

AN ASSESSMENT OF PSYCHOLOGICAL DISTRESS AND RESILIENCE AMONG  
NURSE PRACTITIONER STUDENTS

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**Title**

An Assessment of Psychological Distress and Resilience Among Nurse  
Practitioner Students

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## **ABSTRACT**

Medical doctors and medical students experience increased prevalence of depression, anxiety, suicidality, suicide, stress, and burnout when compared to the general public. Along with suffering from increased rates of psychosocial distress, medical students and medical doctors often do not seek medical help for their mental health symptoms and are left to suffer in silence. Nurse practitioner students face similar challenges as medical students, yet the literature has not explored the mental health status and needs of nurse practitioner students. Healthcare providers may feel unable to seek help for mental health conditions due to fear of losing their license or fear their professional reputation could be damaged, compounding the problem.

The concept of building personal resilience in healthcare providers has emerged as a possible way to combat poor mental health and burnout in healthcare providers. Healthcare providers who are more resilient are less likely to suffer from poor mental health outcomes.

The purpose of the project was to evaluate if nurse practitioner students suffer from poor mental health during their time in graduate education and if resiliency scores predict psychological well-being. Survey questions about help-seeking behaviors and validated surveys for depression, anxiety, suicidality, stress, burnout, and resiliency were administered to first, second, and third-year students before the start of fall semester 2017, and again near the end of fall semester 2017.

Thirty-seven students completed the baseline assessment and 33 completed follow-up surveys. Depression and burnout scores increased significantly from baseline to follow-up, while other measures did not change significantly. Resiliency scores appeared to negatively correlate with depression, anxiety, and stress scores at baseline assessment.

At baseline, no students endorsed high-risk suicidal behaviors, and at follow-up, three students (9%) scored high risk. At follow-up, 15% of the sample met criteria for moderate to severe depression and 21% met criteria for moderate to severe anxiety, both of which would benefit from medical interventions.

Study findings highlight the significant mental health challenges nurse practitioner students face during their education. Academic programs should recognize these difficulties and implement interventions to support student well-being during the academic training period.

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## LIST OF ABBREVIATIONS

NP .....	Nurse Practitioner
NPS.....	Nurse Practitioner Students
MS.....	Medical Students
MD.....	Medical Doctors
SRNA.....	Student Registered Nurse Anesthetist
AMA .....	American Medical Association
CD-RISC.....	Connor Davidson Resiliency Scale
PHQ-9.....	Depression Scale
GAD-7.....	Anxiety Scale
SBQ-R.....	Suicide Behaviors Questionnaire
PSS.....	Perceived Stress Scale
MBI.....	Maslach Burnout Inventory
MBI-EX .....	Maslach Burnout Inventory – Exhaustion Subscale
MBI-CY .....	Maslach Burnout Inventory – Cynicism Subscale
MBI-PE.....	Maslach Burnout Inventory – Professional Efficacy Subscale



## **CHAPTER ONE. INTRODUCTION AND PROBLEM STATEMENT**

Extensive research has been conducted within the scientific community examining the psychological well-being of medical students (MS) during medical education. Compared to the general public, MS face significantly increased rates of psychological distress, which appear in the form of burnout, depression, anxiety, suicidality, and overall poor mental and emotional quality of life (Dyrbye, et al., 2011). MS enter medical school with depressive symptoms, burnout, and quality of life scores better than that of age, gender, and education-matched control (Brazeau et al., 2014; Dyrbye et al., 2011). As soon as three months into medical school, studies have documented psychological distress dramatically increasing (Brazeau et al., 2014). This quick onset of psychological distress appears to be multi-factorial but is almost sure to be an inadvertent effect of the medical school experience. Despite the significant increase in psychological distress MS experience, less than a quarter of MS will seek medical help for their mental health symptoms (Tjia, Givens, & Shea, 2005).

Medical student distress likely does not resolve as a result of graduating and entering into practice. Roughly 50% of medical doctors (MD) are considered professionally burned out and are dissatisfied with their work-life balance (Shanafelt et al., 2015). The profession also suffers from increased rates of depression, substance abuse, and suicide (Gold, Sen, & Schwenk, 2013; Kuhn & Flanagan, 2017). On average, we lose one MD to suicide every day in the United States, which occurs at a rate higher than that of the general public (Schernhammer & Colditz, 2004). Medical professionals have an ethical, moral and legal duty to provide safe, quality care for the patients they serve. Healthcare provider well-being not only has personal implications but ultimately affects the patient in the form of increased medical errors and poor patient outcomes (Fahrenkopf et al., 2008; West, Tan, Habermann, Sloan, & Shanafelt, 2009). Healthcare provider

burnout creates unnecessary healthcare expense. A medical doctor experiencing burnout is twice as likely to leave their place of employment, and the estimated cost of replacing an MD can range from several hundred thousand dollars to upwards of one million dollars (Shanafelt, Goh, & Sinsky, 2017).

In response to the troubling statistics surrounding healthcare profession well-being, the National Academy of Medicine (NAM) has created an initiative, with the support of 130 multi-disciplinary professional organizations representing medical doctors, nursing, pharmacy and dental professions, which aims to improve healthcare clinician well-being and resilience. Medical schools took notice of this issue many years ago and have been at the forefront of addressing healthcare student well-being. Resiliency training and wellness programs are being adopted into the curriculum of many medical schools with hopes of improving the well-being of students while in school and when they transition into practice. Research on the effectiveness of these programs is in its infancy. Past research has shown higher levels of resilience in MS, and healthcare professionals correlate to lower levels of psychological distress (Bacchi & Licinio, 2017; Eley, Leung, Hong, Cloninger, & Cloninger, 2016; Thompson, McBride, Hosford, & Halaas, 2016; Waddimba et al., 2016).

While increasing amounts of research are being conducted regarding the psychological well-being of MS and MD, research examining the well-being of nurse practitioner students (NPS) is sparse. A review of the literature revealed one study which examined perceived stress of a group of twelve NPS (Maville, Kranz, & Tucker, 2004). Nurse practitioners are entering the workforce at a pace greater than MD, with over 20,000 new NPs entering into practice each year (American Association of Nurse Practitioners, 2018). Nurse practitioners have become a cornerstone of providing medical care in the United States, especially in rural locations where

MD are hard to recruit. NPS complete academic programs lasting anywhere from two to four years in duration. While in school, NPS are required to participate in time-intensive didactic and clinical learning experiences and complete a training program similar to that of MS. Upon graduating from school, nurse practitioners have the same obligations to the patients they serve and share nearly the same practice environment and requirements as their MD colleagues.

### **Project Significance**

The findings from this project are meaningful for the educational experience of future NPS and may play a significant role in the curriculum delivered in NP programs. This project provides evidence for the need to monitor the well-being of NPS and create an academic environment that is supportive and protective of NPS well-being. Further research examining interventions which aim to support NPS well-being during the academic experience are needed based on the findings from this project.

## **CHAPTER TWO. LITERATURE REVIEW**

### **Depression and Healthcare Professionals**

While there is little data available which examines the NP student experience, a great deal of research has been done exploring the well-being and academic experience of MS. One of the most extensively researched topics related to the MS experience is that of depression. According to the American Psychiatric Association (APA) (2017), depression, or major depressive disorder, is a medical condition characterized by feelings of sadness or lack of interest in activities one usually enjoys. Symptoms of depression may include loss of energy, trouble sleeping, changes in appetite, psychomotor retardation or increased purposeless physical activity, feelings of worthlessness or guilt, difficulty thinking or concentrating and thoughts of death or suicide. Risk factors for developing depression include biochemical, genetic predisposition, persons with low-self-esteem, and environmental exposures such as neglect, abuse, or poverty. Depression is a treatable condition with 80-90% of depression cases responding to medication and/or psychotherapy (APA, 2017). Prevalence rates of depression among the U.S. adult population is approximately 6.7% (NIMH, 2016).

In a large meta-analysis of over 200 studies examining rates of depression among MS, the prevalence of depression among MS is approximately 28% and ranged anywhere from 9% to 43% among studies reviewed (Khan, Lin, & Mata, 2015; Mata et al., 2015; Rotenstein et al., 2016). These numbers are significantly higher when compared to that of the general public, or when compared to age, sex, and education level matched controls. Studies examining depression in MS from a longitudinal approach saw rates of depression increase from pre-medical school rates that were better than that of the general public, to depression rates much higher than that of the general public. A median absolute increase in depressive symptom with the onset of training

was found to be 15.8% (Brazeau et al., 2014; Rotenstein et al., 2016). This dramatic increase happened as soon as three months after starting medical school, and rates appear to increase with time spent in a medical program (Sen et al., 2010). While no literature was found concerning the rates of depression among NPS, a study involving 1,353 nurse anesthetist students found that 47.3% of students reported being depressed at some point during their school experience (Chipas et al., 2012).

One may assert that rates of depression may be higher in NPS compared to medical and nurse anesthetist students' due to the high percentage of women in the NP field, with roughly 92% of nurse practitioners being female (AANP, 2018). Female MS were more likely to experience depression while in medical training and depression prevalence increased by 36% when work-family conflict was taken into account (Guille et al., 2017). In the general public, women are twice as likely to develop depression when compared to male counterparts and are more likely to suffer from severe depression (APA, 2017; Albert, 2015; Schwenk et al., 2010). Other demographic and personal characteristics which may predispose students to developing depression include prior history of diagnosed or self-diagnosed depression, Caucasian ethnicity, adverse early family environment, having children, being employed during school, having high amounts of debt, lack of social support, experiencing a personal or family crisis occur during schooling, perceiving their learning environment to be negative, and lack of sleep (West et al., 2009; Wimsatt, Schwenk, & Sen, 2015). The symptoms of depression, such as fatigue, difficulty concentrating, and lack of sleep may impair the learning ability of students or make it difficult to find the energy or motivation to complete coursework and keep up with other academic demands.

While depression is a condition that has high treatment success, many MS will not seek help for their depressive symptoms due to the perceived stigma surrounding depression. Of those experiencing screening positive for depression, only 15.7% sought treatment (Rotenstein et al., 2016). Students reporting more severe depression were more likely to stigmatize receiving treatment for depression (Schwenk et al., 2010). Students expressed thoughts of feeling less intelligent for seeking treatment, feared to appear personally weak and unable to handle academic expectations, devalued by peers, faculty, and their community, and fear of professional repercussions (Wimsatt et al., 2015). Students also felt they did not have access to treatment from a healthcare professional who would maintain their confidentiality and they lacked the time or financial resources to seek treatment (Schwenk et al., 2010; Zisook et al., 2016). Help-seeking behaviors may be lower among MS compared to graduate-level nursing students. Studies examining MS help-seeking behaviors found only 29% to 40% of MS experiencing psychological distress sought professional help (Dahlin & Runeson, 2007; Givens & Tjia, 2002; Gold, Johnson, Leydon, Rohrbaugh, & Wilkins, 2015). Approximately 56.6% of nurse anesthetist students who experienced depressive symptoms sought professional help (Chipas et al., 2012; Gold et al., 2015). An investigation into depressive symptoms and help-seeking behavior among nurse practitioner students is needed as there is no available literature which examines depression in NPS.

### **Suicidality and Healthcare Professionals**

Treating depression in healthcare professionals could mean the difference between life and death. Depression and suicidal ideation share a close relationship, with studies showing a positive depression screen to be the strongest independent factor associated with suicidal ideation in MS (Dyrbye et al., 2015; Khan et al., 2015; Zisook et al., 2016) Perhaps the most disturbing

statistic surrounding medical student well-being is that of suicidality. A systemic review and meta-analysis of suicidal ideation occurring in MS found suicidal ideation to occur in approximately 11.1% of MS with prevalence across studies ranging from 7.4% to 24.2%, respectively (Rotenstein et al., 2016). MS may also participate in non-suicidal self-injury, with one study finding up to 14% of MS exhibited this type of behavior (Allroggen et al., 2014). Rates of medical student suicide are unknown, but numerous case reports exist documenting individual cases of student suicide. Rates of suicidality among NPS are unknown as no studies have examined this population. A large study examining suicidal thoughts of nurse anesthetists students revealed 21.2% of students had suicidal ideation during their time in school (Chipas et al., 2012).

Causes of suicidal ideation are likely multi-factorial and unique. In a large, multi-institute study of MS, with each additional form of psychological distress, the risk for suicidal ideation increased. Within that sample, 81% of students reported one or more forms of distress (Dyrbye et al., 2010). Female students are at a higher risk for suicidality when compared to males and is also true in regard to MD suicidality (Zisook et al., 2016). Rates of suicide appear highest among female providers, with a risk of suicide 130% higher than that of the general public (Schernhammer & Colditz, 2004). Male physicians also remain at high risk for suicide, with suicide rates 70% higher than non-physician males (Schernhammer & Colditz, 2004). Medical doctors are also 1.4-2.3 times more successful at completing suicided compared to the general public (Schernhammer & Colditz, 2004). Roughly 400 MDs commit suicide every year in the United States, with lethal drug overdoses and firearms being the most common suicide methods used. Post-mortem toxicology reports often find alcohol and medications, such as benzodiazepines and other controlled substances, present in MD who commit suicide, but do not

usually find anti-depressants (Gold, Sen, & Schwenk, 2013). Researchers feel MD suicide deaths are likely under reported due to sympathetic colleagues certifying death.

In a survey of over 4,000 MS, 32% met criteria for alcohol abuse/dependence (Jackson, Shanafelt, Hasan, Satele, & Dyrbye, 2016). Among nurse anesthetist students seeking help for depression, 29.3% reported using alcohol, 11.7% reported using antidepressants, and 40.1% reported using an over-the-counter or prescription sleep aid to manage their sleep-associated symptoms of depression (Chipas et al., 2012). These findings may be an indication that substance use and inappropriate use of prescription drugs may be common practice among healthcare professions attempting to manage their psychiatric symptoms.

### **Stress and Healthcare Professionals**

When elicited, the stress response is meant to protect humans from threats that are viewed as potentially dangerous to an individual. Stressful events activate the sympathetic nervous system and hormones, such as cortisol, norepinephrine, and epinephrine, are released within the body to assist with the stressful stimuli. In short durations, these hormones are helpful to the body. When the body endures many months or years of chronic stress, these hormones can be damaging to the body. Chronic stress has been linked with increased risk for heart disease, high blood pressure, diabetes, chronic pain, depression, anxiety and other illnesses (Ahirwar et al., 2016; Hannibal & Bishop, 2014).

Some amount of stress is likely to be associated with any academic program, but for those entering healthcare training programs, such as medical school or advanced nursing practice programs, the level of stress students experience appears high and is chronic. Prevention, or early recognition, of increased stress could serve as a form of prevention against psychological distress in MS. Biochemical evidence exists suggesting diurnal salivary cortisol blunting occurs in MS



(Tseng, Iosif, & Seritan, 2011). Cortisol blunting occurs when the body is exposed to prolonged periods of stress and the body essential gets burned out, and lower than normal levels of cortisol are produced. When cortisol blunting occurs, one is not able to mount the needed cortisol response; therefore, cortisol may not be helpful to the individual when they need to deal with a stressful stimulus. Cortisol blunting has been linked to increased risk for mental health conditions such as depression and anxiety and is commonly observed in cancer patients (Saban, Mathews, Bryant, O'Brien, & Janusek, 2012).

In approximately 80% of major depressive episodes, a stressful life event precedes the onset of depressive symptoms and remains the strongest risk factor for developing a depressive episode (Guille, Clark, Amstadter, & Sen, 2014). For MS, stress may cause feelings of hopelessness, fear, incompetence, anger, guilt and may lead to other psychological conditions, such as depression (Dyrbye et al., 2011). Perceived high stress in MS varies across studies, as did tools used to measure stress. In a study of over 2,200 MS, 48.6% of students reported high levels of stress, according to the Perceived Stress Scale, which was greater than ½ standard deviation than that of age-matched controls (Dyrbye et al., 2011) Other studies show rates of high stress vary, with a prevalence rate of approximately 58% in U.S MS and international ranges between 20.9% and 90%, respectively (Fares, Al Tabosh, Saadeddin, El Mouhayyar, & Aridi, 2016).

In the only study found which examined a dimension of NPS well-being, a group of 12 students was interviewed about their feelings of stress, causes of stress, and areas of support. Fifty percent of students reported stress that was above average and 41.7% reported their current level of stress to be the highest ever in their life. Students also endorsed low levels of support from faculty members and found time management to be the most distressing aspect of their schooling. Students felt inadequate or ill-prepared due to trying to manage family, work, and

academic obligations. Students felt they were not able to complete academic work to their full potential due to lack of time (Maville et al., 2004).

### **Anxiety and Healthcare Professionals**

Anxiety disorder affects nearly 30% of adults at some point in their life and may impact job and school performance and interfere with relationships. Generalized anxiety disorder is characterized by excessive anxiety or worry that lasts for several months. Along with feelings of worry, physical and mental manifestations may also be present and can include restlessness, feeling wound up or on edge, easily fatigued, difficulty concentration, irritability, muscle tension, difficulty controlling worry, and sleep problems (NIMH, 2016).

Medical students appear to suffer from rates of anxiety at levels significantly higher than that of the general public (Dyrbye, Thomas, & Shanafelt, 2006). Few studies have been conducted in recent years examining generalized anxiety in the medical school population. One recent study of approximately 450 MS found rates of anxiety to be around 20%, which is significantly higher than the 2.3% prevalence of anxiety found in age-matched controls (Mousa, Dhamoon, Lander, & Dhamoon, 2016).

Some of the activities medical and nursing students partake in could be contributing to anxiety, such as increased alcohol and caffeine intake and lack of physical activity. In a large study focused on stress in nurse anesthetist students, students reported many symptoms that may be indicative of generalized anxiety disorder. Sixty-four percent of students reported feeling agitated, anxious or irritable great than one time per week (Chipas et al., 2012). Other weekly occurring symptoms endorsed by a large number of students surveyed included annoyance by trivial things, food cravings, decreased concentration, gastrointestinal reflux, impatient with others, mood swings, nervousness, overuse of alcohol, and sleep disturbance (Chipas et al.,

2012). Many of these symptoms are inclusive of diagnostic criteria for generalized anxiety disorder.

### **Burnout and Healthcare Professionals**

Chronic stress is recognized as a precursor to burnout. Occupational burnout, also known as burnout syndrome, is caused by prolonged exposure to chronic emotional and interpersonal stressors in an occupational setting and is further defined by feelings of exhaustion, cynicism, and lack of achievement (Maslach, Schaufeli, & Leiter, 2001). Of the three dimensions of burnout, the feeling of physical exhaustion is the most recognizable and widely reported dimension. Cynicism, or depersonalization, is defined as a cognitive distancing from work and work relationships. Burnout may manifest as healthcare providers viewing patients as merely objects and not as unique and valuable and may result in loss of care and compassion for patients. The third dimension of burnout, reduced personal accomplishment, is thought to be a result of exhaustion and cynicism and results in job dissatisfaction. Feelings of accomplishment, purpose, and importance of one's work may be lost.

Healthcare industry jobs are associated with higher rates of burnout due to common job-related stressors encountered by many in the profession. Healthcare professionals often work long hours with heavy workloads, which can cause physical exhaustion. Patient unhappiness, death, healthcare system demands, immense responsibilities related to the provider role, and time away from family are all recognized among healthcare workers experiencing burnout. Anxiety and depression share a relationship with burnout and may be confused with burnout syndrome. Burnout is specific to occupational demands, while depression and anxiety are all-encompassing of one's personal life. It is recognized that a history of anxiety or depression may predispose one to burnout and indeed these conditions can co-exist (Maslach et al., 2001).

A review of studies examining MS burnout from 1990-2015, found the average rate of student burnout to be around 50% (Dyrbye & Shanafelt, 2016). Burnout in MS can increase the risk for numerous poor outcomes. The personal side effects of burnout are documented to include serious thoughts of dropping out of medical school, abuse or dependence on alcohol, depression, suicidal ideation, high levels of perceived stress, diminished professional qualities, and increase in academic dishonesty (Dyrbye & Shanafelt, 2016; Dyrbye et al., 2011; Dyrbye et al., 2010; Jackson et al., 2016).

Burnout in MS potentially impacts the safety of patients. Students who are experiencing burnout report higher rates of depersonalization and emotional exhaustion, lower rates of empathy and altruistic views, and were more likely to view patient situations with cynicism (Dyrbye & Shanafelt, 2016; Paro et al., 2014). Students experiencing high levels of burnout endorsed more self-perceived medical errors (West, Halvorsen, Swenson, & McDonald, 2013) and were more likely to be dishonest about patient situations, such as reporting abnormal physical exam findings as normal or delaying the ordering and reporting of lab results (Dyrbye et al., 2010).

Demographic and personality characteristics have been identified of those most susceptible to burnout. Demographic characteristic for burnout in the general public includes single males, those younger than 30, early stage of career, and higher education status (Maslach et al., 2001). Personality characteristics include those with low levels of hardiness, poor self-esteem, an external locus of control, and avoidant coping styles (Maslach et al., 2001). In the MS population, demographic characteristics and risk factors for burnout includes female sex, history of depression, personal or family member illness, family-related stress, financial concerns, high educational debt, working while in school, use of avoidant-oriented coping strategies, and lack of

time for family and social interactions (Lapinski, Yost, Sexton, & LaBaere, 2016; Michalec & Keyes, 2013; Santen, Holt, Kemp, & Hemphill, 2010; Thompson et al., 2016).

Individual strategies that may lower the risk of student burnout includes creating a personal plan to finding meaning in the work students are engaged in, maintaining a positive outlook, making time for rest and leisure activities, building a close social network with family and friends and viewing self-care activities as a high priority (Dyrbye et al., 2015; Dyrbye & Shanafelt, 2016). The academic environment also appears to play a role in burnout. Viewing the learning environment as negative, feeling mentors and faculty members do not see the educational experience as a priority, and lack of timely and routine feedback all appear to increase the risk of burnout for MS (Dyrbye & Shanafelt, 2016; L. Dyrbye & T. Shanafelt, 2016; Reed et al., 2011).

Graduating from medical school does not immediately remove the distress imparted by the academic rigors expected of students. Nearly half of graduating MS are burned out and are suffering from high rates of depressive symptoms and low mental quality of life at the time of graduation (Dyrbye et al., 2011) When they enter practice, they will once again face factors that lead to high rates of burnout, depression, and suicidality (Kuhn & Flanagan, 2017).

### **Help-seeking Behavior for Psychological Distress**

While MS and healthcare providers understand the pathophysiology of mental health conditions and direct patient care of mental health conditions, MS and MD often do not seek care for their personal mental health conditions (Dyrbye et al., 2015; Kuhn & Flanagan, 2017; Wimsatt et al., 2015). MS report a lack of help-seeking for mental health conditions because they fear stigma and that they will be perceived as unable to handle responsibilities by their peers and mentors (Dyrbye et al., 2015).

Medical providers are less likely to seek help for mental health conditions than the general public and self-report studies examining mental health conditions in health care providers may produce significantly lower estimates of mental health conditions among this profession due to under-reporting (Kuhn & Flanagan, 2017). Providers may avoid seeking mental health services for fear of being deemed unfit to continue practicing and having restrictions placed on their medical practice license. When renewing a medical license, questions about mental health history are asked as part of the renewal process. Healthcare colleagues or those providing direct care to a healthcare professional have an ethical obligation to report those whom they feel are unsafe to practice (Kuhn & Flanagan, 2017).

### **Resilience: A Protective Skill**

In the past 20 years, research investigating causes and solutions to medical student and physician distress has increased significantly. While there is much research available demonstrating the poor psychological health of MS and MD, research investigating how to prevent these outcomes is in its infancy. Causes of and risk factors for psychological distress in MS appear individual, unique, and multi-factorial, which makes creating interventions that will benefit each unique student's situation difficult. Emerging from the research among medical student and healthcare provider well-being is the protective influence resilience appears to play in reducing psychological distress in these populations. Numerous research studies have found a direct correlation between high levels of resilience and low levels of psychological distress and burnout, and high levels of career satisfaction among MS and healthcare professionals (Bacchi & Licinio, 2017; Eley & Stallman, 2014).

The concept of human resilience started appearing in psychology literature in the 1970's. The empirical definition of human resilience, often categorized as a personality trait in the

literature, lacks a universal definition. Examples of definitions in the literature which reference resilience include the ability to bounce back, rise above, adapt or adjust to change and adversity (Aburn, Gott, & Hoare, 2016), a set of personal characteristics that allow one to thrive when faced with adversity (Connor & Davidson, 2003) or a phenomena in which good outcomes occur in the face of serious threats to adaptation or development (Masten, 2001).

Initially, researchers were fascinated by the ability of children to thrive and prosper despite enduring poor social situations, such as war, poor socioeconomic status, single-parent families and other traumatic experiences (Howe, Smajdor, & Stöckl, 2012; Masten, 2001). Resilience was thought to be an inherent trait which one was born with, and people with this trait were seen as “invincible” (Masten, 2001). As research progressed in this area, resilience was surprisingly identified as an ordinary personality trait of which one can be taught skills to enhance their level of resilience (Masten, 2001). People with the highest levels of resilience are thought to be resistant to psychological distress due to their ability to self-regulate their emotions. Higher levels of resilience also share an inverse relationship with chronic health conditions such as glycemic control and depression severity (Cal, Sá, Glustak, & Santiago, 2015). Characteristics of a resilient person include a generally positive outlook on life, having self-love and confidence in one’s abilities, a belief that most situations work out for the best, and a feeling that their life has a purpose (Connor & Davidson, 2003).

Research examining student resilience and how it relates to psychological distress during medical school found resilient students were less likely to experience depression, had experienced fewer stressful life events, reported high levels of social support, low levels of stress, used approach-oriented coping skills, and perceived their learning climate to be more positive (Bacchi & Licinio, 2017; Dyrbye & Shanafelt, 2016; Dyrbye et al., 2010; Thompson et

al., 2016) Overall, MS appear to have lower levels of resilience compared to the general public (Houpy, Lee, Woodruff, & Pincavage, 2017). Students who felt comfortable discussing stress and burnout with peers exhibited higher resilience.

High levels of resilience also appear to be protective of practicing MD and nurses. Medical doctors and nurses displaying higher levels of resilience were less likely to experience burnout, depression, depersonalization, and had greater work satisfaction and better uncertainty tolerance (Mealer et al., 2012; Waddimba et al., 2016; Zwack & Schweitzer, 2013). Work environments that appear supportive of resilience are those with lighter workloads and have a greater number of colleagues (Waddimba et al., 2016).

### **Interventions and Recommendations for Prevention**

Researchers in the field of medical student distress have offered many opinions and recommendations for possible interventions to prevent psychological distress in MS. While many intervention recommendations exist, research deploying interventions and documenting their effectiveness is only recently appearing in the literature. Of the interventions implemented, only small, single-institution studies exist which examine intervention outcomes. Medical schools around the country are being encouraged to implement curriculum directed at reducing student burnout. Curriculum strategies being implemented by medical schools include emphasis on self-care, mental health and wellness programs, teaching resiliency skills, mentorship programs, conversion to pass-fail grading system, curricular restructuring, early recognition of psychological distress via periodic mental health assessment, yoga, and mindfulness training (Dyrbye et al., 2011; Moir, Henning, Hased, Moyes, & Elley, 2016; Pandey, Singh, & Haider, 2016; Wasson et al., 2016; Williams, Tricomi, Gupta, & Janise, 2015). Future high-quality studies evaluating the effectiveness of these interventions is needed (Wasson et al., 2016).



Medical schools and healthcare institutions have trialed programs aimed at raising awareness of the prevalence of mental health issues in medical providers and students and as a result have offered programs to address these issues. A program developed and launched by the University of California San Diego provided MS and physicians with an annual wellness check. The check consisted of a confidential, 35-question, internet-based mental health assessment which examined levels of stress, depression, and suicidal thinking. While only 8% of invited respondents completed the assessment, 11% of respondents were referred onto to mental health services and five of the six who reported seeking follow-up services reported improvement in their symptoms (Haskins et al., 2016)

Building student resilience skills has been the most predominate theme in the literature surrounding interventions for MS. Top medical schools across the United States such as the Vanderbilt Medical School, Mayo Clinic School of Medicine, Stanford University School of Medicine, and Duke University School of Medicine, have implemented interventions focused on building student resilience and are in the early stages of measuring outcomes and replicating findings. Thus far, results have been promising (Moir et al., 2016; Thomas, Haney, Pelic, Shaw, & Wong, 2011). Small studies examining resilience-building interventions implemented with nurses and MDs have shown promising results, but need larger scale reproduction (Sood, Prasad, Schroeder, & Varkey, 2011).

Not only is the importance of resilience being recognized by medical schools, professional associations recognize the importance of building resilience for medical professionals. The American Medical Association offers the STEPS Forward™ program, which is an online module for MD specific to building resiliency skills. The National Academy of Medicine is embarking on a four-year action collaboration, working with a multi-disciplinary

team to bring all key players in healthcare together to improve the well-being and resilience of all healthcare professionals. The focus of the collaboration has been on reducing electronic medical chart burden, improving working conditions, and decreasing time spent on activities outside of providing direct health care, such as documenting and working with third-party payers. While the action collaboration is in its early stages of development, they are eager to investigate and work on fixing any part of healthcare that leads to poor outcomes for healthcare providers, as they know this ultimately impacts the care of the patients being served.

### **Theoretical Framework**

While some students experience psychological distress during their schooling, other students will not experience these outcomes. With the same academic expectations, what sets the psychologically distressed students apart from those who do not experience psychological distress? While the answer to this question is likely multi-factorial, much distress and burnout experienced by students may be related to their cognitive appraisal of individual situations, whether personal or professional, encountered during their schooling experience.

In 1984, Richard Lazarus and Susan Folkman developed the Transactional Model of Stress and Coping and it remains a cornerstone of stress and coping research (Lazarus & Folkman, 1984). The basis of this theory describes, first, an interaction between an individual and their environment, which is considered a potential stressor. This interaction with the environment is appraised by the individual as positive or negative. Appraisal of the situation by the individual is dependent on the meaning of the stimulus to the individual. If the interaction is appraised by the individual as positive, there is no stress response. If the interaction is appraised initially as negative, a secondary appraisal occurs, and the individual looks for coping options or

ways to turn the interaction from negative to positive. If no reasonable options are acknowledged by the individual, the result is a negative appraisal, and a stress response is created.

An example of such an event may be if two students complete the same assignment and receive the same grade and feedback from their teacher, the individual student encountering the interaction will uniquely appraise this interaction. The first student, Student A, understands they are learning, and they will not always know the right answers. They appreciate the feedback from their teacher as it was fair and constructive. They've also had many positive interactions with their teacher and believe their teacher cares about them and wants to see them succeed. Student A walks away with positive feelings about the assignment and no stress response. On the other hand, Student B is concerned they won't receive the best grade in the class as a result of this assignment. They feel their teacher doesn't care about their learning experience and views them as a poor student as a result of this assignment and the student feels embarrassed. A secondary appraisal of the event results in a stress response due to an inappropriate appraisal by Student B or an inability to believe and rely on one's own past successes and outcomes. Student B walks away with a negative experience that results in a stress response.

While it may be the same stressor each student was exposed to, each student will interpret the situation using their learned coping skills or what appears to be true, based on their cognitive assessment of the situation. Often, the cognitive assessment made is one that is imagined and false. For example, the teacher doesn't think Student B is a poor student and feels the student is one of the brightest students in the class. In this case, the student has created an appraisal of the situation that is indeed untrue, yet in their mind, their negative appraisal of the situation feels true.

Lazarus and Folkman's theory provides a possible explanation for the concept of resilience in healthcare professionals. Students and healthcare providers who are more resilient are less likely to burnout or have psychological distress. The stress response is often not triggered, such as the case with Student A, when a stressor appears. Resilient individuals are able to appraise the situation from a more positive point of view and call on their past positive experiences and learned coping mechanisms to avoid triggering the stress response. Resilient individuals tend to have a strong belief in their own abilities and are able to look outside of a situation and realize most stressors are just a small, temporary setback. Those who are less resilient may find it difficult to recall past coping mechanism, and a negative cognitive appraisal of the situation may occur. Individuals lacking resilience are more likely to see a stressful situation as all-encompassing. They may have a difficult time believing in their capabilities and skills, and problems feel much larger and significant than they may truly be.

### **Organization Strategic Goals**

The study took place at a midwestern school of nursing which offers a Bachelor of Science in Nursing and Doctor of Nursing Practice degrees. The project served as a first step in evaluating the well-being of current students. By conducting the project, the potential risk NPS face for poor mental health and well-being during their academic career is acknowledged and future steps to promote student well-being can be established based on study findings. An essential skill of a dynamic healthcare provider would be one who can effectively cope with the challenges they face in their personal life along with academic and professional demands. NPS are expected to provide safe and effective care for the patients they serve, while preserving one's own well-being. Supporting the mental health and well-being of students should be a priority of

any academic program as personal well-being is an essential skill to thriving in the professional work environment.

### CHAPTER THREE. DESIGN

A longitudinal design was used to examine changes in first, second, and third year NPS mental health and well-being as students progressed through an academic semester. The study collected baseline data, which was collected before the start of fall 2017 classes, and follow-up data, which was collected prior to the end of fall semester. Studies examining MS well-being before starting medical school saw well-being better than that of the general public and a dramatic decline in those numbers had been documented as soon as three months into medical school. (Liselotte N. Dyrbye, Christine Moutier, et al., 2011). An additional follow-up assessment will be conducted near the end of spring semester 2018 to further assess psychological changes over time with this cohort of students. Each assessment time point utilized the same validated tools, demographics, and mental health history questions to assess psychological well-being (see Appendix B for survey).

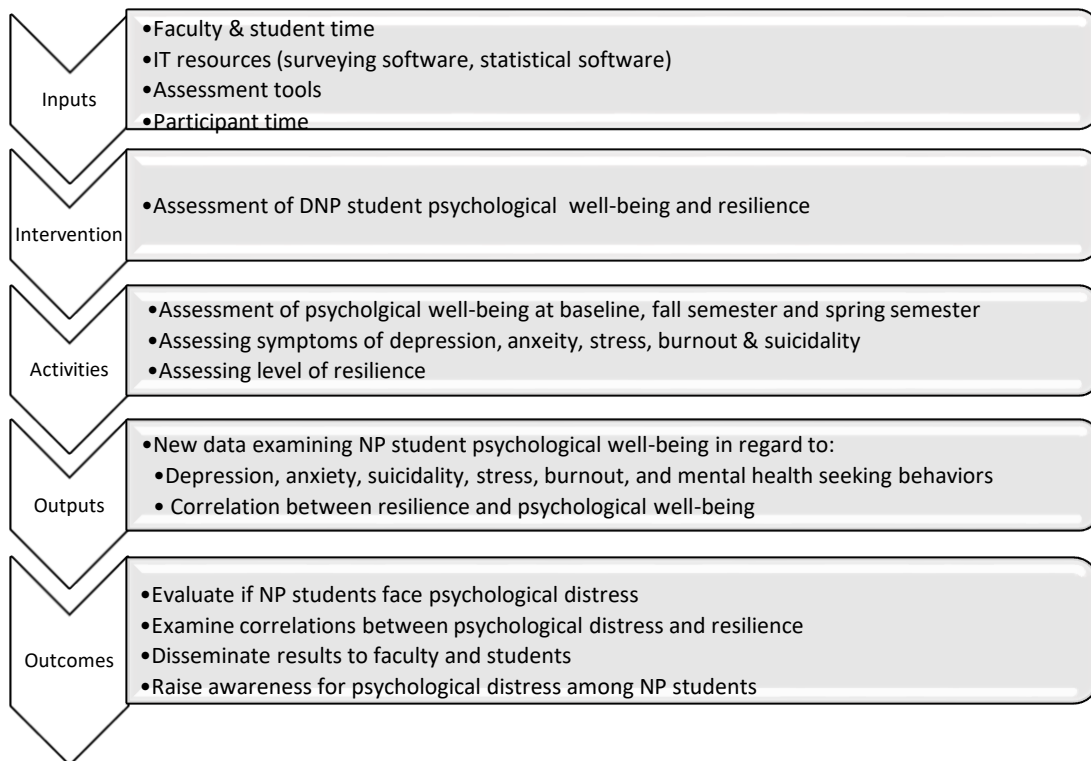


Figure 1. Logic Model

## **Project Objectives**

Objective One: Examine first, second, and the third year NPS psychological distress at the start of the academic year and evaluate for changes in distress after one academic semester. The results from this project provide valuable insight into the psychological well-being of NPS in one academic program. Psychological distress was measured using validated tools for depression, anxiety, suicide, stress, burnout, and a self-created mental health help-seeking behaviors questionnaire, which will be discussed in more detail in the Evaluation Plan section.

Objective Two: Examine level of resilience in NPS and examine if resilience correlates negatively with the psychological distress at baseline and follow-up assessment. According to the literature on resilience and MS, more resilient students experience lower rates of psychological distress, burnout, and have a better quality of life. This project examined if this relationship is consistent with NPS.

## **Subjects, Setting, and Resources**

A convenience sample of first, second, and third year Doctor of Nursing Practice students from a Midwestern School of Nursing was invited to participate in the study. Students spend a total of eight academic semesters, including fall, spring, and summer semesters, completing this particular NP program. Students spend four to eight hours per week attending in-person class. Several students enrolled in the program live in rural communities and commute to class each week. In just under three years, students will complete 86 academic credits, 1000 clinical hours, and complete a scholarly project.

In total, 46 students were eligible to participant in the study. Email invitations were sent via the surveying software Qualtrics©, a web-based internet surveying tool that is available and free to use for students of the university. A computer with internet access is a program

requirement for NPS, ensuring that all students who were invited to participate had an equal opportunity to complete the survey.

Two of the validated tools used in the survey were purchased by the investigating student. The total cost to utilize the CD-RISC and MBI tool was \$340, respectively. No other costs were encountered as a result of the study.

### **Timeline of Project Phases**

Following IRB approval in July 2017, NPS were sent an invitation via email to participate in the survey. The baseline assessment was administered before the beginning of fall classes, in mid-August 2017, and students were able to complete the survey into the first week of classes. The second survey was disbursed near the end of November 2017 and responses were accepted into the last week of classes for the semester. Once the survey was sent to students, a periodic reminder email was sent to students requesting them to complete the survey.

### **Assessment Tools**

#### **Patient Health Questionnaire (PHQ-9)**

Depressive symptoms and current suicidality will be measured using the PHQ-9. The PHQ-9 is a brief, self-administered, nine-item questionnaire designed to detect clinical depression and severity based on the nine diagnostic criteria for clinical depression according to the Diagnostic & Statistical Manual of Mental Disorders, 4<sup>th</sup> edition (DSM-IV) (Kroenke, Spitzer, & Williams, 2001). Validated in 2001, the PHQ-9 was intended to provide healthcare providers with a time-conscious tool to diagnose clinical depression. Construct validity was established using the Short-Form General Health Survey, and criterion validity was assessed against structured mental health interviews. Scoring of the PHQ-9 is based on a 4-point Likert scale, with “0” being “not at all” and “3” being “nearly every day.” Respondents are asked to



rate their feelings over the past two weeks, using the 0-3 rating system, for each of the nine diagnostic criteria. Response scores are added together, and a total score determines the level of depression severity. Mild depression is considered a score between 5-9, moderate depression is a score of 10-14, moderately severe depression is a score between 15-19, and severe depression is a score of 20-27, respectively (See Appendix B for survey). PHQ-9 scores  $\geq 10$  are 88% sensitive and 88% specific for major depression. With increasing scores on the PHQ-9, there is also a negative correlation with functional status of the respondent (Kroenke et al., 2001). Current suicidality is also assessed using the PHQ-9 tool.

The PHQ-9 is a desirable tool used in the clinical and research setting as it takes approximately one minute to complete, is highly sensitive and specific, and is a free source. A majority of studies examining depression in MS utilized the PHQ-9. Of the studies which used the PHQ-9, the prevalence of moderate to severe depression was approximately 20.8% in MS (Mata et al., 2015). Prevalence rates of depression among the U.S. adult population is approximately 6.7% (NIMH, 2016).

### **Generalized Anxiety Disorder Scale (GAD-7)**

The GAD-7 is a seven-item, self-report questionnaire developed for clinical and research use as a way to quickly detect generalized anxiety disorder (GAD) (Spitzer, Kroenke, Williams, & Löwe, 2006). Similar to the PHQ-9, the GAD-7 uses DSM IV established criteria to screen for GAD. Respondents are asked to rate their symptoms over the past two weeks on a 4-point Likert scale, with “0” corresponding to “not at all” and “3” corresponding to “nearly every day.” Scores for each of the seven items are added together to form a composite score. A score of 0-4 likely signifies minimal anxiety, 5-9 is mild, 10-14 is moderate, and a score between 15-21 indicates severe anxiety, respectively. GAD-7 scores  $\geq 10$  are 89% sensitive and 82% specific for detecting

GAD. The measure has good internal consistency, with a Cronbach's alpha 0.79-0.91. The GAD-7 also has good specificity and sensitivity for detecting panic disorder, social anxiety disorder, and post-traumatic stress disorder (Spitzer et al., 2006).

### **Suicidal Behaviors Questionnaire-Revised**

The Suicide Behaviors Questionnaire-Revised (SBQ-R) is a four-item, self-administered questionnaire which assesses lifetime suicidal ideation and suicide attempts, the frequency of suicidal ideation over the past 12 months, the threat of suicide attempt, and the likelihood of suicidal behavior in the future (Osman et al., 2001). Suicide risk is determined by the total score of the scale (See Appendix B for survey). Each question response ranges from no endorsement of suicidal ideation to very high-risk response for suicidality. Total survey score risk was used to determine risk for suicidal behaviors. Anyone scoring greater than seven, out of a total of 18, on the scale is considered high risk for suicidal behaviors, which was 93% sensitive and 95% specific for identifying individuals at high risk for suicidal behavior (Osman et al., 2001).

### **Perceived Stress Scale**

The Perceived Stress Scale (PSS) is the most widely used psychological measures available which rates individual perception of stress. The PSS is a 10-item self-report measure examining stress perception over the past month (Cohen, Kamarck, & Mermelstein, 1983). The PSS has a Cronbach's alpha score of 0.84-.086, respectively, and test to re-test reliability is 0.85. When compared with other measures examining stress, correlation of the PSS ranged between 0.52-0.76 The PSS uses a 5-point Likert scale with "0" corresponding to "never" and "4" corresponding to "very often." The higher the total score for the measure, the greater the level of self-perceived stress. Scores can range from 0-40. A score of 0-13 would indicate low stress, 14-26 correlates to moderate stress, and 27-40 represents high levels of perceived stress.

## **Maslach Burnout Inventory – Student Survey**

The Maslach Burnout Inventory (MBI) is the most extensively used measure to examine occupational burnout in professions that spend a majority of their time working with people. The MBI has several validated and reliable scales which aim to evaluate individual burnout in general work environments and burnout occurring in different specialty populations such as healthcare, education, and students (Maslach & Jackson, 1981). The project utilized the MBI student inventory, which is a 16-item, self-administered survey in which respondents are asked to rate their feelings about their academic work (Schaufeli, Salanova, González-romá, & Bakker, 2002).

The MBI is comprised of three subscales and includes students' feelings of exhaustion, cynicism about academic work, and feeling of academic accomplishment (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 2016). A 7-point Likert rating scale is utilized with "0" corresponding to "never" and "6" corresponding to "every day." Scores can be added or averaged for each subscale. Higher levels of burnout correlate to higher scores on the exhaustion and cynicism sub-scales, and a lower score on the professional efficacy sub-scale.

## **Connor-Davidson Resilience Scale (CD-RISC)**

The Connor-Davidson Resilience Scale (CD-RISC) is the most widely used scale which measures the resilience of individuals. The CD-RISC is a 25-item, self-administered questionnaire which uses a 5-point Likert scale rating from 0-4, with "0" corresponding to "not true at all" and "4" corresponding to "true nearly all of the time" (Connor & Davidson, 2003). Scoring of the scale ranges from 0-100, with higher scores indicative of greater resilience. Internal consistency for the scale yielded a Cronbach's alpha score of 0.89 for the full scale. Test-retest reliability in clinical trials demonstrated interclass correlation coefficient of 0.87. The CD-RISC correlated positively with the Kabasa hardiness measure and displayed a negative

correlation with the Perceived Stress Scale and Sheehan Stress Vulnerability Scale. The CD-RISC also corresponds negatively with the Sheehan Social Support Scale and the Sheehan Disability Scale, which indicates higher levels of resilience correlates to low levels of social distress and disability. All studies examining resilience in MS utilized the CD-RISC to measure resilience. Studies found MS scoring highest on the CD-RISC appear to be more resistant to psychological distress (Bacchi & Licinio, 2017).

### **Demographics & Mental Health History**

Several demographic risk factors emerged in the literature regarding MS and MD well-being, which were explored with the NPS population. While the demographic questions collected for this project may be of a sensitive nature, they were thoughtfully selected according to the literature surrounding MS well-being and may be important factors influencing NPS psychological well-being. Examples of demographic characteristics which appeared to negatively impact psychological distress in MS include Caucasian race, female sex, number of children, changes in relationship status, financial concerns, amount of debt, and being employed (Dyrbye et al., 2011; Dyrbye, Thomas, & Shanafelt, 2016; Dyrbye et al., 2006; Hardeman et al., 2015). A history of mental health issues, such as depression or anxiety, emerged as a risk factor for psychological distress in MS. MS are also not likely to seek help for mental health conditions. Students were asked questions about past mental health diagnosis and mental health treatment history. Students were also asked if they felt they had a mental health condition in the past but did not seek help, and why they chose not to seek help (see Appendix B for survey).

## **Protection of Human Subjects**

### **Human Subjects Involvement and Characteristics**

All enrolled NPS attending the same Midwestern School of Nursing were invited to participate in the study and were in their first, second, or third year of a Doctor of Nursing Practice program. Students who were pregnant, or became pregnant during the study, remained eligible to participate. All NPS hold, at a minimum, a bachelor's degree in the field of nursing and were of the mental capacity to understand the risks associated with participation in the project.

### **Potential Risks & Protection Against Risks**

Subjects may have found the survey questions upsetting or intrusive. Therefore, they were allowed to withhold information of their choosing and could choose not to complete the survey without penalty. The survey was set up to keep the confidentiality of the subjects anonymous. The surveying software was able to assign random identification numbers to surveys, so the investigators were unable to identify individual responses.

Some of the questions asked about the mental health of subjects included questions about past suicidal and current suicidal thoughts. Due to the anonymity of the survey, identifying and providing an intervention to subjects who express suicidal thoughts or intentions would not be possible. Within the survey, resources for available mental health services were provided immediately following questions about suicidality and students are encouraged to seek out these resources if they are endorsing suicidal thoughts or any type of mental health condition (see Appendix B for survey).

Due to the small sample size, reporting of results will not include demographic factors that may potentially identify individuals from within the sample. All data collected from the

study will remain in a restricted access folder in a OneDrive account and access to the folder will only be granted to those who are working directly on the project. All personnel working on this project have completed CITI training and understand appropriate conduct when working with research data and human subjects.

### **Recruitment and Informed Consent**

Nurse practitioner students were sent an email at the beginning of the baseline and follow-up time points inviting them to participate in the study. A description of the study, the risk of study participation, right to withdraw from the study, study contacts, and IRB contact information were presented at the beginning of the survey. Subjects gave their consent to participate by choosing to proceed with completing the survey (See Appendix B for survey). It was emphasized that students would in no way be penalized for not participating in the study and that the survey information they provided would remain de-identified and confidential.

### **Benefits of Project to Subjects**

Subjects who chose to participate in this project did not personally benefit from participation. With all participation in research, there is a general benefit to society.

### **Importance of the Knowledge to Be Gained**

The proposed study created new data specific to NPS well-being during their educational experience, for which data is sparse in the literature. Results of this study may have the potential to positively impact the educational experience of future NPS. Based on the findings from this project, NP faculty will be made aware of the significant mental health challenges students in their program face. NP faculty may feel motivated to emulate and measure interventions deployed by medical schools and other organizations. Such interventions may help support the

well-being of their students and help better prepare them to manage mental health issues into their professional career.

### **Inclusion of Women, Children and Minorities**

All students enrolled in the DNP program were invited to participate in the study, and this included the possibility of women and minority individuals. No children were enrolled in the study.

## CHAPTER FOUR. EVALUATION

To measure the first objective, questionnaires were administered to explore symptoms of depression, anxiety, suicidality, stress, burnout, and past mental health help-seeking behaviors. The same questionnaire was administered at each time point and also included demographic information (see Appendix B for survey).

Outcomes for the second objective were measured using a validated resilience measure, the Connor-Davidson Resilience Scale (CD-RISC), to assess the level of student resilience at baseline and follow. Using statistical analyses, we examined if there was meaningful change to resiliency scores over the course of an academic semester and if the level of resiliency correlates to psychological distress at baseline and predicts distress at follow-up. (See Appendix B for survey).

### Statistical Analysis

To observe changes over time, a mixed-effects repeated measure model was utilized to evaluate changes in psychological status that occurred over the course of the semester. A nonparametric paired t-test, Wilcoxon signed ranks test, was used to determine statistically significant changes in validated measure scoring from baseline to follow-up due to non-normative data distribution. Prevalence for each measure were also reported. A generalized linear regression model was used to evaluate the association between resilience and depression, anxiety, suicidality, stress, and burnout. For all analyses in this project, level of statistical significance is reported as  $p < .05$ . Due to the small sample size, reporting of results did not include demographic characteristics that may potentially identify individuals from within the sample.



## CHAPTER FIVE. RESULTS

### Sample Description

The response rate for the baseline survey was 79%, with 37 of 46 eligible respondents completing the survey. At follow-up, 33 of 46 invited respondents completed the survey for a response rate of 70%. Data analysis included all respondents from both surveying time points (See Table 1 and Table 2).

Table 1

#### *Demographics of Participants*

Sample Demographics	(n = 37)		(n = 33)	
Gender				
Female	32	86.5%	28	87.5%
Male	5	13.5%	5	12.5%
Mean age (range), y	28.8	(25-54)	30.5	(25-54)
Marital status				
Married/partnered	29	78.4%	22	66.7%
Never married	7	19%	10	30.3%
Divorced	1	2.6%	1	3%
Year in program				
1 <sup>st</sup>	12	32.4%	12	36.4%
2 <sup>nd</sup>	13	35.2%	12	36.4%
3 <sup>rd</sup>	12	32.4%	9	27.2%
Average hours worked in paid position per week				
0	8	21.6%	4	12.1%
1-16	13	35.1%	20	60.6%
17+	16	43.3%	9	27.3%

Table 2

*Descriptive Statistics*

	<i>n</i>	Mean	SD	Min	Max
<b>PHQ-9 - Depression</b>					
Baseline	37	3.05	3.79	0	15
Follow-up	33	4.21	4.52	0	20
<b>GAD-7 - Anxiety</b>					
Baseline	37	4.57	4.85	0	20
Follow-up	33	4.79	5.02	0	18
<b>SBQ-R - Suicidality</b>					
Baseline	37	3.162	0.50	3	5
Follow-up	33	3.52	2.00	3	12
<b>PSS - Stress</b>					
Baseline	37	12.03	6.31	0	28
Follow-up	33	12.76	6.23	3	27
<b>MBI-EX - Burnout Exhaustion</b>					
Baseline	37	10.32	8.56	0	27
Follow-up	33	15.06	6.24	5	26
<b>MBI-CY - Burnout Cynicism</b>					
Baseline	37	7.27	7.02	0	24
Follow-up	33	11.76	6.26	1	26
<b>MBI-PE - Burnout Professional Efficacy</b>					
Baseline	37	19.84	11.66	0	36
Follow-up	33	27.52	5.35	15	36
<b>CD-RISC – Connor- Davidson Resiliency</b>					
Baseline	37	77.24	17.75	53	97
Follow-up	33	76.09	12.57	51	98

**Baseline and Follow-up Psychological Measure Findings****Depression**

Mean PHQ-9 scores increased from baseline to follow-up and a Wilcoxon Signed-Ranks test indicated that follow-up PHQ-9 scores were significantly higher than baseline PHQ-9 scores ( $M = 4.21$ ,  $SD = 4.52$ ;  $Z = 2.426$ ,  $p = 0.015$ ). Regarding clinical significance of PHQ-9 findings, 11% (4 of 37 students) of students met diagnostic criteria for moderate to severe depression, and at follow-up, 15% (5 of 33 students) met criteria.

## **Anxiety**

GAD-7 score differences were not statistically significant from baseline to follow-up. The clinical scoring of the GAD-7 at baseline survey had 9% (7 of 37 students) meeting criteria for moderate to severe anxiety and 21% (7 of 33 students) met criteria for moderate or severe anxiety at follow-up.

## **Suicidality**

No statistically significant change in SBQ-R scores was found when comparing baseline to follow-up scores. At baseline, no students scored in the high-risk category for suicidal behaviors. At follow-up, 9% (three of 33) of students endorsed high-risk suicidal behavior which put them at significant risk for suicidal behaviors. The three students who scored high-risk for suicidal behaviors were in their first semester of the program.

## **Perceived Stress**

The mean PSS score at baseline did not significantly change when compared to follow-up assessment time point. The baseline survey had 41% (15 of 37 student) of respondents scoring a 14 or greater on the PSS scale, which indicates moderate to severe levels of stress. At follow-up, 45% (15 of 33 students) reported experiencing moderate to severe stress levels. As a group, mean perceived stress scores were consistent with low levels of stress at baseline ( $M = 12.03$ ,  $SD = 6.31$ ) and follow-up ( $M = 12.76$ ,  $SD = 6.23$ ).

## **Burnout**

The MBI inventory is divided into three subscales, exhaustion, cynicism, and professional efficacy, and all subscales displayed statistically significant differences in scores at follow-up. Mean exhaustion scores ( $M = 10.32$ ,  $SD = 8.56$ ) increased significantly from baseline to follow-up ( $M = 15.06$ ,  $SD = 6.24$ ;  $Z = -2.802$ ,  $p = 0.005$ ) which indicates the group averaged

feelings of exhaustion approximately once a month or less and at follow-up feelings of exhaustion occurred, on average, a few times a month. Mean cynicism scores at baseline ( $M = 7.27, SD = 7.02$ ) showed a significant increase at follow up ( $M = 11.76, SD = 6.26$ ),  $Z = -3.344$ ,  $p = 0.001$ . On average, at baseline, students felt cynical about their academic work a few times a year or less, this increased to feelings of cynicism occurring, on average, once a month or less at follow-up. Feelings of professional efficacy changed significantly from baseline ( $M = 19.87, SD = 11.66$ ) to follow-up ( $M = 27.52, SD = 5.35$ ;  $Z = -3.683, p < 0.001$ ) which is a positive finding and relates to increased feelings of professional efficacy. On average, at baseline, students felt positive about their academic work about once a week and this increased to feeling positive about their work a few times a week at follow-up.

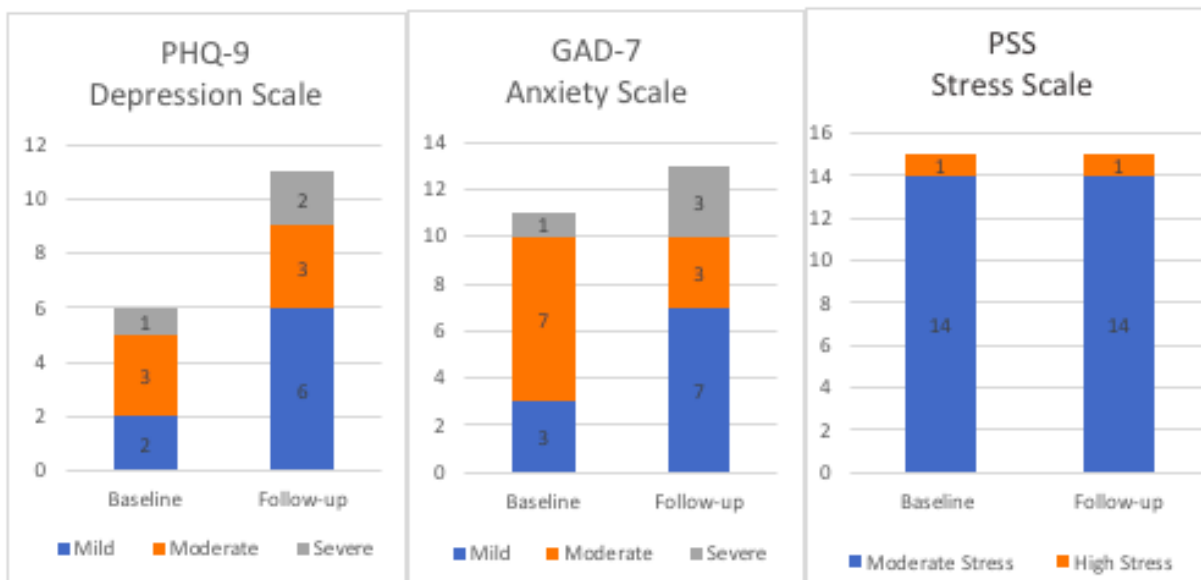


Figure 2. Clinical Criteria Scoring at Baseline (n = 37) and Follow-up (n = 33)

### Mental Health Help Seeking Behaviors

Students answered questions about their current and past mental health history and treatment seeking behaviors (See Appendix B, survey Q13-18). At baseline, 22% (8 of 37

students) reported they had previously been formally diagnosed with anxiety, depression, or both, and received medication as a treatment and 32% (12 of 37 students) indicated they likely had anxiety, depression or both, currently, or in the past, but did not seek treatment for their mental health condition. Of the respondents who choose not to seek help for their mental health condition, 58% (7 of 12 students) reported they did not seek help because they “felt they could deal with the problem on their own”.

Table 3

*Mental Health History Questionnaire*

Mental Health History Questionnaire	<b>Baseline</b> n = 37		<b>Follow-up</b> n = 33	
<b>Students formally diagnosed with a mental health condition by a healthcare provider</b>	8	22%	6	18%
Anxiety	3	8%	1	3%
Depression	3	8%	1	3%
Anxiety + Depression	2	5%	4	12%
Suicidality	0	0%	1	3%
<b>Attempted treatment with medication(s)</b>	8	100%	6	100%
<b>Students who felt they had an undiagnosed/untreated mental health condition in the past or currently</b>	12	32%	10	30%
Anxiety	6	16%	4	12%
Depression	1	3%	1	3%
Depression + Anxiety	5	14%	5	15%
Suicidality	0	0%	1	3%

**Resiliency**

Resiliency scores were measured at baseline and follow-up. These scores remained consistent at baseline and follow-up with no statistically significant change from baseline ( $M = 77.24$ ,  $SD = 17.75$ ) to follow-up ( $M = 76.09$ ,  $SD = 12.57$ ). A CD-RISC mean score of 77 places the sample in the 25-50% percentile when compared to the US population, meaning students

have a mean resiliency score less than 50% of the general public. Mean resiliency scores for the general U.S. population is roughly 82, which falls in the 50-75% percentile.

### **Resiliency as a Predictor of Psychological Distress**

Spearman's correlation was used at baseline to determine significant correlations between resiliency and psychological distress measures. The correlation between resiliency and GAD-7 ( $r = -.429, p = .008$ ), PSS ( $r = -.474, p = 0.003$ ), and PHQ-9 ( $r = -.551, p < 0.001$ ) were found to be significantly negative.

A generalized linear model with gamma distribution was used to evaluate if resiliency predicted changes over time in relation to psychological distress. Resiliency significantly negatively predicted perceived stress scores ( $b = -.011, p = .002$ ) at follow-up, while there was no significant relationship found with other measures.

## **CHAPTER SIX. DISCUSSION AND CONCLUSION**

### **Discussion**

Outcome one was met by examining the psychological well-being of NPS. As mentioned previously, a lack of data is available documenting the psychological well-being of NPS. Throughout the literature examining MS and MD distress, the measure of resiliency and resiliency skill building interventions were prominent. Higher levels of resiliency correlate to an overall better mental health status (Masten, 2001). The mean CD-RISC resiliency score for the sample was lower than the general public average, with the mean group score being in the 25% to 50% percentile, signifying students displayed lower than average resiliency scores. Mean resiliency scores remained consistent without a statistically significant change from baseline to follow-up, which is an expected finding as resiliency scores should remain consistent over the short period between survey intervals. Mean resiliency scores using the CD-RISC in MS populations varied between studies and ranged from the lowest quartile, 0-25%, to the 50-75% quartile (Dyrbye et al., 2010; Houpy et al., 2017; Sood et al., 2011; Thompson et al., 2016).

When examining individual resiliency scores, over half of the sample had lower than average resiliency scores, with 51% of the sample (19 of 37 students) scoring in the 0-25% and 25-50% quartiles. Students with low resiliency scores may be at higher risk of developing poor mental health outcomes. With over half of the sample having poor resiliency, a potential intervention for academic programs may be assessing the level of resiliency in individual students before starting the program. Based on resiliency scores, academic programs could inform students about their increased risk of developing poor mental health outcomes. Students may also stand to benefit from program curriculum incorporating evidence-based resiliency

training to help all students improve their ability to cope with academic, personal, and professional challenges.

NPS appear to experience increased prevalence of depression during the academic experience, and these findings are consistent with MS findings. At baseline, 10.8% of the sample met criteria for moderate to severe depression and 5.4% met criteria for mild depression. At follow-up, 15.1% met criteria for moderate to severe depression and 18.8% met criteria for mild depression. Group PHQ-9 mean scores from baseline to follow-up showed statistically significant increases, implying depression symptoms worsened for the group over the course of the academic semester. Prevalence of moderate to severe depression in the general public is reported to occur in 6.7% of the population and medical school studies report roughly a 20% prevalence with use of the PHQ-9 (NIMH, 2016; Rotenstein et al., 2016). Treatment interventions are recommended for those scoring in the moderate to severe categories on the PHQ-9 depression screening. Five students in the sample would likely benefit from receiving medical treatment with medications or psychotherapy. Three of the respondents lost to follow-up were in the third-year cohort, and this cohort may have the highest risk for depression related to the length of time spent in the program (Rotenstein et al., 2016).

The prevalence of anxiety in the sample is higher than the general public and similar to MS studies examining anxiety. Anxiety occurs in the general public at prevalence rate of 3.1% and is documented in the MS population to occur in roughly 20% of students (Mousa et al., 2016). At baseline, 21.6% of students met criteria for moderate to severe anxiety, and 8% met criteria for mild anxiety. Follow-up evaluation revealed 18.1% met criteria for moderate to severe anxiety and 21.2% met criteria for mild anxiety. Similar to depression, medications and psychotherapy would be indicated for the six students scoring in the moderate to severe anxiety



category at follow-up. There was no significant change in anxiety scores from follow-up to baseline but the prevalence rate in the sample appears to be high and worthy of medical intervention for those suffering from moderate to severe symptoms. Additional follow-up may be warranted to determine if students are facing specific triggers of their anxiety related to the academic environment, such as fear inadequate academic performance, conflict in the clinical setting, or perceived lack of support from faculty and peers.

No students scored high risk for suicidal behaviors at baseline, but at follow-up, three students developed high-risk suicidal behaviors, representing 9% of the sample. Reports of suicidal ideation among MS is approximately 11.1% and 21.2% in SRNA, respectively. Statistically there was not a significant change in suicide scores, but from a clinical standpoint this is meaningful if someone is high-risk for suicidal behaviors. The three students scoring high-risk were all from the first cohort and this finding is unexpected as the first year is typically seen as one of the easier years in regard to the academic demands in the program. Further investigation into the cause of suicidal thinking with these individuals should be investigated to determine if the academics played a significant role versus personal events, which the program may not influence.

At baseline and follow-up, students had low levels of perceived stress. Means PSS score at baseline was 12.03 and follow-up score was 12.76. In comparison, medical school studies examining perceived stress had mean PSS scores averaging in the moderate stress range with mean scores from 16 to 22, with maximum score of 40 (Al Sawah et al., 2015; Lebensohn et al., 2013; Prasad, Varrey, & Sisti, 2016). While mean perceived stress scores increased significantly at follow-up, these scores still remained lower than age matched controls, with normative stress scores for this age category being 14.2 (Cohen & Janicki-Deverts, 2012; Cohen et al., 1983).

Scores of 13 or less are consistent with low levels of stress, scores ranging from 14-25 are consistent with moderate stress, and scores greater than 26 are considered high stress.

Stress is often the precursor to many psychological issues and that does not appear to be true for this population as a whole, yet prevalence of depression and anxiety were high in this sample. Further investigation examining if there's a correlation between stress scores and anxiety and depression scores may reveal students suffering from higher levels of stress and burnout are also the students experiencing depression or anxiety. Students who are feeling higher levels of stress may have felt they did not have the time to participate in the survey. Small sample size limits the results of this survey and replication on a larger scale may yield significantly different scores.

Burnout is a condition that happens as a result of prolonged exposure to occupation stressors. A three-month surveying interval would not be adequate to observe high burnout syndrome scores. The significant increases in mean burnout scores observed in the relatively short surveying time period may be telling of the potential for burnout scores to continue escalating to the point of high burnout.

Mean sub-scale scores were not particularly concerning regarding their severity. There is no cut point for diagnosed burnout syndrome, but often feelings of exhaustion or cynicism would occur at least a few times a week or more to be consistent with high levels of burnout. Students reported feeling exhausted once a month at baseline, to a few times a month at follow-up. As a group, cynicism feelings increased from occurring less than once a year to less than once a month.

The relatively short time span between surveying time points may be a limitation to seeing higher severity burnout and a longer surveying interval may be needed to see more severe

burnout. Burnout typically occurs over time, so burnout severity may continue to worsen with time spent in the program. It may be of interest to survey students prior to starting the program, near the completion of the program, and after a year or two of professional practice to see if more significant burnout develops as a result of many years of exposure to stressful environments. Further analysis may be considered by looking at mean burnout scores in each cohort to see if years in the program correlate to burnout severity. Analysis by cohort is limited due to the small sample size.

Burnout and feelings of professional efficacy have a negative correlation and students had an increase in their feelings of academic satisfaction from baseline to follow-up. This is a positive finding and signifies that students' feelings of success related to in their academic performance increased. These findings may support that students continue to feel their work is meaningful and that their perception of their pace of learning in the program is adequate.

The survey also included questions aimed at collecting a history of past and current mental health help-seeking behaviors. Students were asked questions about their mental health history, treatments received for mental health issues, and help-seeking behaviors. At baseline, 22% of respondents said they had been formally diagnosed with a mental health condition and all of these students received some form of treatment, which consisted of medications, psychotherapy, or both. A large portion of respondents, 32%, reported they've likely had, or currently have, a mental health condition for which they chosen not to seek help from a medical provider for evaluation and treatment. Lack of help-seeking behaviors in NPS appears to follow trends of MSs and MDs who do not seek professional evaluation and treatment for their mental health symptoms. The combination of diagnosed, and possibly undiagnosed, mental health conditions in this population suggests over half of the students in the program likely have a

significant mental health history and may be at increased risk for reoccurrence of poor mental health outcomes. Additional information should be collected about help-seeking behaviors of students. As part of student fees for the sample program, students can receive free or significantly discounted medical and mental healthcare on campus. Knowledge and utilization of campus services should be evaluated to see if students are aware of the affordable healthcare services available to them on campus.

Poor help-seeking behaviors may also support the under-reporting healthcare professionals may engage in when they are knowingly answering questions about their mental health, such as surveying tools used for this project or when being evaluated during healthcare visits. Interventions focuses on increasing help-seeking behavior may benefit students in healthcare programs. Of the students who did report a past mental health history, they all received some kind of treatment. If students get to the point of reaching healthcare services for evaluation and diagnosis of for their mental health symptoms, they may be more willing to accept treatment.

Outcome two examined resiliency as a predictor of psychological distress at baseline and follow-up. Resiliency scores negatively correlated with depression, anxiety, and stress scores at baseline assessment. This is an expected finding as resiliency and psychological stress have a negative correlation. Students who displayed higher levels or resilience had fewer psychological symptoms and students who had lower resiliency scores had more significant psychological symptoms. At follow-up, resiliency predicted a statistically significant negative change in perceived stress. While resiliency did not predict other significant changes in psychological distress, other psychological measures likely remained highly correlated at follow-up and may

significantly change if given a longer survey interval and student psychological outcomes continue to worsen with time.

### **Limitations**

The results of this study should be interpreted with caution as many limitations exist. The sample is small and homogeneous; therefore, the results may not be generalized to all NPS populations. Normative findings were not available for most measures administered for the project. Ideally, comparing study results to age, sex, and education- matched controls would provide for more meaningful interpretation of study results.

Students will face varying degrees of personal stressors before and during the study that cannot be controlled for, such as the death of loved one, financial concerns, personal health events, or other stressors that occur on an individual level. Students who were invited to participate were assured anonymity by the faculty and student researcher, but the personal relationship with the investigators may limit responses due to possible fear of the investigators becoming aware of their responses.

Depending on individuals' current mental state, they may feel more or less motivated to complete surveys based on the topic at hand. Two students who reported a previous diagnosed mental health did not complete the follow-up survey. With a baseline sample size of 37 and a follow-up sample size of 33, the loss of these two subjects to follow-up may have significantly impacted findings. Due to having a past mental health diagnosis, these students are at higher risk for re-occurrence of mental health conditions. Three of the four students who were lost to follow-up were in the third year of the program. Length of time in the program may lead to increased feelings of burnout. Third-year students experienced the highest mean burnout scores in our

sample, and those who did not follow-up may have been less motivated to fill out the survey due to symptoms of burnout or poor mental health.

Students in the second and third year of the program had already been exposed to academic demands, so their baseline psychological scores could be higher at the baseline survey time point compared to what they may have been if they were surveyed prior to starting the NP program. As a result, there may be a lower likelihood of observing significant changes in psychological measures over time. Ideally, we would sample all students prior to starting the academic program. The time elapsed between surveying intervals may also present a limitation as worsening of mental health may progress with prolonged exposure to academic demands. Surveying students at a time point further out from the baseline assessment, such as near the end of spring semester, would possibly yield additional significant findings regarding changes to well-being over time. Time elapsed between surveying time points was approximately three months.

Another possible limitation identified was the possibility that respondents understood the purpose of each measure being administered and therefore may have had difficulty providing an objective response about their symptoms. For example, the PHQ-9 and GAD-7 are widely used in clinical practice and a majority of NPS would likely understand the purpose of these measures and their scoring implications.

### **Recommendations**

Based on the findings from the project, psychological distress is present in this population and prevalence appears to be similar to other healthcare professions. A unique combination of personal triggers, paired with stressful academic and occupational demands, likely causes distress for healthcare students. The NP program observed likely is not unique in the distress it

may cause students. Graduate-level education and advanced nursing practice is mentally and emotionally challenging compared to other professions, but it should not cause significant life-altering distress or cause someone to end their life.

To begin addressing psychological distress in NPS, academic and healthcare organizations must acknowledge these problems are common and exist among healthcare professions. Both academic and healthcare organizations should begin educating students and providers about the prevalence of psychosocial distress associated with healthcare professions.

The most concerning finding from this project is the number of first-year students who developed serious risk for suicidal behaviors over the course of the academic semester. At baseline assessment, no students had scored in the high-risk suicidal behaviors category and at follow-up three students developed high risk suicide behavior scores. A significant part of the healthcare student curriculum should emphasize how to recognize when one is facing mental health issues and promote help-seeking behaviors. Students in the sample program have access to free, or significantly discounted, medical and mental health services as university students. Students should be made aware of what services are available to them, where they can go to utilize these services, and frequently encouraged to use these services if they are experiencing any type of illness during academia.

Upon graduation, students should be adequately prepared to care for themselves just as they are adequately prepared to care for their future patients. With over half of the sample displaying low resiliency scores and increased rates of psychological distress, students would likely benefit from incorporation of resiliency training into the academic program. If help-seeking behaviors cannot be significantly improved in this population, equipping students with skills to better cope with stress may be the best intervention. Resiliency skills can be learned, and

these skills may continue with individuals into their professional practice. Steps should be initiated to move towards improving the well-being of healthcare students and providers not only at the individual level, but also at the organization level. Support for well-being of students and healthcare professionals must be supported by academic programs and employing institutions. Many students opted not to seek medical treatment for what they felt were likely diagnoses of anxiety or depression because a majority felt they could deal with these problems on their own.

Emphasis on help-seeking behavior from within the program may prompt students to seek out mental health services. Of the students who did seek medical help for their psychological symptoms, all students received some form of treatment. If programs can convince students to see a mental health professional for help, maybe more students would receive some form of treatment. Further research could be done examining if periodic wellness evaluations and promoting help-seeking behaviors during the NP program would result in more NPS seeking mental health help and receiving some form of treatment.

Recommendations will be made to NP faculty to further evaluate possible causes of distress related specifically to the academic environment. Development of a student-faculty committee focused on improving the academic environment and promoting student well-being may be beneficial. The committee could investigate students' current feelings about the academic environment, research evidence-based interventions, implement interventions, and monitor and report intervention outcomes. Small studies have found things such as teaching resiliency and coping skill, periodic wellness evaluations, cognitive behavioral therapy, meditation, yoga, and conversion to pass/fail grading systems have positively impacted the well-being of medical students.



### **Implications for Practice**

The well-being of healthcare providers is necessary to provide safe and effective care for patients. Healthcare providers who are experiencing psychological distress put their patients at increased risk and are less productive, not to mention the personal implications for the provider who is suffering from these symptoms. As a whole, the healthcare world must start recognizing healthcare provider distress as a serious system problem and not just an individual problem. Just as healthcare organizations are able to monitor patient outcomes, healthcare systems have a responsibility to monitor the well-being of their providers for the safety of the provider and the patient. Buy in and support for improving the well-being of those working in healthcare by all key players in healthcare, including academic organizations, employers, insurance companies, and patients, will be crucial to improving the well-being of those working in healthcare professions. Organizations, such as the National Academy of Medicine, are in the early stages of investigating and addressing the issue of healthcare provider well-being and findings from ongoing studies and interventions should help to guide future academic setting interventions.

### **Implications for Future Research**

Findings from this study support the need for further research examining NPS well-being and also NP well-being in practice. Larger, multi-site studies are needed to validate the generalizability of these findings to other NP programs. There is significant variability amongst NP programs in the United States as far as academic demands associated with completing a program. Some programs are conducted completely online, while others have frequent in-person meetings. Doctoral NP programs are longer and require students to complete a dissertation while master's NP programs often require less clinical time and do not require a scholarly project so there may be some variability regarding psychological distress associated with programs and

could likely benefit from additional research. Additional research could be conducted regarding the academic impact of psychological distress on NP students regarding cognitive functioning and academic outcomes of students.

Increasing awareness, researching causes, and trialing interventions are occurring regarding MS and MD well-being, and these same attempts may be applicable and necessary for the NP student and NP provider population. Given the findings from this small study, more extensive research is needed to evaluate if NPS and nurse practitioners are facing similar disparities. Since MD and NP face nearly the same practice environment, academic institutions and healthcare organization would likely benefit from monitoring both professions in a similar way and working together to design interventions that would be applicable and available to both professions.

### **Application to DNP Roles**

In recent years, graduation numbers of nurse practitioners have been exceeding that of MDs. Nurse practitioners will continue to play a crucial role in delivering quality healthcare in the United States. Increasing awareness amongst NPS and nurse practitioners regarding their mental health and teaching skills to cope with the hardships that come with healthcare practice are likely needed now and far into the future. Interventions focused on NP coping and well-being will retain nurse practitioners in practice and provide the best outcomes for patients and providers. Teaching students how to advocate for their well-being in practice and to recognize when they are experiencing psychological distress and to seek help for these issues is an immediate need amongst this profession.

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## APPENDIX A. NDSU IRB APPROVAL



July 27, 2017

Dr. Mykell Barnacle  
Nursing

Re: IRB Determination of Exempt Human Subjects Research:  
Protocol #PH18014, "An Assessment of Psychological Distress and Resilience Among Nurse Practitioner Students"

Co-investigator(s) and research team: Carrie Nelson, Ross Crosby  
Certification Date: 7/27/2017 Expiration Date: 7/26/2020  
Study site(s): NDSU  
Sponsor: n/a

The above referenced human subjects research project has been certified as exempt (category #2b) in accordance with federal regulation: (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the original protocol submission (received 7/24/2017).

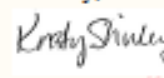
Please also note the following:

- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.

Sincerely,

  
digitally signed by Kristy Shirley  
DN: cn=Kristy Shirley, o=NDSU,  
ou=Institutional Review Board,  
email=kshirley@irb.ndsu.edu,  
c=US  
Date: 2017.07.27 13:01:01 -0500

Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult [http://www.ndsu.edu/research/integrity\\_compliance/irb/](http://www.ndsu.edu/research/integrity_compliance/irb/). This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD  
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | [ndsu.edu/irb](http://ndsu.edu/irb)

Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102

NDSU is an EQUIS university

## APPENDIX B. SURVEY

Q1.

**NDSU North Dakota State University**

School of Nursing

NDSU Dept. 2670

Fargo, ND 58108-6050

701-231-7395

**Title of Research Study:** An Assessment of Psychological Distress and Resilience Among Nurse Practitioner Students

This study is being conducted by:

Dr. Mykell Barnacle, DNP, RN, FNP-BC

Assistant Professor of Practice

Phone: 701-231-7730

### **Why am I being asked to take part in this research study?**

You are being asked to participate in this study because you are a Doctor of Nursing Practice (NP) student at NDSU. There has been much research done looking at the mental health and well-being of medical students. Medical students suffer from increased rates of depression, anxiety, suicidal thoughts, burnout and other negative health outcomes. There is little research looking at the mental health and well-being of NP students during their time in NP school.

### **What is the reason for doing the study?**

The purpose of this research is to better understand how NP student mental health and well-being is affected during their time in school.

### **What information will be collected about me?**

You will be asked to read this consent statement to decide if you would like to participate in this research project. If you choose to participate, you will be asked questions about your age, sex, relationship status, family and financial status, and questions about your past mental health history. You will also be asked to fill out questionnaires that ask about symptoms of depression, suicide, anxiety, burnout, stress, and resilience.

### **Where is the study going to take place, and how long will it take?**

The study will take place as soon as you select the continue button at the bottom of this page. Total time to complete the survey is about 18 minutes. You will be asked to complete this survey three times over the course of the 2017-2018 academic year. You will be asked to complete the survey in August 2017, near the end of fall 2017 semester, and near the end of spring 2018 semester.

### **What are the risks and discomforts?**

You may experience some discomfort while participating in this research study. Researchers involved in this study have put reasonable safeguards in place to minimize the risk to you as a participant. You will be asked questions about your personal life and feelings you've had over the past couple of weeks and months. Due to the personal nature of some survey questions, you may feel emotional, psychological, or social distress.

Safeguards have been put in place to protect your confidentiality so that the answers you provide can in no way be linked back to you. To help protect your confidentiality, this survey will not ask you to disclose your name and any potentially identifying information about this group will not be shared with others or within study results.

As part of this survey, you will be asked questions about your mental health and thoughts of ending your life. Due to the anonymous nature of this survey, we will not know if someone is having thoughts about ending their life and will not be able to directly provide help. If you are having thoughts of ending your life, or have any other mental health concerns, we encourage you to seek help. Below are some sources of help in our area:



National Suicide Prevention Lifeline (24 hours a day)  
Call them at 1-800-273-8255  
<https://suicidepreventionlifeline.org>

NDSU Student Health Services (Monday-Friday 8am-5pm)  
Call them at 701-231-7331  
<https://www.ndsu.edu/studenthealthservice/>

Sanford Health Emergency Services (24 hours a day)  
Located at 720 4th St. N, Fargo, ND  
Call them at 701- 234-5121

**What are the benefits to me?**

You are not expected to get any benefit from being in this research study.

**What are the benefits to other people?**

Research is conducted with the hope of gaining new, meaningful knowledge and improving society as a whole. We want to learn about mental health and well-being issues NP students face during their academic career and work to improve the academic experience for future NP students.

**Do I have to take part in the study?**

Your participation in this research is your choice. If you decide to participate in the study, you may change your mind and stop participating at any time without penalty.

**Who will see the information that I give?**

We will keep private all research data that's collected private. The information we collect about you will be combined with information from other people taking part in the study. When we write about the study, we will write about the combined information that we have gathered. We may publish the results of this study.

This study is anonymous. That means that no one, not even members of the research team, will know that the information you give comes from you. If you withdraw before the research is over, your information will be retained in the research record and we will not collect additional information about you.

**Can my taking part in the study end early?**

You may choose to stop the survey at any point and you will not be penalized.

**What if I have questions?**

Before you decide whether to accept this invitation to take part in the research study, please ask any questions that might come to mind now. Later, if you have any questions about the study, you can contact the researcher, Mykell Barnacle at 701-231-7730 or [mykell.barnacle@ndsu.edu](mailto:mykell.barnacle@ndsu.edu)

**What are my rights as a research participant?**

You have rights as a participant in research. If you have questions about your rights, or complaints about this research [may add, "or to report a research-related injury" if applicable], you may talk to the researcher or contact the NDSU Human Research Protection Program by:

- Telephone: 701.231.8995 or toll-free 1.855.800.6717
- Email: [ndsu.irb@ndsu.edu](mailto:ndsu.irb@ndsu.edu)
- Mail: NDSU HRPP Office, NDSU Dept. 4000, PO Box 6050, Fargo, ND 58108-6050.

The role of the Human Research Protection Program is to see that your rights are protected in this research; more information about your rights can be found at: [www.ndsu.edu/irb](http://www.ndsu.edu/irb) .

**Documentation of Informed Consent:**

You are freely making a decision whether to be in this research study. Continuing with this survey means that

1. you have read and understood this consent statement
2. you have had your questions answered, and
3. you have decided to be in the study.

Q2. What is your current age?

Q3. What was your sex assigned at birth?

- Male
- Female
- Prefer not to disclose

Q4. What is your ethnic background?

- Hispanic or Latino
- Not Hispanic or Latino
- Prefer not to disclose

Q5. Ethnicity (select one):

- Caucasian
- Black or African American
- American Indian/Alaska Native
- Asian
- Native Hawaiian/Pacific Islander
- More than one race
- Unknown
- Prefer not to disclose

Q6. What is your current marital status?

- Married
- Widowed
- Divorced
- Separated
- Partnered
- Never married

Q7. How many children are you the primary caregiver for?

- 0
- 1
- 2
- 3
- 4
- 5 or more

Q1. What is your current year in the DNP program?

- 1st
- 2nd
- 3rd

Q2. What was your total annual **personal** income before taxes?

- \$0-10,000
- \$10,001-\$20,000
- \$20,001-\$30,000
- \$30,001-\$40,000
- \$40,001-\$50,000
- \$50,001-\$60,000
- \$60,001-\$70,000
- \$70,000 +

Q3. What was your total annual **household** income before taxes?

- Less than \$20,000
- \$20,001-\$30,000
- \$30,001-\$40,000
- \$40,001-\$50,000
- \$50,001-\$60,000
- \$60,001-\$70,000
- \$70,001-\$80,000
- \$80,001-\$90,000
- \$90,001-\$100,000
- \$100,000 +

Q4. What is your total amount of **household** debt in U.S. dollars?

Please include student loans, mortgage, credit card, auto or any other personal debt you and your partner may have.

Q5. How do you anticipate you will pay for your graduate schooling and living expenses?

- I have taken out loans to pay for my schooling and living expenses
- I will take out loans to pay for my schooling and living expenses
- I will pay for my schooling and living expenses without taking out loans

Q6. What is the total amount of loans you anticipate taking out in order to pay for your tuition and other expenses during nurse practitioner school?

- Less than \$10,000
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- More than \$50,000

Q7. On average, over the past three months, how many hours per week have you been working in a paid position?

- 0 hours per week
- 1-8 hours per week
- 9-16 hours per week
- 17-24 hours per week
- 25-32 hours per week
- 33-40 hours per week
- 40+ hours per week

Q8. What type of work have you been doing over the past three months?

- Hospital Nurse
- Clinic Nurse
- Graduate Assistant Nurse
- Other (Please describe position)

Q9. On average, how many standard alcoholic drinks do you consume per week? One standard drink is a 12 ounce beer, a 5 ounce glass of wine, or a 1.5 ounce shot of liquor.

- I do not consume alcohol
- Average number of drinks consumed per week:

Q10. On average, over the past academic year, how often have you doubted whether nurse practitioner school was the right choice for you?

- Never
- A few times a year or less
- Once a month
- A few times a month
- Once a week
- A few times a week
- Every day (nearly every day)

Q11. On average, over the past academic year, how often have you had serious thoughts about quitting nurse practitioner school?

- Never
- A few times a year or less
- Once a month
- A few times a month
- Once a week
- A few times a week
- Every day (nearly every day)

Q12. Have you ever been diagnosed with a mental health condition?

- Yes
- No

Q13. What mental health condition(s) have you been diagnosed with?

- Depression
- Anxiety
- Suicidal thoughts or suicide attempt
- Other (please describe)

Q14. What type of treatment did you receive, or are you currently receiving, for your mental health condition(s)? Select all that apply.

- Medication (please list all medications you've tried)
- Therapy (please describe type of therapy received)
- Self-help group (please describe)
- Other (please describe)
- I chose not to treat my condition

Q15. Why did you choose not to receive help for your mental health condition? Select all that apply.

- I felt I could manage the problem on my own
- Lack of personal time to see a provider
- Long waiting period to see a provider
- Fear of what others might think
- Fear that my peers or faculty members might think differently of me if they found out I had a mental health condition
- Other (please describe)

Q16. Do you currently feel you have an untreated mental health condition or likely had a mental health condition in the past, but did not seek medical help to have your condition evaluated?

- Yes
- Maybe
- No

Q17. What type of mental health condition do you feel you've had in the past or currently have? Select all that apply.

- Depression
- Anxiety
- Suicidal thoughts
- Other (please describe)

**Q18.** Why did you choose not to see a health care provider for evaluation and treatment of this potential mental health condition?

- Fear of what others might think
- Felt you could manage the condition on your own
- Lack of time
- Fear of having restrictions placed on your nursing license
- Lack of money to pay for treatment
- Other (please describe)

**Q19.** Over the **last 2 weeks**, how often have you been bothered by any of the following problems?

	Not at all (0)	Several days (1)	More than half the days (2)	Nearly everyday (3)
Little interest or pleasure in doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling down, depressed, or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble falling or staying asleep, or sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling tired or having little energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor appetite or overeating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling bad about yourself or that you are a failure or have let yourself or your family down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble concentrating on things, such as reading the newspaper or watching television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thoughts that you would be better off dead, or of hurting yourself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q20.** Over the **last 2 weeks**, how often have you been bothered by any of the following problems?

	Not at all (0)	Several days (1)	More than half the days (2)	Nearly everyday (3)
Feeling anxious, nervous or on edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not being able to stop or control worry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worrying too much about different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble relaxing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being so restless that it is hard to sit still	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Becoming easily annoyed or irritable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling afraid as if something awful might happen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q21.

How often have you thought about killing yourself in the past year?

- Never
- Rarely (1 time)
- Sometimes (2 times)
- Often (3-4 times)
- Very Often (5 or more times)

Q22. Have you ever thought about or attempted to kill yourself?

- Never
- It was just a brief passing through
- I have had a plan at least once to kill myself but did not try to do it
- I have had a plan at least once to kill myself and really wanted to die
- I have attempted to kill myself, but did not want to die
- I have attempted to kill myself, and really hoped to die

Q23.

Have you ever told someone that you were going to commit suicide, or that you might do it?

- No
- Yes, at one time, but did not really want to die
- Yes, at one time, and really wanted to die
- Yes, more than once, but did not want to do it
- Yes, more than once, and really wanted to do it

Q24.

How likely is it that you will attempt suicide someday?

- Never
- No chance at all
- Rather unlikely
- Unlikely
- Likely
- Rather likely
- Very likely

Q25.

If you are having thoughts of ending your life, or have any other mental health concerns, we encourage you to seek help. Below are some sources of help in our area:

National Suicide Prevention Lifeline (24 hours a day)

Call them at 1-800-273-8255

<https://suicidepreventionlifeline.org>

NDSU Student Health Services (Monday-Friday 8am-5pm)

Call them at 701-231-7331

<https://www.ndsu.edu/studenthealthservice/>

Sanford Health Emergency Services (24 hours a day)

Located at 720 4th St. N, Fargo, ND

Call them at 701-234-5121

Q26. The questions in this scale ask you about your feelings and thoughts during the **last month**. In each case, you will be asked to indicate by selecting how often you felt or thought a certain way.

	Never	Sometimes	About half the time	Most of the time	Always
In the last month, how often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt nervous and stressed?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Never	Sometimes	About half the time	Most of the time	Always
In the last month, how often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you been angered because of things that happened that were outside of your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## APPENDIX C. CONNOR-DAVIDSON SURVEY AGREEMENT

Dear Carrie:

Thank you for your interest in the Connor-Davidson Resilience Scale (CD-RISC). We are pleased to grant permission for use of the CD-RISC in the project you have described under the following terms of agreement:

1. You agree (i) not to use the CD-RISC for any commercial purpose unless permission has been granted, or (ii) in research or other work performed for a third party, or (iii) provide the scale to a third party without permission. If other colleagues or off-site collaborators are involved with your project, their use of the scale is restricted to the project described, and the signatory of this agreement is responsible for ensuring that all other parties adhere to the terms of this agreement.
2. You may use the CD-RISC in written form, by telephone, or in secure electronic format where the scale is protected from unauthorized distribution or the possibility of modification. In all presentations of the CD-RISC, including electronic versions, the full copyright and terms of use statement must appear with the scale. The scale should not appear in any form where it is accessible to the public, and should be removed from electronic and other sites once the project has been completed.
3. Further information on the CD-RISC can be found at the [www.cd-risc.com](http://www.cd-risc.com) website. The scale's content may not be modified, although in some circumstances the formatting may be adapted with permission of either Dr. Connor or Dr. Davidson. If you wish to create a non-English language translation or culturally modified version of the CD-RISC, please let us know and we will provide details of the standard procedures.
4. Three forms of the scale exist: the original 25 item version and two shorter versions of 10 and 2 items respectively. When using the CD-RISC 25, CD-RISC 10 or CD-RISC 2, whether in English or other language, please include the full copyright statement and use restrictions as it appears on the scale.
5. A student-rate fee of \$ US is payable to Jonathan Davidson at 3068 Baywood Drive, Seabrook Island, SC 29455, USA, either by PayPal (at [mail@cd-risc.com](mailto:mail@cd-risc.com)), cheque, bank wire transfer (in US \$\$), international money order or Western Union.
6. Complete and return this form via email to [mail@cd-risc.com](mailto:mail@cd-risc.com).
7. In any publication or report resulting from use of the CD-RISC, you do not publish or partially reproduce items from the CD-RISC without first securing permission from the authors.

If you agree to the terms of this agreement, please email a signed copy to the above email address. Upon receipt of the signed agreement and of payment, we will email a copy of the scale.

For questions regarding use of the CD-RISC, please contact Jonathan Davidson at [mail@cd-risc.com](mailto:mail@cd-risc.com). We wish you well in pursuing your goals.

Sincerely yours,

Jonathan R. T. Davidson, M.D.  
Kathryn M. Connor, M.D.

Agreed to by:

  
Signature

Carrie Nelson  
(printed)

5-16-17  
Date

Doctor of Nursing Practice Student  
Title

North Dakota State University  
Organization

## APPENDIX D. MASLACH BURNOUT INVENTORY AGREEMENT

Hi, Carrie Nelson

Thank you for shopping with Mind Garden!

### ORDER DETAILS - PAYMENT COMPLETE

Order: SUHUSWIYA  
Completed on: 05/16/2017 08:29:03  
Payment: Credit Card

Product	Unit price	Quantity	Total price
Maslach Burnout Inventory - Remote Online Survey License - Translation : English (default)			
		Shipping	\$0.00
		Total Tax	\$0.00
		<b>Total</b>	

## **APPENDIX E. EXECUTIVE SUMMARY**

Psychological distress in healthcare providers is an emerging topic of interest amongst top healthcare organizations across the country. The National Academy of Medicine, backed by over 130 intra-disciplinary professional healthcare organizations, has started a four-year initiative aimed at uncovering the causes of distress in healthcare professionals and looking for solutions. Thus far, little has been revealed as far as definite answers to the cause of distress, and few significantly meaningful interventions have been trialed.

Psychological distress occurs in numerous healthcare professionals and is recognized in students training for healthcare careers. The purpose of this project was to evaluate the psychological well-being and resilience of nurse practitioner students over the course of an academic semester. Symptoms of depression, anxiety, suicidality, stress, and burnout were explored along with mental health help-seeking behaviors and resiliency.

Forty-six students were invited to participate in the survey. Thirty-seven respondents completed the baseline survey, and 33 students completed the follow-up survey. At baseline, 11% of students met criteria for moderate to severe depression and at follow-up 15% met criteria and mean depression scores increased from baseline to follow-up. Anxiety scores did not significantly change from baseline to follow-up. Nine percent of the sample met criteria for moderate to severe anxiety at baseline and follow-up scores had 21% of the sample scoring in moderate to severe range. Baseline survey responses for suicidality did not reveal anyone with high suicide risk. Three students endorsed high risk for suicidal behaviors at follow-up. As a group, there was no statistically significant change in baseline to follow-up suicidality scores. Stress scores did not significantly change over the course of the semester. The baseline and follow-up survey had 41% and 45% of students meeting criteria for moderate to severe stress,

respectively. The three burnout subscale scores, exhaustion, cynicism, and professional efficacy, increased statistically significantly from baseline to follow-up. Students reported feeling emotionally exhausted a once a month or less at baseline and this subscale was reported to occur a few times a month at follow-up. Students expressed feelings of cynicism a few times a year or less at baseline, and this increased to once a month or less at follow-up. Of note, the professional efficacy subscale increased significantly from baseline to follow-up which indicates increased feelings of professional satisfaction.

Resiliency scores did not significantly change from baseline to follow-up with mean resiliency scores for the group falling into the 25-50% percentile. When compared to the general U.S. population, mean resiliency scores for the group were lower than at least half of the U.S. population. Resiliency scores were significantly negatively correlated with depression, anxiety and stress scores at baseline. At follow-up, there was no statistically significant change in correlation, except for stress scores. This finding is likely due to resiliency and depression and anxiety remaining highly correlated at follow-up as well.

Students were also asked questions about their past mental health history and help-seeking behaviors. At baseline, 22% of respondents indicated they had been seen by a healthcare professional and diagnosed with depression, anxiety, or both. All had received some form of treatment, either medication, therapy or both. Students were also asked if they felt they currently, or at some point in their life, had an undiagnosed and untreated mental health condition. Thirty-two percent of respondents felt they had an untreated mental health condition currently or in the past but chose not to seek help.

Findings from this study support the need for further investigation and trialing of interventions to protect and support the psychological well-being of nurse practitioner students in

this program. Larger, multi-site studies would be needed to generalize the findings of such a study to other nurse practitioner populations. Recommendations will be made to the School of Nursing to form a committee of students and faculty which can investigate evidence-based interventions for supporting student well-being. Trialing and measuring outcomes of evidence-based interventions are needed as a next step to begin addressing psychological well-being in this population.