas an individual who experiences too much stress may develop feelings of anxiety and tension (Chipas & McKenna, 2011). Acute stress, which is the most common, may develop from burdens of the recent past and expected demands and pressures of the future, such as beginning nurse anesthesia school (Chipas & McKenna, 2011). Chronic stress is deceptive and eventually more devastating than acute stress in that our bodies get used to the stress and we forget it is there. An individual may not recognize chronic stress until the damage has been done. "Personal resources, both mental and physical, become depleted, leading to illnesses such as obesity, hypertension, heart attack and stroke, ulcers, violence, depression, substance abuse, and decreased ability to concentrate and learn" (Chipas & McKenna, 2011, p. 123). Stress for the SRNA can be positive motivation in the learning environment; however, stress can also be detrimental and lead to negative consequences when it proceeds beyond a motivational level (Chipas et al., 2012). Sources of stress for the SRNA may be the new environment, information overload, adaptation to new teaching styles, test anxiety, income loss, and new role responsibilities as an anesthesia

provider (Chipas et al., 2012). A study conducted by Chipas et al. (2012) determined that the mean stress level was 7.2 based on a 10-point Likert scale among 1,375 SRNAs.

The manner in which an SRNA adapts to stress is an individualized activity and may be maladaptive in nature. SRNAs who exercise at least several times a week have been shown to have significantly lower stress levels than those SRNAs who exercise infrequently (Chipas et al., 2012). SRNAs often develop maladaptive coping mechanisms including the use of alcohol or drugs, self-criticism, and giving up. SRNAs are expected to perform well in a complex and competitive environment. This pressure may lead to beginning a career with physical and emotional stress (Chipas & McKenna, 2011).

#### *Chemical Dependency and Wellness Education*

Hawkins, Catalano, & Arthur (2002) suggested that chemical dependency prevention curricula improve protective factors and reduce risk factors. The development of an effective chemical dependency and wellness educational program is essential to increasing knowledge regarding substance misuse and the development of healthy coping mechanisms in individuals. Major foci of prevention programs should include targeting modifiable risk factors and strengthening known protective factors (Hawkins, Catalano, & Arthur, 2002).

In addition to chemical dependency education, wellness must also be addressed. According to Beets et. al (2009), wellness education should focus on self-control, emotional awareness, communication, social problem-solving, and academic support. Chemical dependency and wellness programs are most effective when interactive techniques, such as group discussions and classroom involvement, are employed

(Hawkins et al., 2002). Cornell University did a study in 1999 and found that of 6,000 students in New York, the odds of substance misuse were 40% lower among individuals who partook in a school-based substance-abuse program than among their colleagues who did not (Office of National Drug Control Policy, 1999).

### *Effectiveness of Delivery of Educational Programs*

There are many types of educational settings. The two that will be discussed in the project will be the traditional classroom setting and distance learning. According to Chen & Jones (2007), the traditional classroom setting enhances instructor clarity. “Students and instructors alike may simply be more comfortable with the classroom environment because it has always existed” (Chen & Jones, 2007, p. 11). The traditional classroom setting allows for immediate feedback and classroom discussions, which can enhance learning.

As students move farther away from the instructor, concepts become increasingly difficult to interpret and comprehend (Lee & Gupta, 2010). In the presence of unmotivated students, distance learning exaggerates the difficulty of teaching. One of the many reasons online courses may fail to improve student knowledge include lack of face-to-face communication and interaction with their instructors and classmates (Lee & Gupta, 2010). Lack of accountability is also a contributing factor in the failure of online coursework. Distance learning denies the student assistance from the instructor with impromptu questions. Direct assistance and clarification from the instructor is also absent in the setting of distance learning. Distance learning does not allow the students observation of reactions to their questions and suggestions nor does it allow for discussions. Distance learning also has several benefits. “Distance education encourages

independence and flexibility, but for individuals that thrive in a cooperative group environment, this may not be the ideal learning environment” (Lee & Gupta, 2010, p. 625).

### Theoretical Background

Pender’s Health Promotion Model profoundly involves behavioral change in individuals. This model is relevant to this project in that the goal was to develop an educational program that will not only increase the knowledge of SRNAs but also promote healthy coping mechanisms. Pender’s Health Promotion Model has been categorized as a middle-range integrative theory. This model focuses on three areas: individual attributes and experiences, behavior-specific awareness, and behavioral effects (“Health Promotion,” 2016). The first category affects the individual’s actions. This focus is relevant to this project because specific characteristics of SRNAs may predispose them to substance misuse. Behavioral effects will be addressed in the implementation of the educational program. Pender’s model emphasizes nurses raising awareness about the issue, promoting self-efficacy, and controlling the environment to allow for behavior change. The theory illustrates that each person has characteristics and experiences that are unique that influence ensuing actions.

According to Pender, Murdaugh, and Parsons (2015), developing a health promotion-prevention plan occurs in nine steps. These nine steps include:

1. Reviewing and summarizing data
2. Emphasizing strengths and capabilities of the population
3. Identifying goals and opportunities for behavioral change
4. Identifying outcomes

5. Developing a plan based on knowledge regarding effective interventions
6. Emphasizing the benefits of behavioral change
7. Addressing barriers to behavioral change
8. Identifying a clear timeline for implementation
9. Formalizing a commitment to goals and providing support

These nine steps were used in the development of an educational program to effectively reinforce knowledge regarding chemical dependency and to promote healthy coping mechanisms.

Pender's Health Promotion Model has four assumptions. The first assumption states that a person seeks to produce circumstances of living in which they can communicate their individualized human potential. The second assumption is that a person has the capability of self-awareness that comprises evaluating his or her own capabilities. The third assumption is that a person appreciates growth in a positive direction and makes efforts to obtain a balance among change and stability. The fourth assumption is that a person seeks to control his or her own behavior.

Pender's model includes 13 theoretical statements. These statements offer a basis for research on health behaviors and include:

- Prior behavior and inherited and acquired characteristics influence beliefs, affect, and enactment of health-promoting behavior. Persons commit to engaging in behaviors from which they anticipate deriving personally valued benefits.

Perceived barriers can constrain commitment to action, a mediator of behavior as well as actual behavior.



- Perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior.
- Greater perceived self-efficacy results in fewer perceived barriers to a specific health behavior. Positive affect toward a behavior results in greater perceived self-efficacy, which can in turn, result in increased positive affect. When positive emotions or affect are associated with a behavior, the probability of commitment and action is increased. Persons are more likely to commit to and engage in health-promoting behaviors when significant others model the behavior, expect the behavior to occur, and provide assistance and support to enable the behavior.
- Families, peers, and health care providers are important sources of interpersonal influence that can increase or decrease commitment to and engagement in health-promoting behavior. Situational influences in the external environment can increase or decrease commitment to or participation in health-promoting behavior. ("Health Promotion," 2016)

Pender's model assisted with understanding the main determinants of health behaviors as a foundation for behavioral education to promote healthy coping mechanisms and enhance knowledge regarding chemical dependency. Pender indicated that peers, colleagues, and healthcare providers are essential sources of interpersonal influence who have the capability to positively impact engagement in health promoting behavior. The purpose of the Health Promotion Model is not to be an antidote for disease but designed to encourage healthy lifestyles and choices that effect the health of individuals. Health promoting behavior is the anticipated behavioral product, which makes it the conclusion of the Health Promotion Model ("Health Promotion," 2016). This

model helped guide my project in that the purpose was not to cure addiction but to educate individuals on chemical dependency and promote healthy coping mechanisms.

This model is appropriate for this project in that it is based on health recommendations and improving the ability to create awareness on the prime establishers of health behaviors. The goal of my project was to build an educational program that will provide health recommendations for healthy coping mechanisms and increase awareness about chemical dependency among SRNAs. Using this model, an educational program was designed that will be the most effective in providing desired outcomes.

#### Doctorate of Nursing Practice Essentials

The inclusion of the eight Doctorate of Nursing Practice (DNP) essentials is fundamental to a DNP project. These eight essentials define the competencies that all candidates seeking to complete a DNP program are required to meet. This project was developed with these essentials in mind.

##### *Essential One: Scientific underpinnings for practice*

This essential allows the nurse to utilize nursing theory to guide their project. Pender's Health Promotion Model was used to guide this project.

##### *Essential Two: Organizational and Systems Leadership for Quality Improvement and Systems Thinking*

This essential allows the nurse to develop new methods to improve healthcare delivery (American Association of Colleges of Nursing, 2006). In the development of an effective chemical dependency and wellness program, the goal was to enhance education and improve coping mechanisms.

*Essential Three: Clinical Leadership and Analytical Methods for Evidence-based Practice*

Through a review of literature I was able to determine the best evidence for practice prior to the development of a plan for implementation.

*Essential Four: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care*

Multiple electronic databases were navigated for completion of the comprehensive review of literature.

*Essential Five: Healthcare Policy for Advocacy in Healthcare*

This essential prepares the nurse for the development of policies on all levels (state, local, etc.). The chemical dependency and wellness education program and this project's results were presented to the director of the nurse anesthesia program.

*Essential Six: Interprofessional Collaboration for Improving Patient and Population Health Outcomes*

Faculty, CRNAs, and SRNAs must all work together to improve outcomes.

*Essential Seven: Clinical Prevention and Population Health for Improving the Nation's Health*

The educational program developed was be specific to the population being studied, SRNAs.

*Essential Eight: Advanced Nursing Practice*

Professional relationships are essential when working towards a common goal. All DNP graduates are expected to demonstrate advanced assessment skills and base their practice on the application of biophysical, psychosocial, behavioral, sociopolitical, cultural,

economic, and nursing science as appropriate in their area of specialization (American Association of Colleges of Nursing, 2006). The comprehensive review of literature assisted in guiding the development of a program based on evidence. The population was assessed before and after the implementation of the program. This project also provides an opportunity to mentor new SRNAs regarding healthy ways to deal with the stress of school and family.

### Summary

Chapter I presented the background and significance, clinical question, the purpose of the project, summary of evidence, and theoretical framework. The doctorate of nursing practice essentials were also addressed in this chapter. The evidence illustrates the importance of chemical dependency/wellness education and the need for action in reducing the incidence of anesthesia providers with chemical dependency. A synthesis matrix has been developed from this systematic review of literature (Appendix A).

## CHAPTER II – METHODS

### Target Population and Sample

The population studied included all SRNAs currently enrolled in an accredited nurse anesthesia program. The convenient sample for this project included all SRNAs currently enrolled in a DNP nurse anesthesia program in the southeastern region of the United States. Participation was completely voluntary. Inclusion criteria for this project required that the students be currently enrolled in the nurse anesthesia program. Exclusion criteria for this project included first year SRNAs who have already completed the online wellness modules.

### Design

Upon receiving approval from The University of Southern Mississippi's Institutional Review Board (IRB) (Protocol # 17030208) and the director of the nurse anesthesia program, a meeting was scheduled for implementation of the project. Informed consent was obtained from all participants after explanation of the project. All participants were informed that there would be no compensation for participation and no consequences for declining to participate. Once informed consents were completed, time was provided for all participants to ask questions regarding the project.

Limitations to this project included the number of SRNAs willing to complete the pre and posttest and the honesty of their responses. Ethical considerations included informed consent, collecting sensitive information, and confidentiality. Participants were ensured that no harm would come to them. Students are a vulnerable population, and they may not be inclined to disclose information in fear of consequences. In the

encouragement of honest answers, no identifying questions were asked and pre and posttests were matched by a 3 digit code.

In the first phase, the pre and posttests were used to assess the participants' perceived knowledge of substance misuse and anesthesia providers and healthy versus unhealthy coping mechanisms. Phase one only included students in their first year of the nurse anesthesia program. The survey instrument consisted of 7 Likert-style questions (see Appendix B). Phase one also consisted of the delivery of the chemical dependency/wellness education material face to face. Similar to the online program, this material consisted of signs and symptoms of substance misuse, prevalence of substance misuse among anesthesia providers, identification of unhealthy stress, healthy coping mechanisms, and steps to take in the event that an individual feels he or she has a problem regarding substance misuse. Upon completion of the educational program, a posttest was administered to the participants to assess for improved knowledge and perceived effectiveness of the program. Phase two of this study included only the nurse anesthesia students in their second or third year of the program who have completed their online wellness modules. A retrospective posttest was administered to the participants to assess their perceived knowledge following the online modules that were completed in their first year of the program.

The survey instrument included 7 Likert-style questions in which the students were asked to rate their perceived knowledge on a scale from 1-5. One being the lowest and five being the highest. The students were asked questions regarding their knowledge of healthy and maladaptive coping mechanisms, signs and symptoms of chemical

dependency, and steps to take in the event they believe someone has a problem with substance misuse.

Upon the analysis of the results from the tests, an independent t-test was used to compare the means of the pre and posttests and then again to compare the means of the posttests of the three groups. This information was used to determine if the chemical dependency/wellness information presented in the classroom setting is more effective than the wellness modules currently in place in the program. Short-term outcomes included students' willingness to participate in a face-to-face chemical dependency/wellness education program, the implementation of a face-to-face chemical dependency/wellness education program, increased knowledge and awareness regarding anesthesia providers and substance misuse, and increased knowledge of healthy coping mechanisms. Long-term goals included the development of healthy coping mechanisms and a decreased in the incidence of anesthesia providers with substance use disorder.

### Summary

In Chapter II, the population, limitations, and methodology of the project were discussed. The pretest/posttest design used in this study were also described. Short and long-term goals were also defined.

## CHAPTER III – RESULTS

### Overview

A pre and posttest was administered to 17 first year nurse anesthesia students. These tests were administered prior to and following the delivery of a face-to-face chemical dependency and wellness education. The presentation was approximately 30 minutes long with a 10 minute allowance for completion of the post-test. The presentation was given at The University of Southern Mississippi prior to the students' already scheduled class time. A retrospective posttest was administered to 21 second year nurse anesthesia students and 15 third year nurse anesthesia students. All tests were administered in English since all participants were English-speaking. Also, the tests were not given in electronic form. Rather, they were administered to the participants directly on paper.

### Sample

The sample included all students currently enrolled in the nurse anesthesia program at The University of Southern Mississippi. Males and females were included in the study. Fifty-three students participated in the study and no ethnic groups were excluded.

### Statistical Analysis

Participants were administered seven Likert-style questions in which they rated their perceived knowledge on a scale from one to five. One being the lowest and five being the highest. The first year nurse anesthesia students were administered the same questions before and after the delivery of the chemical dependency and wellness education.



Pre and post mean scores were examined for the first year nurse anesthesia students using a two sample t-test with unequal variances. There was not a significant difference in the pretest scores (M=3.379, SD=0.459) and the posttest scores (M=4.69, SD=0.154);  $t(2.11)$ ,  $p(2.62)$ . When examining the posttest scores from the first year students (M=4.69, SD=0.154) and retrospective posttests from the second year nurse anesthesia students (M=4.2, SD=0.25), results indicated a significance ( $t=2.03$ ,  $p=0.0029$ ). There was no significant difference in the posttest scores from the first year students (M=4.69, SD=0.154) and the retrospective posttest scores from the third year students (M=3.72, SD=0.37);  $t(2.06)$ ,  $p(2.05)$ .

Table 1

*First Year Students' Mean Pre and Post-test Scores*

<b>1<sup>st</sup> year</b>	<b>Mean score of Pre-test</b>	<b>Mean score of Post-test</b>
<b>1</b>	3	4.85
<b>2</b>	4	5
<b>3</b>	5	5
<b>4</b>	4.42	4.5
<b>5</b>	3.42	4.71
<b>6</b>	3	4
<b>7</b>	4.14	5
<b>8</b>	2.85	4.85
<b>9</b>	2.51	4.42
<b>10</b>	3.14	4.57
<b>11</b>	2.85	5
<b>12</b>	3.85	5
<b>13</b>	3.14	4.28
<b>14</b>	3.42	5
<b>15</b>	3	3.71
<b>16</b>	3	4.85
<b>17</b>	2.71	5
<b>Mean Totals</b>	3.379	4.69

Table 2

*Second Year Students' Retrospective Post-test Scores*

<b>2<sup>nd</sup> year</b>	<b>Mean score of Retrospective Post-test</b>
<b>1</b>	4
<b>2</b>	4.4
<b>3</b>	4.7
<b>4</b>	4
<b>5</b>	4.7
<b>6</b>	3.8
<b>7</b>	4.57
<b>8</b>	4
<b>9</b>	4.57
<b>10</b>	4.28
<b>11</b>	4.71
<b>12</b>	4
<b>13</b>	3
<b>14</b>	4.85
<b>15</b>	4.42
<b>16</b>	5
<b>17</b>	4.14
<b>18</b>	4.14
<b>19</b>	3.42
<b>20</b>	3.85
<b>21</b>	4
<b>Mean Totals</b>	3.6

Table 3

*Third Year Students' Retrospective Post-test Mean Scores*

<b>3<sup>rd</sup> year</b>	<b>Mean score of Retrospective Post-test</b>
<b>1</b>	4.5
<b>2</b>	4.5
<b>3</b>	3.5
<b>4</b>	3
<b>5</b>	4
<b>6</b>	3
<b>7</b>	4
<b>8</b>	3.85
<b>9</b>	3
<b>10</b>	2.57
<b>11</b>	3.57
<b>12</b>	4.42
<b>13</b>	4.14
<b>14</b>	4.14
<b>15</b>	3.71
<b>Mean Totals</b>	3.72

Summary

In chapter III, an overview of the project results a statistical analysis were discussed. T-test results and p-value significance were also defined. The next chapter will discuss recommendations, implications for future practice, and the conclusion.

## CHAPTER IV – DISCUSSION

When pre and posttests were compared among the first year students, there was a slight improvement in the posttest scores after being presented with the chemical dependency and wellness material. Posttest mean scores were compared between the first and second year students. The t-tests indicated a significant difference between these posttest scores. The higher posttest scores among the first year students may be related to the in classroom presentation of the chemical dependency and wellness material or that the students took the posttest immediately after the presentation of the material. The second year students took the retrospective posttest approximately one year after completing the online modules.

When the mean posttests were compared between the third year and first year students, there was a slightly higher score among the first year students. However, the t-test did not indicate the difference was significance. The third year students took the retrospective posttest approximately two years following the completion of their online modules. The higher mean posttest score in the third year compared to the second year may be related to exposure. The third year students have approximately a year and a half of clinical experience; whereas, the second year students have approximately three to four months.

### Recommendations

Further projects or studies should include larger sample sizes and other nurse anesthesia programs to determine if the same results are replicated. This project examined the effectiveness of the setting of chemical dependency and wellness education. Future projects or studies could explore the results of a continuation of

chemical dependency and wellness education throughout the duration of the three year program. Future projects or studies could also continue to follow these students into practice and examine if the then students found the information useful as a practicing nurse anesthetist.

#### Implications for Future Practice

The results from this project indicated only a significance between the first and second year students. Chemical dependency and wellness education is a necessary component of the nurse anesthesia curriculum; however, the results did not conclude that one method was significantly more effective than another. The first year students offered ample positive feedback in regards to the in classroom presentation.

#### Limitations

Limitations for this project include the students' willingness to participate. Limitations for implementation of an in classroom wellness and chemical dependency program may include limited resources such as faculty and classroom time. Other limiting factors may include comfort and knowledge of the individual presenting the material.

#### Dissemination

The findings from this project were presented to the director of the nurse anesthesia program. Statistical data along with feedback received from the students were also be communicated to the program director and plans have been made to continue both the in classroom educational program and the online modules required. The Mississippi state peer advisor has also been in contact regarding the development of a wellness

program for the nurse anesthesia program at The University of Southern Mississippi. I plan to pursue publication in a nurse anesthesia specific journal.

### Conclusion

The purpose of this DNP project was to determine whether the method of chemical dependency/wellness educational program effects the level of understanding of anesthesia providers and substance misuse and the development of healthy coping mechanisms. The results concluded that there was a significant improvement in perceived knowledge following chemical dependency and wellness education. However, the results were inconclusive as to whether one method is more effective than another.

## APPENDIX A Literature Matrix

	Topic A: Substance misuse among anesthesia providers	Topic B: Chemical dependency and wellness education	Topic C: Stress and SRNAs	Topic D: Delivery of educational programs
<p>Wright, E., McGuiness, T., Moneyham, L., Schumacher, J., Zwerling, A., &amp; Stullenbarger, N. (2012).</p>	<ul style="list-style-type: none"> <li>- While the Substance Abuse and Mental Health Services Administration projects that the overall percentage for substance misuse among the general population has steadily remained at 8% since 2002, determining the occurrence of substance misuse and chemical dependency among anesthesia providers is challenging (p. 120)</li> <li>- Nurse anesthetists may likely be grouped into the general nursing profession which has an estimate of six to ten percent for incidence of substance abuse (p. 121)</li> <li>- Substance misuse is not only a problem for certified registered nurse anesthetists (CRNAs) and anesthesiologists. “Abuse of anesthetic medications can occur in all groups of</li> </ul>			

	<p>anesthesia professionals including physicians in practice, residents, CRNA's, and student anesthetists" (p. 121-122)</p>			
<p>Bryson, E., &amp; Silverstein, J. (2008)</p>	<p>- Accounts of disciplinary actions, mortality statistics, and archives for anesthesia providers who have been identified as substance misusers may provide some evidence, however, the interpretation of these types of data is challenging for the reason that there is no guarantee that all incidences are reported (p. 905)</p>			
<p>Chipas, A., &amp; McKenna, D. (2011)</p>			<p>- An individual who experiences too little stress may struggle with sleep and boredom, whereas an individual who experiences too much stress may develop feelings of anxiety and tension (p. 122)</p> <p>- "Stress can result in disruption in relationships, fatigue, headaches, gastrointestinal disturbances, weight loss or gain, insomnia, depression, even addictive behavior" (p. 123)</p>	



			<ul style="list-style-type: none"> <li>- Acute stress, which is the most common, may develop from burdens of the recent past and expected demands and pressures of the future, such as beginning nurse anesthesia school (p. 123)</li> <li>- “Personal resources, both mental and physical, become depleted, leading to illnesses such as obesity, hypertension, heart attack and stroke, ulcers, violence, depression, substance abuse, and decreased ability to concentrate and learn” (p.123)</li> <li>- SRNAs are under expected to perform well in a complex and competitive environment. This pressure may lead to beginning a career with physical and emotional stress (p. 122)</li> </ul>	
Chipas, A., Cordrey, D., Floyd, D., Grubbs, L., Miller, S., & Tyre, B. (2012)			<ul style="list-style-type: none"> <li>- Stress for the SRNA can be positive motivation in the learning environment, however, when stress proceeds beyond a motivational level, it can be detrimental and lead to</li> </ul>	

			<p>negative consequences (p.49)</p> <ul style="list-style-type: none"> <li>- Sources of stress for the SRNA may be the new environment, information overload, adaptation to new teaching styles, test anxiety, loss of income, and the responsibilities of the new role as an anesthesia provider (p. 50)</li> <li>- “Among 1,375 SRNAs there was a mean stress level of 7.2 based on a 10-point Likert scale” (p. 51)</li> <li>- SRNAs who exercise at least several times a week have been shown to have significantly lower stress levels than those SRNAs who exercise infrequently (p. 52)</li> </ul>	
Beets, M., Flay, B., Vuchinich, S., Snyder, F., Acock, A., Li, K., Durlak, J. (2009)		<ul style="list-style-type: none"> <li>- “Wellness education should focus on self-control, emotional awareness, communication, social problem-solving, and academic support” (p. 1443)</li> </ul>		
Hawkins, J., Catalano, R., & Arthur, M. (2002)		<ul style="list-style-type: none"> <li>- Chemical dependency prevention curricula should improve protective factors and</li> </ul>		

		<p>reduce risk factors (p. 953)</p> <ul style="list-style-type: none"> <li>- Major foci of prevention programs should include targeting modifiable risk factors and strengthening known protective factors (p. 955)</li> <li>- “Chemical dependency and wellness programs are most effective when interactive techniques, such as group discussions and classroom involvement, are employed” (p. 956)</li> </ul>		
Chen, C., & Jones, K. (2007)				<ul style="list-style-type: none"> <li>- The traditional classroom setting enhances instructor clarity (p. 11)</li> <li>- Students and instructors alike may simply be more comfortable with the classroom environment because it has always existed (p. 11)</li> </ul>
Lei, S., & Gupta, R. (2010)				<ul style="list-style-type: none"> <li>- As students move farther away from the instructor, concepts become increasingly</li> </ul>

				<p>difficult to interpret and comprehend (p. 618)</p> <ul style="list-style-type: none"> <li>- One of the many reasons online courses may fail to improve student knowledge include lack of face-to-face communication and interaction with their instructors and classmates (p. 622)</li> <li>- Distance education encourages independence and flexibility, but for individuals that thrive in a cooperative group environment, this may not be the ideal learning environment (p. 625)</li> </ul>
Valdes, J. (2014)	<ul style="list-style-type: none"> <li>- Given that there are approximately 80,000 anesthesia providers in the United States, a 10% to 15% incidence translates to 8,000 to 12,000 anesthesia providers who might be abusing the very drugs they</li> </ul>			

	are administering to their patients (p.95)			
Bozimowski, G., Groh, C., Rouen, P., & Dosch, M. (2014, August)	- "It has been noted that risks for misuse are high for nurse anesthesia students in their formative educational years" (p. 277)			
Office of National Drug Control Policy. (1999)		Cornell University did a study in 1999 and found that of six thousand students in New York the odds of substance misuse were forty percent lower among individuals who partook in a school-based substance-abuse program than among their colleagues who did not		

## APPENDIX B -Chemical Dependency and Wellness Questionnaire

Please read each question carefully and rate your perceived knowledge level. 1= lowest 5= highest.

1. Identification of signs and symptoms of substance use disorder.

1  2  3  4  5

2. Identification of signs and symptoms of stress.

1  2  3  4  5

3. Healthy coping mechanisms to deal with stress

1  2  3  4  5

4. Maladaptive coping mechanisms

1  2  3  4  5

5. Steps to take in the event that you or someone you know has developed a substance misuse problem.

1  2  3  4  5

6. Your overall knowledge regarding substance misuse and anesthesia providers.

1  2  3  4  5

7. Do you feel that you have the knowledge to adequately deal with stress?

1  2  3  4  5

## APPENDIX C – IRB Approval Letter



THE UNIVERSITY OF  
**SOUTHERN MISSISSIPPI**

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**INSTITUTIONAL REVIEW BOARD**  
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### NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 17030208  
PROJECT TITLE: Evaluation of Delivery Methods for a Chemical Dependency and Wellness Education Program  
PROJECT TYPE: New Project  
RESEARCHER(S): Marissa Coggin  
COLLEGE/DIVISION: College of Nursing  
DEPARTMENT: Advanced Practice  
FUNDING AGENCY/SPONSOR: N/A  
IRB COMMITTEE ACTION: Exempt Review Approval  
PERIOD OF APPROVAL: 03/14/2017 to 03/13/2018  
**Lawrence A. Hosman, Ph.D.**  
Institutional Review Board

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