

DEPRESSION SCREENING OF UNIVERSITY STUDENTS

**IMPROVING OUTCOMES OF DEPRESSION THROUGH IMPLEMENTATION  
OF A SCREENING PROCESS IN UNIVERSITY STUDENTS**

by

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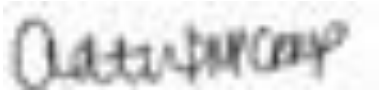
MARYVILLE UNIVERSITY

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## DEPRESSION SCREENING OF UNIVERSITY STUDENTS

## MARYVILLE UNIVERSITY

As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Stephanie Jennings titled Improving Outcomes of Depression Screening through Implementation of a Screening Process in University Students and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.



04-08-2022

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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.


Date: 4/8/2022


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## DEDICATION

This paper is dedicated to my husband, Sean, and my four children. Sean, thank you for supporting this journey I decided to take. Thank you for constantly telling me how proud you are of me and my success. Your encouragement (and taking over dish duty) has given me the drive I needed to accomplish this dream. To my children, Matthew, Molly, Ryan, and Emmy, thank you for listening to me say “I have to go write a paper” every week for the past almost two years. Thank you for showing me your strength, so I could mirror the same determination you show me with whatever you set out to do. I am prouder of you than you could ever imagine. You four are the best thing I have ever done. I love you more.

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### ABSTRACT

Depression is a common phenomenon in adolescents and young adults. There is an increased risk of depression and suicide on university campuses. This Doctor of Nursing Practice project will establish the importance of screening for depression in this often-vulnerable population.

#### **Purpose**

The purpose of the project was to implement a depression screening protocol in a student health center on a university campus, where no previous depression screening was taking place. The focus was to guide the student to the appropriate resources prior to experiencing any untoward events of depression, such as psychological issues, self-harm, or destructive behavior. The overall aim of the project was to identify depression in this population, initiate counseling, thus improve outcomes and prevent adverse events.

#### **Background**

Depression is even more prevalent in university students than the average population. Untreated, or unrecognized, depression can have devastating consequences to a university student. It is essential to capture cases of depression prior to a student experiencing some of these ramifications.

#### **Methods**

A quantitative, exploratory design through a retrospective chart review was utilized for obtaining the results of this quality improvement project. Students that matriculated through the student health center were screened for depression using a Patient Health Questionnaire-2. If the Patient Health Questionnaire-2 screened positive for depression, a Patient Health Questionnaire-9 was administered. If the end result showed a positive screening for depression, the student was

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referred to the counseling services department on campus for further evaluation and management.

### **Results**

The results of the project affirmatively answered the question of whether there was a need for depression screening in the student health center on campus. Throughout the time-frame examined, there were nine students that were referred to the counseling services department. Thus, outcomes were improved, and the students did not experience any untoward events of depression.

### **Conclusions**

There is a strong need for depression screening in university students. An established depression screening protocol is essential to limit any undetected cases of depression that may have devastating consequences to the student. This Doctor of Nursing Practice project showed sustainability for years to come to combat this evolving mental health concern.

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### **Improving Outcomes of Depression through Implementation of a Screening Process in University Students**

#### Chapter One

##### Phenomenon of Interest

Depression among college students is a significant health problem in today's society. Astoundingly, one in five college students are estimated to have depression (Rosenberg, 2018). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5, 2013), depression is diagnosed when an individual has at least one of the following: a) depressed mood, or b) loss of interest or pleasure. If an individual has one or both of these symptoms, they would also need either three or four, respectively of the following: c) unintentional weight gain or weight loss; d) decreased thought processes and decreased physical activity that is observable by others; e) fatigue or loss of energy; f) inappropriate guilt, or feelings of worthlessness, nearly every day; g) diminished concentration abilities, or indecisiveness, nearly every day; and h) suicidal ideations, or recurrent thoughts of death, even without a specific plan. These symptoms would be occurring in a two-week period, and not associated with any substance abuse or attributed to a specific medical condition (Truschell, 2020).

There are many challenges associated with attending a university. Academic pressures, social demands, financial obligations, and anxiety are all triggers that may cause an individual to experience depression for the first time. These psychological and financial burdens may likely have a negative impact on the student's well-being. Additionally, the student is often physically distanced from family and friends, therefore may lack adequate emotional resources.

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The World Health Organization (WHO, 2020) estimates that more than 300 million people in the world are suffering with depression. The National Alliance on Mental Health states 75% of all mental health conditions begin by age 24 (NAMI, 2019). Therefore, the post-high school years are a key time depression may be prone to develop or evolve (Riba & Cusumano, 2018).

It is imperative to capture all depression cases, but especially cases of new onset, as the student would not have had any ongoing treatment or following. This early detection will help prevent any ill-effects, such as self-harm or destructive behavior. First time college students may not have experience with dealing with sadness or hopelessness, and therefore may not identify their feelings as those of depression. They may also lack the skills to recognize that their feelings and behaviors would meet the criteria for a diagnosis of depression.

### **PICOT Question**

A PICOT question in a DNP project identifies the Population of Interest (P), the intervention (I), the Comparison of Interest (C), the Projected Outcome (O), and the Time it takes for intervention to take place (T) (Reavy, K., 2016). For this project, the PICOT question is: In university students, how does the use of a depression screening tool, embedded in a newly constructed EHR, compared to no previously identified screening, improve outcomes for intervention, or referral to counseling services? The population of interest is the student body at a university, that will matriculate through Student Health Services. The intervention is a depression screening tool. The projected outcome is to identify any cases of depression amongst the students, and refer for appropriate evaluation and treatment. The project will be studied retrospectively, and the time frame examined will be three months.

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### **Interest and Expertise**

This author has a particular interest in pediatrics and young adults, and in helping to guide them to become the best versions of themselves. There is so much negativity and despair in the world, finding internal negativity and disdain in a young person's psyche is incredibly distressing. Working for years as a Nurse Practitioner in pediatrics, has brought great joy and career fulfillment. However, there were a few instances of great anguish. A particular instance of despondence occurred when the practice learned of a suicide death of one of our young adolescent patients. This loss of life ended what should have been a bright future for this intelligent, well-rounded, family-oriented young man. Although this adolescent was already being treated for chronic, profound depression, there is still the wonderment of "what if's" that potentially could have made a difference in this unfortunate, tragic outcome.

First-hand experience of seeing many family members affected by suicide, and the suffering of long-term consequences that affect their own mental health and well-being, also plays an important factor in this scholarly project. Survivor's guilt, profound sadness, disruption in normal activities, and impaired relationships are all examples of the effects depression can have on family members. Sometimes helping one individual avoid the negativity and hopelessness trap can help many other people in that individual's life. As a firm believer in preventative medicine, early detection has an utmost importance in health care. In the instances of depression; preventing the occurrence, and early detection, is of a high priority.

### **Purpose and Aims**

The purpose of this scholarly project was to identify depression in university students, and guide them to the appropriate channels for further evaluation and care. The incidence of

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depression is very prevalent among university students, and any opportunity to identify the disorder is paramount to improving the outcomes associated with this condition. The aim of the project was to screen individual students at every opportunity when they presented to the Student Health Center on campus. This provided opportunities during both sick visits, and otherwise well visits, such as physicals, tuberculosis screenings, immunization visits, allergy immunotherapy visits, etc. The implementation of the project allowed the appropriate follow up and care by referring students with depression to the appropriate channels. The goal was to find an individual that may otherwise have slipped through the radar prior to the depression worsening, or the student having any untoward psychological issues, self-harm, or destructive behavior.

### **Type of Inquiry**

This project was a quality improvement project that used an evidence-based intervention. The project was implemented by embedding a depression screening tool into the newly constructed Electronic Health Records (EHR)<sup>1</sup>. The screening was to be done on all students that presented to the student health center on the university campus. The student was to complete the depression screening at every interaction in the office. All screenings were reviewed by the provider immediately, while the student was still present in the health center. Follow-up occurred immediately if any positive screenings were detected. The follow-up included referral to the campus counseling center, or other psychological treatment center, as deemed appropriate. The project was studied retrospectively and evaluated.

### **Background**

According to the American Psychological Association (n.d.), depression is defined as “long-lasting, moderate/severe feelings of sadness, and/or loss of interest in once-enjoyable

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activities.” A majority of instances of depression may arise during the college years for the first time. Considering 20% of college aged students suffer with depression, screening for this disorder is of utter importance (Chiriboga & Rosenberg, 2020). Screening needs to be done in a time-sensitive manner to identify those students afflicted by depression, and also to treat or refer those individuals prior to any untoward events.

The WHO (2020) reports depression is one of the leading causes of disability and poor health worldwide. A depression disability may be life-long if not treated appropriately (Riba & Cusumano, 2018). Poor health, especially mental health, in the college years may have ever lasting effects on an individual’s physical and social well-being also.

There are numerous reasons college students are at a high risk for depression. Students often struggle with being away from home for the first time. They are adapting to new environments, new friends, roommates, all without the comforts of family and close friends. This leads to homesickness and separation anxiety. Additionally, there are new workloads, peer pressure, social adjustments, and culture shock (Riba & Cusumano, 2018).

Research has linked a correlation between depression and social media. In general, social media or internet usage, leads to sedentary habits and decreased physical activity. Lack of physical activity has been found to increase rates of depression (Keles, et al., 2019). Online multitasking, which is a common phenomenon with social media use, has also been a predictor of increased rates of depression (Keles, et al., 2019). A review of literature suggests comparison behaviors, envious feelings, and other motives for social media use, has a greater influence on depression than the actual frequency of use (Keles, et al, 2019).



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Financial stressors may also lead to depressive thoughts. The financial burdens of college tuition and college life are often astronomical. Students will often have a fear of debt, which transcends to depression (Rosenberg, 2018). Along with the fear of debt, is fear of being unsuccessful in their career or life. All of these can potentially lead to depression at this young age.

### **Significance**

Recognizing depression among college students will have important significance across many health care tracts. Depression, if left unrecognized or untreated, will increase the likelihood of worsening symptoms, substance abuse, destructive behavior, loss of productivity, and suicide (Linder Center of Hope, n.d.). Recognizing depression signs through the planned screening process, will foster improvements in health for the individual. The discussion following will show how this project will also hold significance for the nursing world, broader health care, and finally, advanced practice nurses.

### **Significance for Nursing**

Nursing uses critical thinking to identify and protect the needs of patients (ANA, n.d.). Depression has a profound effect on the inner psyche of a person afflicted with the disorder. To achieve optimal health in an individual, the nursing field strives to allow the mental and emotional facets of a person achieve the best framework for success. The nursing process involves; assessment; diagnosis; outcomes or planning; implementation; and evaluation. This project will use the scope of nursing to evaluate the individual students for the disorder. Prevention and early detection of depression will allow an individual to achieve a greater sense

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of improved health and success. This will be accomplished by implementing the project and evaluating the outcomes to improve practice standards.

### *Patterns of Knowing that Inform Nursing*

There are four patterns of knowing in nursing: personal, empirical, ethical, and esthetic. This project influenced each pattern in a unique way. Understanding the fundamental patterns increase awareness in the nursing field through knowledge and experience (Polifroni & Welch, 1999).

**Personal.** The pattern of personal knowing consists of the nurse's individual experiences that deepen the level of understanding. There is empathy involved with this personal experience. This project consisted of empathy toward the depressed student and ultimately assisted in the treatment phase by referral to counseling services.

**Empirical.** Empirical patterns of knowing are based on research and facts. The project implemented this by using an evidence-based intervention. The science behind the construction of the project had a foundation, built on science, as demonstrated by the screening method used to detect depression in the university students.

**Ethical.** The ethical pattern of knowing is based on a strong moral code which nurses are trained to follow. The project signified morality throughout the implementation, especially following privacy and identification practices of the depressed individual. The project worked collaboratively with the student counseling center with any positive findings during the screening process.

**Esthetic.** Esthetic's is following a holistic approach, and asking ourselves "how can we be better?" This project lent credence to the nursing profession by allowing the insights gained

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pave the way to improved care. This can be accomplished by heightening screening techniques, improving client/nurse interactions, and working collaboratively with other members of the health care team (Polifroni & Welch, 1999).

### **Significance for Health Care**

Depression has a significant impact on health care. Barriers to effective treatment and management of depression are lack of resources, lack of trained health care providers to appropriately manage the disorder, and social stigmas associated with the diagnosis (WHO, 2020). Financial costs associated with depression is often colossal. Worldwide, depression is the leading cause of ill health and disability (Riba & Cusumano, 2018). Depression is linked with not only economical burdens, but also loss of work or school productivity. Additionally, depression places a strain on health care resources used to treat and manage the condition (Chow, et al., 2019).

### **Significance for Advanced Practices Nurses**

It is imperative that providers are able to, not only recognize depression in individuals, but also manage the occurrence. Management may consist of monitoring, prescribing, referring, or counseling. Individuals may seek care from an advanced practice nurse for psychological or physiological complaints. Individuals may not even realize they are depressed. Depression is often a “silent illness” (Genesight, 2017). It is up to the advanced practice nurse to identify if the physiological complaints are tied to a manifestation of depression. For instance, weight changes, fatigue, malaise, headaches, etc. all may be exhibited in depression (Genesight, 2017). Therefore, it is of extreme importance to screen every patient for depression, at every interaction, if

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possible. This project planned to increase awareness of the disorder and lend improvements to practice care.

### **Support for Project**

The project will be implemented in the student health center on a university campus. The director of the student health center was agreeable and enthusiastic to allow the implementation of the project. It is recognized that depression is a prevalent problem throughout universities. Depression is often underrecognized and untreated, which can increase negative occurrences for a university student. The director/psychologist of the counseling department was consulted, and reiterated the need for such a project to assist in recognizing and referring students for depression therapies. The university has an internal IRB committee which will be consulted to evaluate the project and approve the study.

### **Benefit of Project to Practice**

There are tremendous benefits to implementing this project in the student health center. Almost all students will interact with the center throughout their time at the university. Some individuals may not recognize the signs of depression. An evaluation in the health center may identify students that presented for physiological complaints. The project also planned to capture students that may otherwise not seek the services offered on campus due to embarrassment or the stigma often associated with mental health issues. The implementation of the tool will allow a provider to review the responses to the depression screening, and evaluate all positive screens. The students that screen positively, will be able to be referred immediately for appropriate management and care.

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### **Conclusion**

Depression is a considerable issue amongst college students. The college years bring many physical, mental, emotional, and financial burdens that a student may have never encountered previously. Depression can cause significant health consequences, both physically and emotionally. If left untreated, depression can cause significant worsening of symptoms, loss of productivity, destructive behaviors and self-harm, including suicide. Screening university students for depression is a significant action that needs to be accomplished to prevent any ill-effects or self-harm. Implementing this project will help capture students with depression, that may otherwise not have been identified.

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### Chapter Two

#### Literature Review

In this chapter, literature was reviewed to render support for depression screening in university students. The placement of a depression screening tool into a new Electronic Health Record (EHR) database was implemented. Previously, the students were not screened for signs of depression through the student health center. This project planned to screen all students for depression that enter the clinic. The purpose of the project was to capture cases of student depression that may otherwise have gone unnoticed. The intended focus was to guide the student to the appropriate resources prior to experiencing any untoward events of depression, such as psychological issues, self-harm, or destructive behavior. The PICO(T) question is: In university students, how does the use of an Electronic Health Record depression screening tool, compared to no identified screening, improve outcomes for intervention, or referral to counseling services?

#### **Search History**

A literature search was conducted using Medline, Cochrane Database of Systematic Reviews, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). CINAHL provided the most comprehensive search. The search was filtered to only access Clinical Trials or Randomized Control Trials for the past five years, specifically January 2016 through March 2021. The keywords for the search included: “depression,” “university students,” “college students,” “student health,” “screening tool,” “intervention,” “counseling intervention,” “improved outcomes,” “positive outcomes,” “Electronic Health Record,” “patient health questionnaire,” and “PHQ-9.” The search used the Boolean phrases “and”

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and “or.” The first literature search used the phrases “university students” or “college students” and “depression” and “screening” and yielded 300 articles. Ten articles were used from this search for the literature review. A subsequent literature search in CINAHL with the same five-year filter and Randomized Control Trials was later conducted. The combination of keywords used were “college students” or “university students” and “depression screening tool” and “Electronic Health Record.” This search yielded 370 articles, from which six more articles were obtained. Prior to beginning the literature synthesis, the sixteen articles were grouped into themes.

### **Integrated Review of Literature**

An integrated review of the literature was conducted on depression screening for college students, and yielded sixteen articles for the review. All sixteen studies noted the need for depression screening. All studies showed current poor screening statistics, and all recommended increased diligence in improving current screening rates.

The sixteen articles were grouped into themes for the review. The four, prevalent themes are: 1) Incidence of Risk Factors, 2) Screening tool, 3) Barriers, and 4) Interventions. These themes provided the most support and guidance to begin the DNP project. The objective of the review was to find support and be able to substantiate the need for the new EHR depression screening in Student Health Services.

### **Incidence of Risk Factors**

Depression is frequent on university campuses due to increased work-loads as a student, and increased demands, such as studying and academics (Marcotte et al., 2018; Worfel et al., 2016; Rodrigues et al., 2020). A study conducted by Worfel, et al., (2016),

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showed significant correlation between and structural conditions, such as study demands. Comparing the age group of 18–29-year-olds in the general population vs university students, university students have greater rates of depression. The perceived study demands were the key factors of the increased rates.

Overall poor coping skills is another reason depression may be more concentrated on university campuses (Rodriguez, et al., 2020; Saw et al., 2019). The post-secondary education years bring new challenges and life experiences, as well as the increased workload. Saw et al., (2019) focused on a study to improve the coping strategies of this college-aged population. Rodriguez et al., (2020) identified attachment issues due to breaking away from the familial unit for the first time. This was identified as a risk factor for poor coping skills on college campuses.

Unhealthy lifestyle beliefs were also found to increase the incidence of depressive thoughts (Mazurek Melnyk et al., 2016; Yang et al., 2017). Self-perceived failures often lead to dispiritedness and despondency, which can cause a decrease in self-worth (Yang et al., 2017). This decrease in self-worth may breed feelings of depression.

Certain lifestyle behaviors are also known to increase depression, especially among college students (Tao et al., 2020; Mazurek Melnyk et al., 2016; Yang et al., 2017). Weakened self-control can lead to impulsive behaviors. A study by Yang et al. (2017) showed depression may be at the root of these behaviors. Decreased physical activity, alcohol consumption, tobacco use, and previous attempts of suicide are all correlated with increased risk of depression symptoms (Tao et al., 2020).



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Problematic smartphone use, or addiction to using a smartphone, has also been studied and is linked to higher incidences of depression, particularly among college students (Boumosleh & Jaalouk, 2017; Tao et al., 2020). A cross-sectional study of 688 undergraduate students were randomly selected from a local university (Boumosleh & Jaalouk, 2017). A multiple linear regression assessed the relationship between smartphone addiction level and mental health issues. The study concluded a smartphone addiction score was significantly associated with depression (Boumosleh & Jaalouk, 2017).

Other risk factors for depression included overall poor health, impaired sleeping patterns, traumatic personal experience, and family medical history of depression (Ebert et al., 2019; Mazurek Melnyk et al., 2016; Tao et al., 2020). A smaller social circle, and bullying, have also been identified as positive predictors of depressive thoughts (Tao et al., 2020; Ebert et al., 2019). Reporting increased somatic complaints, such as fatigue, headaches, abdominal issues, etc., have also been shown to be an indicator of depression (McNealy & Lombardero, 2019). All the above-mentioned risk factors may be predictors of depression; therefore, it is imperative that clinicians recognize the often-hidden condition when evaluating students in a university setting.

### **Screening tool**

Once recognizing the possibility that underlying depression may exist, it is important to use an approved, standardized screening tool. There are a variety of screening tools used for identifying cases of depression. A common denominator with all the screening tools is to use the tool consistently. Some researchers allowed the patient, or university student, to complete the screening themselves. Other researchers preferred to

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ask the questions and record the responses. The tools are all addressing the same mental health responses.

Some recent studies utilize the Beck Depression Scale for screenings (Marcotte et al., 2018; Yang et al., 2017). The Beck Depression Inventory Scale is a 21-question self-report that yields a score that correlates to a hierarchy level of depression (Marcotte et al., 2018).

The literature review had the majority of researchers using a Patient Health Questionnaire (PHQ) (Tao et al., 2020; Mazurek Melnyk et al., 2016; Worfel et al., 2016; Marconi et al., 2019; McNealy & Lombardero, 2019; Kroenke et al., 2001). The standard PHQ is either a PHQ-2 or a PHQ-9, with two or nine questions, respectively.

The PHQ-2 asks two screening questions: Over the last two weeks, how often have you been bothered by 1) feeling down, depressed, or hopeless, and 2) little interest or pleasure doing things? The responses to the two questions are as follows: “not at all” (zero points), “several days” (one point), “more than half the days” (two points), and “nearly every day” (three points). The points of the two questions are added and a score of three or higher is considered positive for depression (Worfel et al., 2016).

The PHQ-9 is a nine-question depression rating scale, using the same scoring answers as the PHQ-2; “not at all,” “several days,” “more than half the days,” or “nearly every day.” The nine questions are asking “over the last two weeks, how often have you been bothered by any of the following problems?”, and then lists the nine questions (See Table 1) (Kroenke et al., 2001).

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**Table 1***PHQ-9*

Name _____ Date _____				
Over the <i>last 2 weeks</i> , how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
(For office coding: Total Score ____ = ____ + ____ + ____)				

(Kroenke et al., 2001)

One question in the PHQ-9 is “thoughts that you would be better off dead or of hurting yourself in some way.” If that is present at all, the screen is considered positive for depression and would need immediate intervention (Kroenke et al., 2001). Answers to the questionnaire of 5, 10, 15, and 20 represent mild, moderate, moderately-severe, and severe depression, respectively. The original study of the PHQ-9 identifies a score less than 5 as having no

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depression symptoms. A score of 5-9 either had no depression, or would show minimal concern. A score of greater than 15 is indicated of major depression. The “gray area” of the questionnaire, are the scores between 10 and 14 (Kroenke et al., 2001).

### **Barriers**

Early detection of depression is key to help preventing any negative or long-term consequences. Unfortunately, there are many barriers to screening (Ebert et al., 2019; English & Campbell, 2019; Worfel et al., 2016; Saw et al., 2019; Marconi et al., 2019). A serious concern with identification of depression is the fact that students may not self-report their depression feelings or symptoms (Ebert et al., 2019). In regards to a questionnaire as a screening tool, students may not always be forthcoming with true feelings and often only “partially respond” to questions. “Partial responders” may not give a clear image of their mental health to providers or researchers (Marconi et al., 2018).

Physical barriers, such as lack of office space to appropriately screen, lack of privacy, and lack of support staff to do the screening are all impediments to screening (Stallman et al., 2018; English & Campbell, 2019). Any individual seeking mental health care, or being screened for care needs the appropriate space and privacy to do such screening. If the obstacles are not met, the results may not be accurate, and there is a strong possibility of not capturing the condition.

In our current cultural climate, and also historically, there is a definite stigma associated with depression. Many individuals will not allow a depression screen to take place due to the perceived stigma the diagnosis carries with it (Eustis et al., 2018; Kosyluk et al., 2016; Marcotte et al., 2018; McNealy & Lombardero, 2019; Saw et al., 2019).

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Eliminating the perception of the attached stigma of depression is of utmost importance in the attempt to capture cases in a student health center.

Along with barriers to screening, there are also barriers to treatment for depression. Limitations of counseling services due to high demand, time-constraints, lack of counselors or psychiatrists, lack of appropriate funding, and lack of access to evidence-based treatment, are all obstacles for the students to receiving the appropriate follow-up for a positive depression screen (English & Campbell, 2019; Eustis, et al., 2018 Marcotte et al., 2018; McNealy & Lombardero, 2019;. Saw et al., 2019; Stallman, et al., 2018). The student health center needs to make sure the appropriate referrals and counseling options are readily available, and the counseling centers readily accept the student with a positive screen.

### **Interventions**

The gold standard of treating depression is a mental health referral. An early intervention is the key component of a treatment plan (Eustis et al., 2018; Mazurek et al., 2016; McNealy & Lombardero, 2019;). The intervention should be immediate and prior to experiencing any untoward negative consequences, such as self-harm or destructive behavior.

Physical activity programs may be used in conjunction with a mental health referral. A cross-sectional study by Tao et al., (2020) concluded that higher levels of physical activity were associated with lower levels of depression symptoms. Assisting students in limiting their use of smartphones will likely also decrease the risk of developing depression (Boumosleh & Jaalouk, 2017; Tao et al., 2020). Encouraging the use of a fitness center,

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establishing an exercise program, or forming group activities will all help alleviate negative thoughts and reflections.

Cognitive Behavioral Therapy is another intervention that has shown improvements in the treatment process. This type of therapy focuses on self-defeating behaviors and thoughts. The aim is to improve the individual's overall mood by focusing on enjoyable or pleasant activities (Saw et al., 2019). A Comprehensive self-control training program (CSCT) is a new option for referrals. This type of program focuses on controlling impulsive behaviors that may otherwise extend to depressive episodes (Yang et al., 2017). A final intervention is a Cognitive Reappraisal. This therapy asks participants to self-reflect after conflicts, even internal conflicts, and it has been linked to improved moods and dispositions (Rodriguez et al., 2020).

### **Literature Critique**

The literature review provided a solid foundation for the establishment of the upcoming DNP project. There were many similarities across the articles, and also there were a few differences noted. All the information researched can be used toward establishing a new depression screening program in Student Health Services at a university. With the knowledge gained from the review, the project will have sustainability for all future clinicians that may work in the department.

### **Strengths**

There were many strengths gained from the literature review. The articles were trustworthy and could be easily adaptable to any university population. Biases were eliminated from the studies reviewed, and validated tools were used for the depression

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screens. The reviewed articles also had decent sample sizes for the research. The sample sizes are important, as too small samples may result in skewed results.

### **Weaknesses**

There were also some notable weaknesses in the articles. Obtaining IRB approval was not addressed. Although the assumption can be made that benefits to participation to the study was identified, the actual risk/benefit connection was not addressed in the articles reviewed.

### **Gaps**

The upcoming DNP project of establishing a depression screening tool in the new transition to EHR, with the hope of identifying depressed students and referring them to counseling services, did have some gaps noted with the literature review. There was a lot of support for screening tools, and the majority did identify the use of the PHQ, but it was not clear which PHQ to use. Some studies recommended the PHQ-2, while others utilized the PHQ-9. For the intended project, the plan is to use the PHQ-2, followed by the PHQ-9, if the first flags positive for depression. There was no identified study that used this exact method for the screening process.

Another gap in the literature is the use of EHRs in relation to the screening process. The department the study was conducted in had transitioning to EHRs, and there is no found literature that addressed the added use of this technology platform vs using paper for the actual screening.

A final gap that is identified is the self-reporting format, as in the student selects the answers privately, vs a clinician asking the students the PHQ questions. It is not easily

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recognized which method is preferred for more valid results. The implementation in the EHRs was constructed for both scenarios for future use.

### **Limitations**

The only possible limitation to the project is the possibility of stigmas attached to the screening process. This is difficult to regulate on the student's behalf. Mental health has always had stigmas attached to it, and it is not expected that this process will deviate from that standard.

### **Concepts and Definitions**

*Depression:* A common, serious mood disorder, where symptoms have been present for at least two weeks (National Institute of mental health, n.d).

*Electronic Health Records (EHR):* Digital storage version that stores patient's medical information; replaces a paper charting system (HealthIT.gov, n.d.)

*Screening:* A test designed to detect a condition before any serious signs or symptoms (My Health Finder, n.d.)

### **Theoretical Framework**

This DNP project regarding the implementation of a depression screening program in university students was most represented by Pettigrew and Whipp's Strategic Model of Change. The model focuses on using research evidence and turning it into a practice opportunity. This change theory focuses on a three-dimensional strategy of: 1) context, 2) content, and 3) process (Pettigrew & Whipp, 1993).

The first dimension of the framework is context. This describes the "who" of the upcoming project. In this particular project, the context is referring to the students and the



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possibility of depression. Pettigrew and Whipp (1993), stress the importance of change. The U.S. Preventive Services Task Force recommends everyone over the age of 18 be screened for depression, and implementation of a depression screening process is vital to college aged students (Mazurek Melnyk et al., 2016).

The context aspect of the model includes internal and external factors that may lead to depression (Pettigrew & Whipp, 1993). Internal context is referring to the reflections of the subject. In the designated project, the internal context were the thoughts and perceptions of the students that matriculated through the student health center. These students were then evaluated by the Patient Health Questionnaire to determine if they screened “positive” for depression.

External factors are the circumstances, or events, that affect the subject. In this project, the external factor of problematic use of smartphones may lead to increased rates of depression. Another external factor that was currently affecting university students is the global pandemic, COVID-19. COVID-19 is a coronavirus that has affected the world with debilitating and often fatal outcomes. Social distancing, limiting attendance at public events, and avoiding shared or common areas, are essential to help control the spread of the virus. Due to these preventative measures, social isolation is leading to increased rates of depression, as evidenced by a recent health tracking poll (Panchal et al., 2021).

The second dimension of the framework was content. This was the “what” of the project. The content for this project is the implementation of a depression screening tool built into the new EHRs. The clinic previously did not conduct any routine depression

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screenings on the university students. In this stage of the framework, the clinic was transitioning to EHRs and the tool was built into the new system for use.

The “process” was the final dimension, and covered the “how” of the project. The process stage is the methods and actions used to implement the change (Pettigrew & Whipp, 1993). In the DNP project, this included the actual screenings conducted on the students in the student health center. All students were to be screened routinely, using the PHQ-2, upon arrival to the clinic. If the PHQ-2 detects a positive screen, then a full PHQ-9 will be used to further assess the individual. A positive result from the PHQ-9 would have initiated an immediate referral to the counseling center on campus.

Pettigrew & Whipp’s Model of Strategic Management of Change also secondarily focuses on historical, cultural, and political factors. Historically, depression was never spoken about due to a social stigma attached to it. Further, it has a cultural component, as some cultures are certainly less likely to discuss personal feelings and attitudes. The framework of Pettigrew and Whipp exemplifies the upcoming project surrounding these subdivisions of the change management theory.

### **Conclusion**

The review of literature has provided a substantial foundation of support for the upcoming DNP project. Depression is an often-debilitating condition, that often goes unnoticed. The research conducted has contributed significantly to the ongoing strides of combating depression in college students. As the implementation of the screening tool in the EHR is established, the screening process can commence with this evidence-based intervention in the student health center.

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### Chapter Three

#### Methods

Depression is a significant health issue for college students. It was found that there was no reliable depression screening tool used at the chosen student health center that serves students at a university located in the northeast region of the United States. To address this issue, the author launched a quality improvement project. The purpose of the project was to implement a depression screening tool, Patient Health Questionnaire-2 (PHQ-2) with follow-up of the Patient Health Questionnaire-9 (PHQ-9), if the PHQ-2 is positive for depression, to identify depression in college students, and to refer to counseling services as needed. The focus is to guide the student to the appropriate resources prior to experiencing any untoward events of depression, such as psychological issues, self-harm, or destructive behavior. The overall aim of this project is to identify depression in this population, initiate counseling, and thus improve outcomes and prevent adverse events.

#### **Methodology**

A quantitative, exploratory design through a retrospective chart review was utilized for this project. As this is a retrospective study, participants were not be engaged, and no patient information was to be abstracted from the EHR. The EHRs from the student health clinic were to be utilized for data collection. The researcher was to record the minimum necessary data to accomplish the goals for the project on the data collection sheet (See Appendix A). All potential patient identifiers were to be removed and not used for this scholarly project.

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### **Design**

The project was implemented in a student health center on a university campus. The screening was to be conducted on all students that enter the health center, as this is a quality improvement project. No students were needed to be recruited, and no incentives given for the screening. The data for this project was to be extracted from the EHRs of students that matriculated through the student health center from August 15, 2021 through November 15, 2021.

### ***Sample***

One hundred student EHRs were to be reviewed for inclusion in the retrospective chart review. The data abstracted from the EHRs was to be from the adult, student population that utilized the on-campus health center. The age of the students was 18 years or older, and all genders and ethnicities were to be included in the data collection.

The student body of the university is predominantly white, females. The female population is 68 percent. White students comprise 74 %, Hispanic 9%, Asian 3%, Black or African American 3%, and other 11%. There are 34 students from a foreign country of origin. Undergraduate students make up 69% of the student population, which is the majority of students that utilize the center.

### ***Inclusion criteria***

The inclusion criteria for the project included: age 18 years or older; the student speaks fluent English; documentation that the student sought care at the center between August 15, 2021 and November 15, 2021; the PHQ-2 was completed; the PHQ-9 was administered if the PHQ-2 scored a two or higher; the student responded affirmatively to the question “thoughts that you

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would be better off dead or hurting yourself in some way”); the EHR has documentation that a referral was made to counseling services on campus, or another mental health referral due to the screening results.

### *Exclusion criteria*

The EHR of potential participants was to be reviewed and excluded in the study if: the student is less than 18 years of age; the student is greater than 90 years of age; the student is non-English speaking; or if there was documentation that the student had already been receiving care or treatment from the campus counseling services. A sequential inclusion and exclusion process was to continue until the determined 100 EHRs was achieved.

### *Specific Steps of Project*

As this project was a quantitative, exploratory design through a retrospective chart review, students were not to be engaged. Additionally, only the minimum necessary data to accomplish the goals of the project was to be collected. There were not any patient identifiers collected during the study.

After Institutional Review Board (IRB) approval had been obtained from Maryville University and the clinic site, the data collection was to begin by obtaining a written list of students that were seen in the clinic from August 15, 2021 through November 15, 2021 by the clinic director. The author of the project reviewed each EHR utilizing the inclusion and exclusion process until 100 records were obtained. Each of the 100 records were given a numeric number, which coincided with an assigned number on the data collection sheet (See Appendix A).

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Only the minimum necessary data was collected. The data collection process stopped when the researcher had reviewed the anticipated 100 EHRs that met inclusion criteria. Once data collection had stopped, the written list provided by the director was returned and destroyed.

### **Data Collection Instruments**

A data collection sheet had been specifically created for the study using an extensive literature review. The data collection sheet contained columns for: age ranges of students; gender; ethnicity; first year student or not; previous history of depression or not; if a PHQ-2 was administered and the results; if a PHQ-9 was administered and the results; if any signs or symptoms of depression were identified; and if the student was referred to counseling services. There were no patient identifiers recorded on the data collection sheet.

There are two instruments used for this project. The PHQ-2 and the PHQ-9. The questionnaires are publicly available for use without permission. The PHQ-2 is an abbreviated questionnaire for screening for depression. If the student scores a two or greater, the PHQ-9 will be administered, which is a longer, more sensitive screening for depression.

### **Analysis Plan**

The project was a quantitative, exploratory design based on implementing a depression screening tool into a newly developed EHR. A university statistician was consulted, but the findings were only to be utilizing descriptive statistics (M. Pahls, personal communication, May 25, 2021). Descriptive statistics are used to synthesize the various findings of the data collection process (Polit & Beck, 2021).

In this project, nominal, ordinal, and interval data was collected. Nominal data is the lowest level of data collection and simply puts the data into categories (Polit & Beck, 2021). The

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nominal data collected was used in the categories of gender and ethnicity of the students. Ordinal measurement is a ranking measurement that goes beyond nominal, and places the data in a ranking system (Polit & Beck, 2021). Ordinal measurement was used to assess the age range of students. The age ranges was grouped: 18-20; 21-24; 25-30; 31-40; 41-60; and 60-89. The project also used interval data, which is data with numbers that have a meaningful order and value (Kellar & Kelvin, 2013). The results of the PHQ will be listed in interval measurement.

This author plans to show multiple descriptive statistics, such as gender, ethnicity, first-year college student or not, and age range of participants. This information was tabulated from the Data Collection sheets and put into frequency distribution charts. The frequency distribution chart shows the number of cases for each category (Polit & Beck, 2021).

The results of the actual PHQs were also tabulated in a distribution chart. It showcased the PHQ-2 score, as well as the PHQ-9 score. A bar graph chart was utilized to show the reason the students were referred for their positive depression screen.

The project outcomes will show whether the investigator captured cases of depression cases among the university students. The data will then make sure that the correct referral to counseling services was initiated.

### **Resources**

The project will consist of two university departments. The student health center, where the project is being implemented, is the main department needed for the project. The staff involved includes the nurse practitioner, and the director of the center. The other department is the counseling services department, where the students will be referred if depression is identified.

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There will be the new EHR system (Medicat), a portable laptop with the Medicat software installed to do the actual screening with the student, and a desktop computer for storing data for the project. Printer ink and copy paper will round out the physical supplies.

Overhead costs consisted of electricity, a phone line for contacting the counseling center or crisis line, fuel for travel to and from the clinic, overall costs for vehicle depreciation, and salary for staff (investigating nurse practitioner) to assist in completing the project.

### Budget

The project, Depression Screening in University Students, was slated to begin data collection August 15, 2021 and continue through November 15, 2021. It was anticipated that 100 EHRs would be reviewed for inclusion in the project. The budget for this project was based on anticipated costs needed to complete the study (Table 2). The total approximate cost for this project is \$35,013.12.

**Table 2**

*Budget Plan*

Budge Item	Breakdown of Cost	Total Cost	Reference for Cost
New Electronic Health Record System (Medicat)	\$11,500.00 for start up and first year	\$11,500.00	Medicat, personal communication, 2021
New Portable Laptop with Medicat system for collecting data	\$1,373.21	\$1, 373.21	CDW-G, personal communication, 2021



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Computer for storing data for project	\$619.99	\$619.99	(Staples, n.d. c)
Printer ink for reports	\$34.99	\$34.99	(Staples, n.d. a)
Copy paper for printing report	\$5.40	\$5.40	(Staples, n.d. b)
Phone line for contacting Counseling Services or Crisis Line	\$25 for business phone line x 3 months for project implementation	\$75.00	(Dinardi, G., 2021)
Electricity needed to implement project in clinic	\$114.44 per month x 3 months for project implementation	\$343.32	(Move.org, 2021)
Fuel for travel to and from clinic for project implementation	32 miles round trip to clinic x approximately 70 days=2,240 miles	\$306.78	(U.S. Dept of Energy, n.d.)

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	2,240 miles/23mpg=97.39 x \$3.15/gallon=\$306.78		
Vehicle depreciation	SUV (Honda Pilot) depreciation 33.68 per mile. 32 miles x 70 days=2,240 x 0.3368=\$754.43	\$754.43	(Hayes, K., 2021)
Salary for staff to assist in completing the project	\$20,000 for staff salary for 3 months for project implementation	\$20,000.00	Based on current salary rates for clinic
<b>TOTAL COST:</b>		<b>\$35,013.12</b>	

**Timeline**

The approximate timeline for this project was eleven months. The IRB approval for the center was obtained on June 17, 2021. IRB approval for Maryville University was obtained approximately August 10, 2021. The data collection began on August 15, 2021 and continued through November 15, 2021. After the data was successfully collected, data analysis began ,

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December 1, 2021 and continued through January 1, 2022. The final results and writing of the paper concluded in April 2022. The entire project was completed by April 30 , 2022 with the final presentation to the Maryville DNP Committee.

### **Protection of Human Subjects**

There were no foreseeable physical, psychological, social/economic, or legal risks that had resulted from this project. One possible risk was breach of confidentiality; however, this risk was minimal. The burden from the potential breach of confidentiality of the students would be incidental and did not exceed the benefit of the knowledge gained about the importance of depression screening in this population. Thus, the potential benefits outweighed the risk.

The project's participants were described as students at a university health clinic in the Northeast region of the United States. The data that was obtained from the retrospective review of the EHRs was recorded in a word document data collection sheet (see Appendix A). All identifiers were removed. The computer was password protected and locked in the researcher's private office. The author of the project was the only person to access the information. The research data will be destroyed three years after completion of the project.

### **Conclusion**

Depression is a significant problem among university students. Depression cases will be captured with the depression screening tool that was embedded into the newly formatted EHR. As a result of the project, the students of the university were to receive improved care by recognizing depression prior to any untoward events. Any cases of depression were then to be directed to the appropriate channel, counseling services, for ongoing mental health evaluation and treatment.

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### Chapter Four

#### Findings

Depression is a significant health issue for college students. It was found that there was no reliable depression screening tool used at the chosen student health center that serves students at a university located in the northeastern region of the United States. To address this issue, the author launched a quality improvement project. The PICOT question for this project is: In university students, how does the use of a depression screening tool, embedded in a newly constructed EHR, compared to no previous identified screening, improve outcomes for intervention, or referral to counseling services?

The purpose of the project was to implement a depression screening tool, Patient Health Questionnaire-2 (PHQ-2) with follow up of the Patient Health Questionnaire-9 (PHQ-9) if the PHQ-2 screens positive for depression, to identify depression in university students, and to refer to counseling services as needed. The focus is to guide the student to the appropriate resources prior to experiencing any untoward events of depression, such as psychological issues, self-harm, or destructive behavior. The overall aim of this project is identification of depression in this student population, initiate counseling, thus improve outcomes and prevent adverse events.

The project was a quantitative, exploratory design through a retrospective chart review. The project was based on embedding depression screening tools into a newly constructed HER. The screening was to be conducted on all students that entered the student health center for services. This was a quality improvement project that was to also benefit future university students matriculating through the health center on campus.

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There are two instruments used for this project; the PHQ-2 and the PHQ-9. The PHQ-2 is an abbreviated questionnaire for screening for depression. If the student scores a two or greater, the PHQ-9 was administered. If the PHQ-9 screened positive for depression, or if the student answered affirmatively to the question of thoughts of self-harm, the student was immediately referred to counseling or a crisis center if needed.

As this was a retrospective chart review, the findings followed descriptive statistics. The findings included gender of the student, age range, ethnicity, first-year college student or not, if the student had a history of depression, the results of the PHQ-2 and the PHQ-9 if applicable, whether the student demonstrated symptoms of depression, and if the student was referred to counseling services. The project was implemented on August 15, 2021 and the time frame for the end of data collection concluded on November 15, 2021. The data analysis began December 1 and concluded January 1, 2022.

### **Methods of Evaluation**

This quality improvement project embedded two depression screening tools into the newly implemented EHR. Students of the university were screened during encounters in the student health center on campus. During a visit, a PHQ-2 was administered to the student. If the PHQ-2 scored a two or greater, this was considered a positive screen for depression, and then a follow-up PHQ-9 was administered. A positive score on the PHQ-9 would be a five or greater. A score of five through nine shows minor concern for depression; a score of ten through fourteen is considered more likely to have depression; and a score of greater than fifteen is indicative of major depression (Kroenke et al., 2001).

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During the retrospective chart review of 100 EHRs, the findings were documented on the data collection sheet (see Appendix A). The information extracted from the EHR included the age range of student, gender, ethnicity, first year student or not, documentation of a previous history of depression, the PHQ-2 score, the PHQ-9 score if applicable, whether symptoms of depression were detected, and if the student was referred to counseling services. This data collection method enabled the author to compile information for the results on the effectiveness of the project.

### **Validity and Reliability of Instruments**

Evidence-based practice relies on quality research using appropriate tools of measurement. In quantitative research, it is crucial to have enhanced measuring tools that are both valid and reliable. Validity shows the accuracy of the measurement, whereas reliability deals with the consistency of the measurement instrument (Heale & Twycross, 2015).

This project used two quality tools: the PHQ-2 and the PHQ-9. The PHQ-2 has a high sensitivity of 0.86. The overall specificity of the PHQ-2 is 0.78. The lower specificity means that 22% of those that screened positive, have a false positive result (Levis et al., 2020). The addition of using a PHQ-9 as a follow-up of the PHQ-2 improves the specificity of measuring depression, and it has a similarly high sensitivity (Arroll et al., 2010). A threshold of greater or equal to eight on the PHQ-9 has a sensitivity of 0.82 with a specificity of 0.85. As the score on the PHQ-9 increases, the specificity increases also. A threshold of ten or greater on the PHQ-9 has an increased specificity of 0.91 (Arroll et al., 2010). Thus, this project used the combination of PHQ-2 with the PHQ-9 based on several reviews and meta-analysis using the two tools conjunctively.

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### **Data Quality and Adequacy**

Obtaining adequate, quality data is fundamental to any worthwhile research study. The findings from this quality improvement project were obtained through a retrospective chart review of 100 student EHRs. One hundred records were reviewed to give a solid sample size of the student population on this university campus. Students were not engaged and no patient identifiers were collected. The EHRs were reviewed utilizing an inclusion and exclusion process, and each record was assigned a numeric number on the data collection sheet (See Appendix A). The various columns in the data collection sheet allowed a variety of information to be collected and showcased using descriptive statistics.

### **Ethical Aspects**

In any research study, it is imperative that appropriate ethical principles are enacted throughout the entire proceedings. Data collection and subsequent reporting must follow all investigative safeguards. Prior to any data collection for this project, Institutional Review Board (IRB) approval was granted at Maryville University, and also IRB approval was granted at the clinic site.

The project implemented was a quality improvement initiative that had no foreseeable physical, psychological, social/economic, or legal risks associated with it. The only potential risk was the risk of breach of confidentiality during the retrospective chart review. This risk was minimal, as there were no patient identifiers captured on the data collection sheets. The sheets were kept in a password protected computer, in a locked, private office. This author was the only person to access the information. The IRB committee at both institutions deemed this project

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exempt from human studies regulations; as appropriate, ethical considerations were followed throughout the study.

### **Data Analysis and Presentation of Data**

This quantitative, exploratory design project amassed data through a retrospective chart review. The project was initiated August 15, 2021 and is ongoing in the student health center on a university campus. For the sake of this study, data was collected retrospectively from August 15, 2021 through November 15, 2021. The retrospective chart review looked at 100 university students that utilized the student health center that were subsequently screened for depression using the PHQ-2 and PHQ-9, if needed. The data was compiled on the Data Collection Sheets (see Appendix A).

There was no previous depression screening taking place in the health center, therefore there were no statistical tests to use for data comparison. The findings obtained from initiation of this project was presented using descriptive statistics. Data that was collected was the age range of the student; gender; ethnicity; first year university student or not; whether the student had a previous history of depression; the results of the PHQ-2 and PHQ-9, if applicable; if depression symptoms were identified; and if the student was referred for counseling services.

### **Research Subjects**

Data collection of the students followed the inclusion and exclusion criteria, as set forth in the IRB approved application. Inclusion criteria included 18 years of age or older; the student must speak fluent English language; and care was sought in the health center between August 15, 2021 and November 15, 2021. Exclusion criteria included if the student was less than age 18



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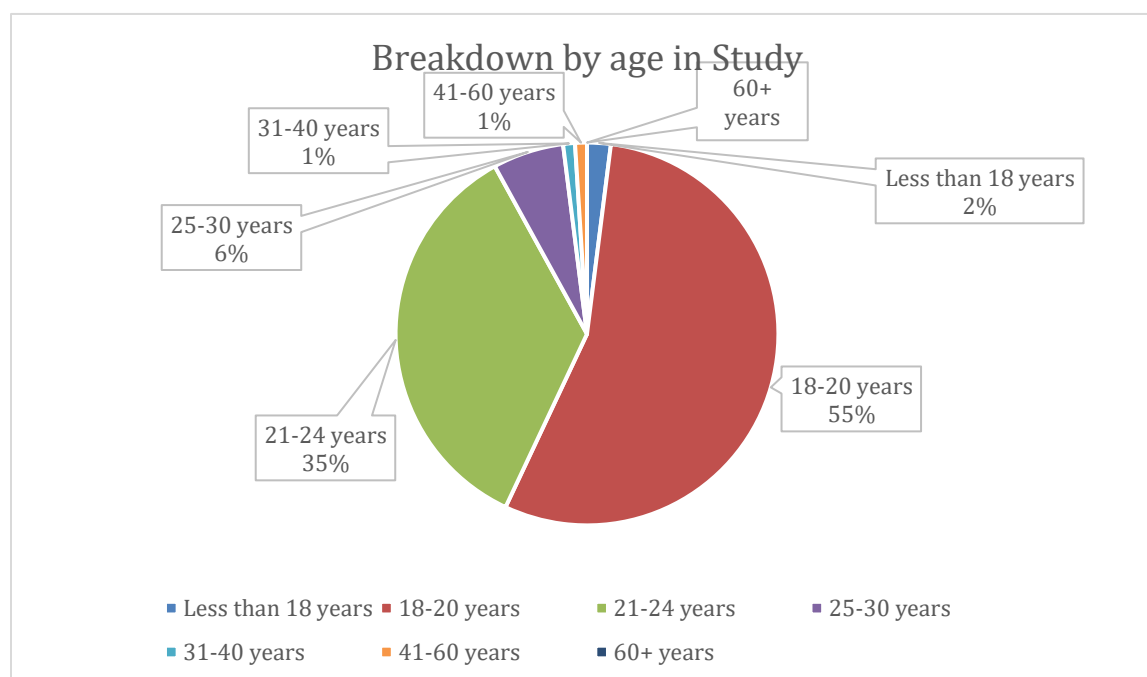
years old; the student was greater than 90 years of age; the student was non-English speaking; or if the student was already receiving care from the campus counseling services.

### *Age Range of Students*

The age range of the students in the study ranged from 18-20 years through 41-60 years of age (see Figure 1). Two students were excluded from data collection, due to age less than 18 years. The majority of students were age 18-20 years (55%). The next frequent age range was 21-24-year-old at 35%, followed by ages 25-30 years at 6%. There was one student in the 31-40-year-old age bracket, as well as one in the 41-60-year bracket.

**Figure 1**

### *Age Breakdown of Students*



### *Gender*

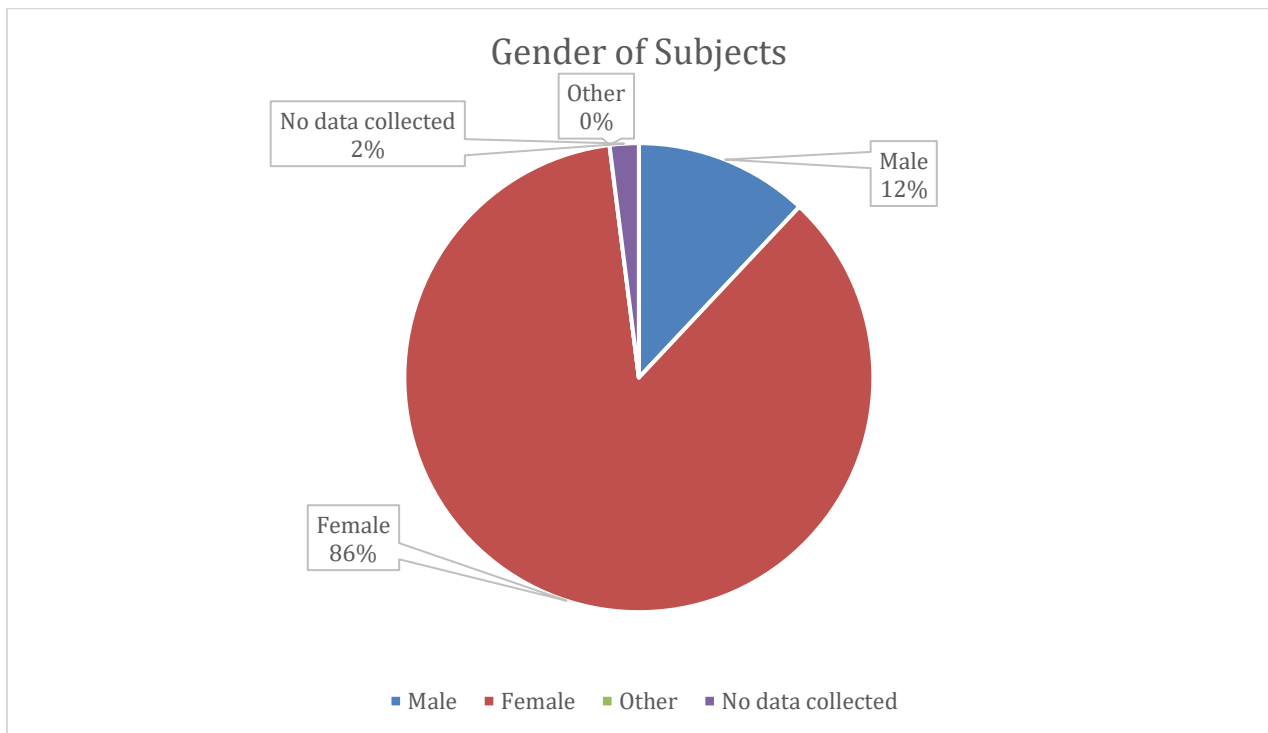
Students in the study could be classified as male, female, or other. The retrospective chart review had 86 females and 12 males (see Figure 2). Although the study was largely female

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students, this is also indicative of the overall university population. The female population on campus is 68 percent.

**Figure 2**

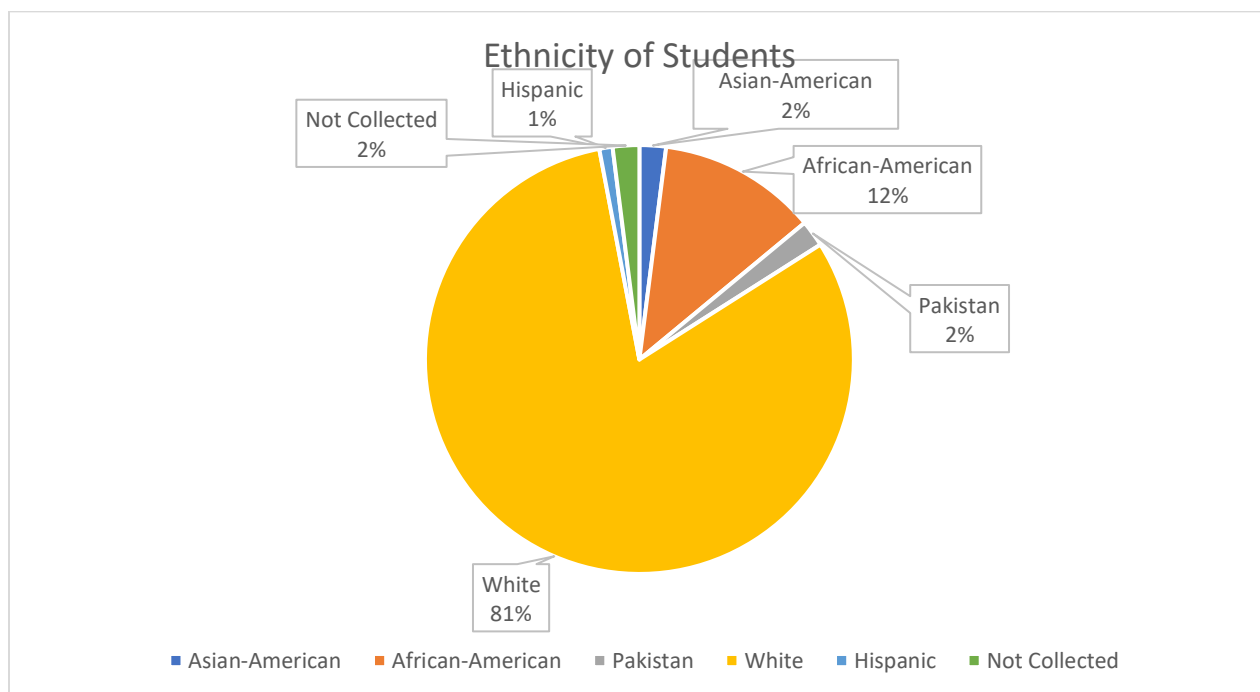
*Gender of Subjects*



## DEPRESSION SCREENING OF UNIVERSITY STUDENTS

***Ethnicity***

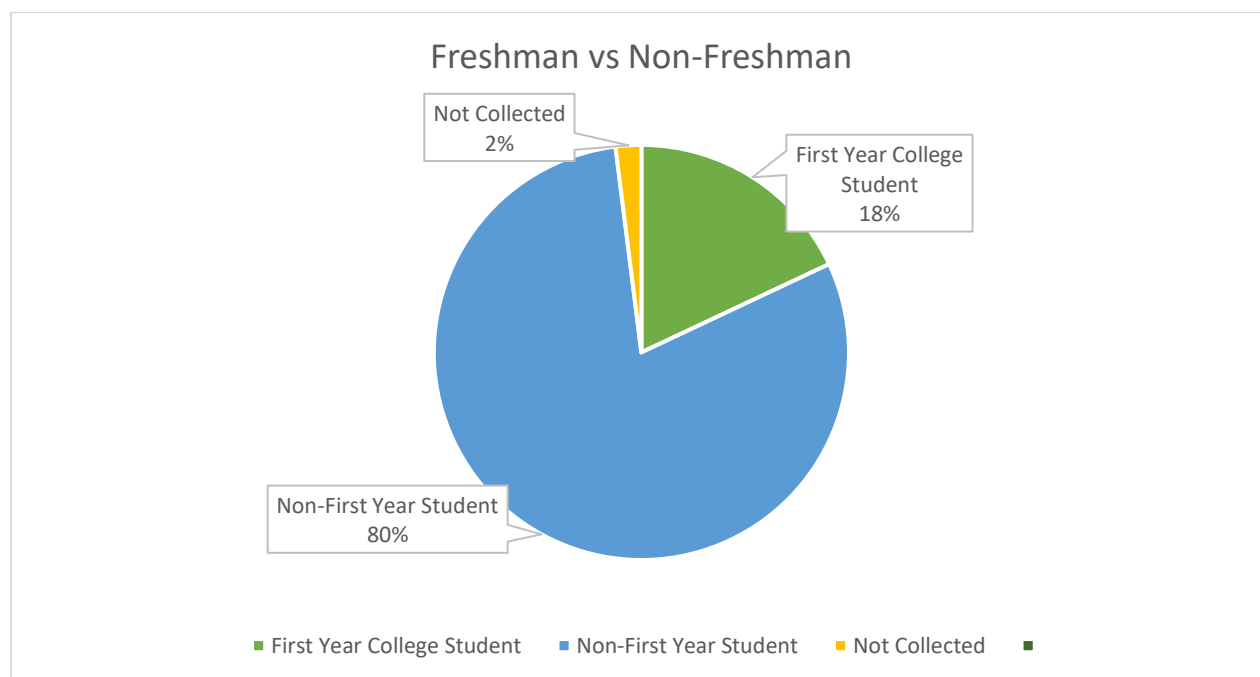
There were five various ethnicities during the chart review of students (see Figure 3). The predominant ethnicity was white students at 81. The next common ethnicity was African-American at 12 students. Asian and Pakistani ethnicity had two students each, followed by one Hispanic student. This breakdown is fairly typical of the overall university composition. The university is predominantly white students at 74%, Hispanic 9%, Asian 3%, Black or African-American at 3% and other at 11%.

**Figure 3*****Ethnicity of Students***

## DEPRESSION SCREENING OF UNIVERSITY STUDENTS

***Freshman vs non-Freshman***

The data collection also included if the student was a first-year student or not (see Figure 4). First-year, or freshmen students, made up 18% of the study participants. Non-first-year or non-freshman, made up the remaining 80%. Two students did not meet the inclusion criteria; therefore, no data was collected.

**Figure 4*****First Year College Student or Not*****Quantitative Methods of Data Analysis**

In this project, nominal, ordinal, and interval data was collected. Nominal data is the lowest level of data collection and simply puts the data into categories (Polit & Beck, 2021). The nominal data collected was the categories of gender and ethnicity of students. Ordinal measurement is a ranking measurement that goes beyond nominal, and places the data in a ranking system (Polit & Beck, 2021). Ordinal measurement was used to collect the age range of

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students. The age ranges consisted of 18-20; 21-24; 25-30; 31-40; 41-60; and greater than 60.

The project also used interval data, which is data with numbers that has a meaningful order and value (Kellar & Kelvin, 2013). The results of the PHQ-2 and PHQ-9 was listed in interval measurements.

The information gained from the retrospective chart review was tabulated on the Data Collection Sheets (See Appendix A). The data was then compiled to make the pie charts showcasing the information using descriptive statistics (see Figures 1, 2, 3, and 4). The results of the actual PHQs will also be tabulated in a distribution chart, with the breakdown of the PHQ scores.

### **Degree of Variability with Implementation of Project**

There was no previous depression screening occurring in the student health center on campus. Any detection of depression captured through the new screening parameters would be greater than previous, as this was a newly implemented design. Thus, descriptive statistics showed the results of the project.

### **Analytic Methods Demonstrating Effects of Time as a Variable**

Data was able to be captured during the retrospective chart review. Unfortunately, not all students were screened due to limitations, primarily associated with global pandemic, COVID-19. The limitations included time restrictions and inappropriate screening capabilities at the time of the student visit.

The results of the project were shown to determine if the investigator captured depression cases among university students in the three-month time frame of August 15, 2021 through November 15, 2021. As this is a quality improvement project, the depression screening will

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continue to occur in the student health center long after the analyzation of data from the study ceased. Subsequently, any cases of depression identified was a triumph for the student's mental health, if that can lead to early treatment and prevention of ill effects, such as psychological issues, self-harm, or destructive behavior.

### **Results**

Depression is a serious concern with university students. A quality improvement project was initiated in a student health center on a university campus in the northeast portion of the United States. Prior to the initiation of this project, there was no identified depression screening taking place in the health center on campus. The aim was to capture cases of depression in university student prior to any experiences of untoward events, such as self-harm, psychological issues or destructive behavior.

### **Nature of Setting and Improvement Interventions**

This project was implemented in a student health center on a university campus where there was no previous depression screening taking place. Depression screening tools, specifically the PHQ-2 and PHQ-9, were embedded in the newly constructed EHR. The tools were encapsulated in the vital sign screen, as it would be easily accessible during all student encounters. The student could complete the screening on the portable laptop in the room, or the provider could verbally administer if needed. The result of the depression screening was visible immediately after completing the questionnaire. If the PHQ-2 screened positive, the PHQ-9 was then administered in the same fashion, again with results immediately accessible upon completion of the questionnaire. Positive screenings from the PHQ-9 were thoroughly evaluated

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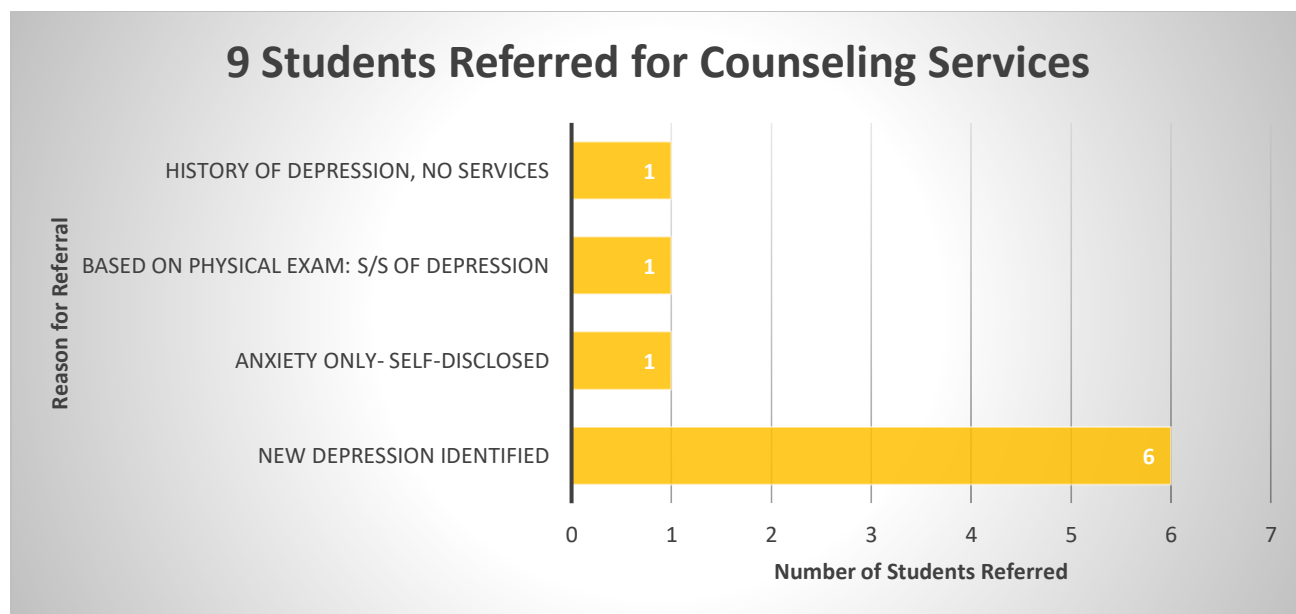
by the treating provider, and the immediate intervention of a referral to counseling services was initiated.

### Outcomes of the Intervention

The retrospective chart review revealed that nine students were referred to counseling services during the time frame of August 15, 2021 through November 15, 2021, as a result of the depression screening initiative. Data was not collected in two charts, and the other 89 charts did not screen positive for depression. There were several reasons for the referral to counseling services (see Figure 5).

**Figure 5**

*Reasons for the Referral to Counseling Services*



Six new cases of depression were identified through the screening. One case had a history, but was not currently under any treatment and was not connected with counseling services on campus; therefore, a new referral was placed. One student (PHQ-2 score=0) self-

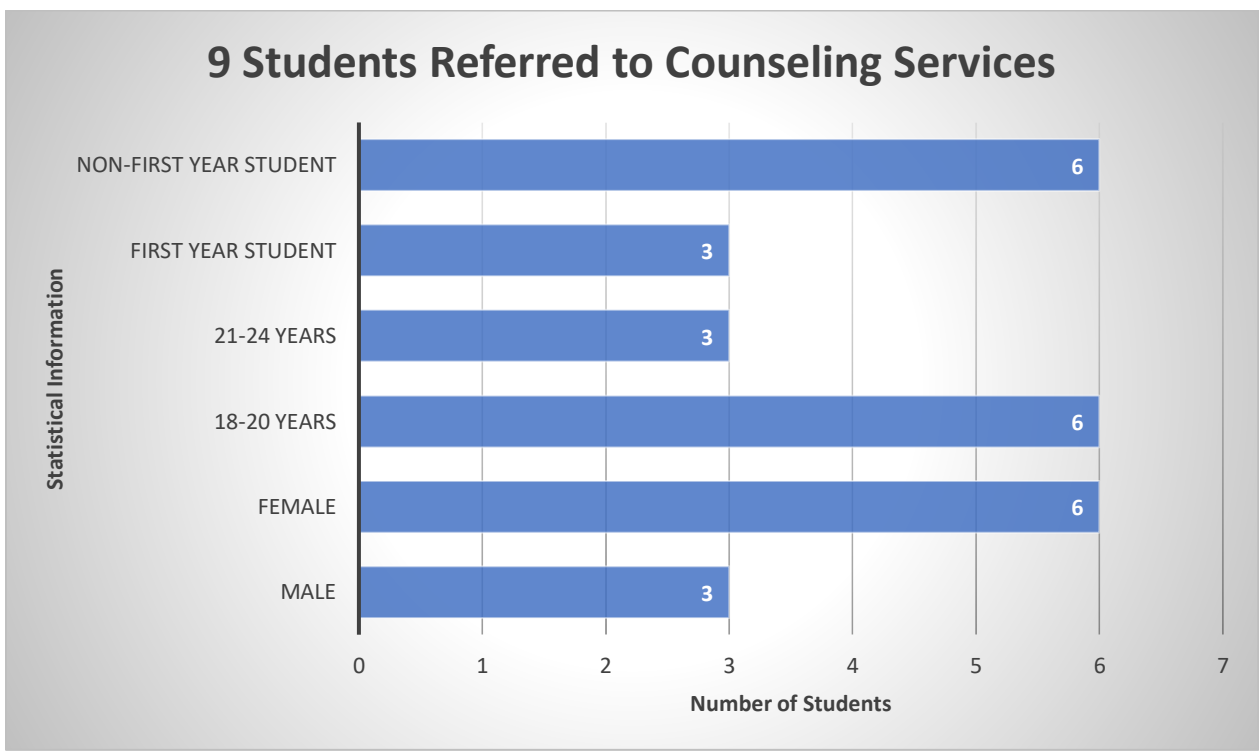
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identified anxiety symptoms and requested counseling for such, as a result of open communication during the screening for underlying depression. The remaining student that was referred exhibited signs of depression during the exam, was not able to competently complete the PHQ-2 or PHQ-9, and was not connected with psychological services.

Statistical information was obtained from the nine students that were referred for counseling as a result of the project (see Figure 6). Three of the students were males, and six of the students were female. Six students were between the ages of 18-20, and three students were ages 21-24 years old. Three students were freshmen, and the remaining six were non-first year students.

**Figure 6**

*Statistical Information of the Students Referred for Counseling Services*



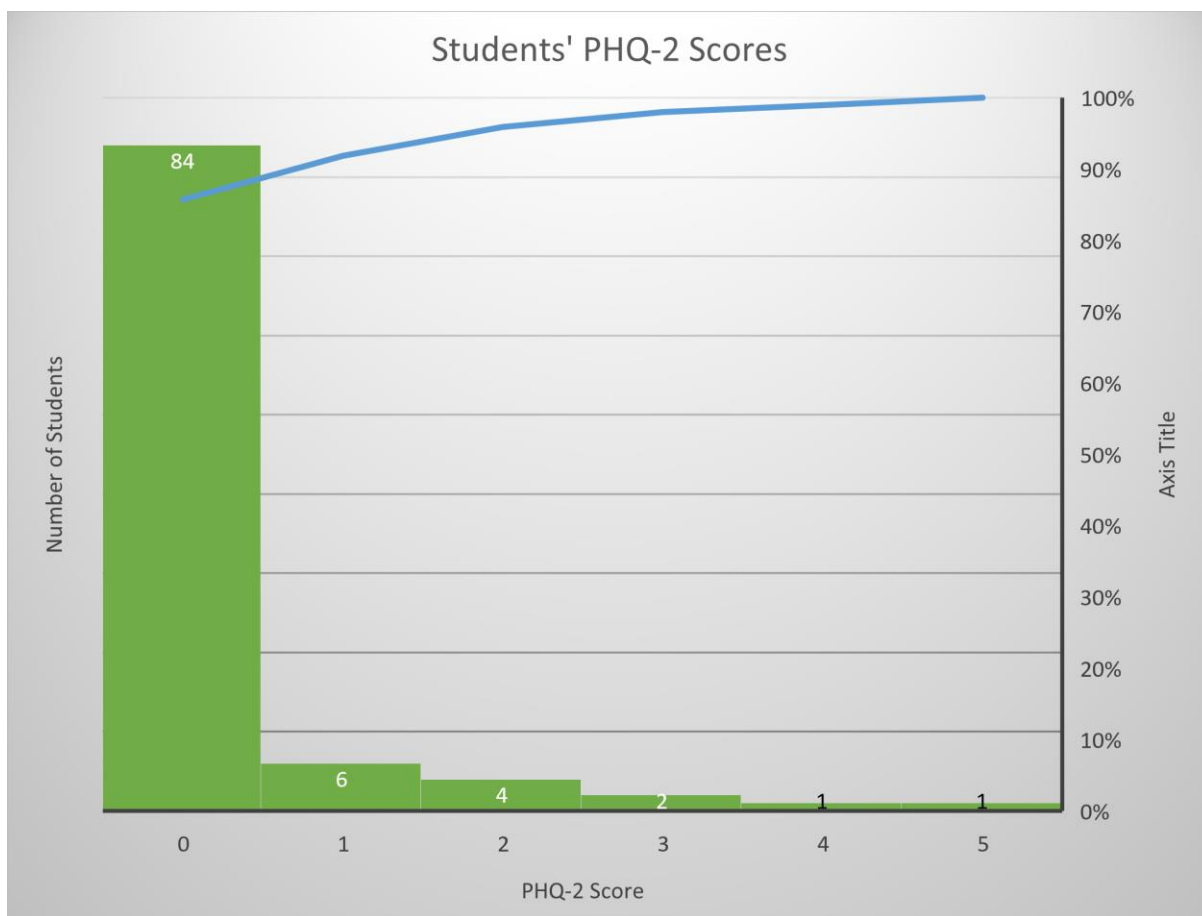


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During the administration of the PHQ-2, 84 students scored a “0” on the screening, 6 students scored a “1”, 4 students scored a “2”, 2 students scored a “3”, 1 student scored a “4”, and 1 student scored a “5” on the questionnaire (See Figure 7). The follow-up PHQ-9 showed seven students with a score of greater than 5, that were then referred for follow-up (see Figure 8).

**Figure 7**

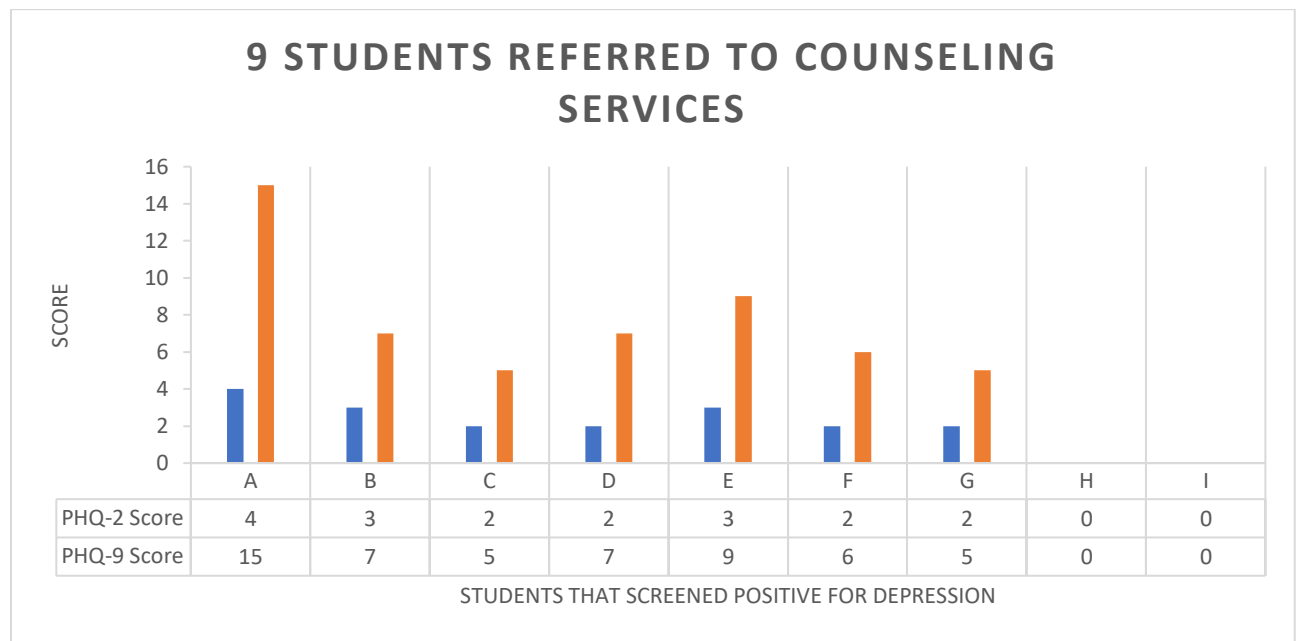
*PHQ-2 Scores of Students*



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**Figure 8**

*PHQ-2 and PHQ-9 Scores of Students Referred during Project*



**Initial Steps of the Intervention and Evolution over Time**

The timeline for this DNP project was approximately 20 months (see Appendix B).. The project idea was initiated in October, 2020, to be implemented in a student health center on a university campus (see Appendix B). The center’s director, as well as the director of counseling services was consulted and the need for the project was verified. The DNP feasibility form was officially signed on December 6, 2020 by the author’s chairperson for the program. The necessary Collaborative Institutional Training Initiative (CITI) was obtained on February 25, 2021.

There were several meetings between the author and the EHR database coordinator to necessitate the embedding of the depression screening tools in the new system that was utilized in the student health center. It was decided to embed the PHQ-2, and the PHQ-9 to use as a

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follow-up, for depression screening. This author established the placement of the tools to be on the same screen as the vital signs for ease and consistency of use.

A statistician was consulted on May 25, 2021 to determine if any statistical tests were needed for the project results. As no previous screening took place, there was no need for any comparison or statistical tests. This was later confirmed with the author's chairperson of the program, and it was decided descriptive statistics would be utilized to showcase the results from the implementation of the screening initiative.

An Institutional Review Board (IRB) application was submitted at both the practice site and also this author's university. IRB approval was obtained at the practice site on June 17, 2021. The doctoral program university's IRB approval was obtained August 12, 2021.

The EHR was officially implemented on August 13, 2021 for student encounter documentation. As this is a quality improvement project, the depression screening officially began with the fall semester, which commenced on August 16, 2021. Screenings began on that date and continue to present. The retrospective chart review lasted a month in duration and the timeframe in review was from August 15, 2021 through November 15, 2021. The data was organized and reported upon through the completion of the doctoral program, ending in April 2022.

### **Details of the Process Measure and Outcome**

The process measure of the retrospective chart review utilized the data collection sheets (see Appendix A). The data was collected and tabulated with the information obtained from the chart review. This included age range, gender, ethnicity, first year college student or not, depression history, results of screening, if depression was identified, and if the student was

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referred to counseling services. Descriptive statistics were utilized to showcase the outcomes of the project (see Figures 1-8).

### **Contextual Elements that Interacted with the Intervention**

There are several contextual elements that merged with the new depression screening initiative in the student health clinic. The primary element regards the impact the screening had in capturing depression in university students that benefited their mental well-being. Another element was improved communication pathways between the student health clinic and the counseling services department on campus. Teamwork and leadership initiatives between the departments showed great benefit to the student in accessing mental health services for depression episodes. The project was able to show an urgent nature in completing the depression screening and the referral for mental health follow-up or an immediate mental health crisis evaluation.

### **Observed Associations between Outcomes, Interventions, and Contextual Elements**

The contextual element of following a team-oriented approach, assisted in facilitating the counseling referral intervention based on the results of the depression screening. The partnership relationship between the student health clinic and the counseling center on campus offered seamless transitions from one department to the other for the benefit of the student. The student was aware of the referral being placed by the student health center, and in all instances, the student was accepting of such referral.

The contextual element of urgency mixed with the depression outcomes led to timely referrals. The student health center is now equipped to transport the student directly to the counseling center if indicated due to an immediate threat to safety or well-being. This provides a

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more thorough, immediate mental health evaluation prior to any untoward events on behalf of the student.

### **Unintended Consequences**

The main screening limitation was a direct result of COVID-19. The project planned to screen every student at every encounter in the student health center. Due to time constraints, this was not always possible. COVID screenings were conducted back-to-back in a designated area of the clinic. The provider was donned in personal protective equipment, without access to the computer, and the students were swabbed and released to limit viral exposure to the staff and other students. This limitation prevented the screening from occurring during this time. There were no other failures or unintended costs associated with the project.

An unintended, yet beneficial, consequence of the project was the increased communication between student and provider administering the questionnaire. A self-disclosure of anxiety and need for further assistance, was identified through the depression screening. Even though the student scored negative for depression (PHQ-2 = 0), there were still struggles that would benefit from counseling to manage anxiety.

Another consequence is the on-going depression screenings taking place since the results have been tabulated. As this was intended to be a quality improvement project, there have been additional depression cases identified during visits to the student health center. As the screening tools are now permanently embedded in the EHR, depression cases can be captured more readily and prior to the student experiencing untoward events as a result of undetected depression.

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### **Details of Missing Data**

There were not as many charts on the list to review for the retrospective data collection process. This is largely in part due to global pandemic, COVID-19. A depression screening was not obtained at every visit due to COVID restrictions, including time restrictions of the visit, such as a COVID swab only, and no access to the EHR, due to the provider's donned personal protective equipment. However, there were 100 charts that were obtained for review, as originally projected. Data was not collected from two of the charts due to student age less than 18 years.

### **Summary**

This quality improvement project was attempting to answer the question: In university students, how does the use of a depression screening tool, embedded in the newly constructed EHR, compared to no previously identified screening, improve outcomes for intervention, or referral to counseling services? The focus was to guide students to the appropriate resources prior to experiencing any untoward events of depression. The overall aim was to identify depression in students, initiate counseling, thus improve outcomes and prevent adverse events. Nine new students were referred to counseling services during the three-month time frame that was reviewed since implementation of this quality improvement project. These referrals were a direct result from embedding the depression screening tools, the PHQ-2 and PHQ-9, and screening university students that matriculated through the student health center on a university campus.

The project demonstrated the urgent importance of screening and an immediate referral to the counseling center for newly identified depression in university students. This project also led

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to improved communication between the students and the provider of the health center.

Additionally, there is now improved partnership between the health center and the counseling center that facilitates improved physical and mental health care. Chapter five will discuss the strengths, limitations and implications for the practice based on the result findings from this project.

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### Chapter 5

#### Discussion

This quality improvement project identified nine students during the examined time-frame of August 15, 2021 through November 15, 2021 (see Figure 5). There was previously no depression screening taking place in the student health center on campus prior to the implementation of the project. Therefore, it is most likely that these cases would not have been captured, at least in a timely manner. There was the possibility that these students may have experienced untoward events, such as a worsening psychological condition, self-harm, or destructive behavior. Fortunately, as a result of this project, these nine students did not suffer any further adverse events due to the screening algorithm.

#### **Result Meanings**

The results of the study found an answer to the PICOT question: In university students, how does the use of a depression screening tool, embedded in a newly constructed EHR, compared to no previous identified screening, improve outcomes for intervention, or referral to counseling services? This lends credence to the importance of depression screening in this often-vulnerable population. These students benefitted mentally from a prompt referral to the counseling services department.

#### **Association to Relevant Studies**

This quality improvement project recognized the importance of depression screening in university students. Multiple similar studies have also recognized that early screenings enable students to have a decreased chance of morbidity, multiple social dysfunctions, and also early



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screenings can improve a student's quality of life (Jenkins et al.,2020; Kang et al., 2021; Khubchandani et al., 2016; Wynter et al., 2021).

Depression is more likely to affect female university students, as exhibited in many clinical studies (Jenkins et al., 2020; Kang et al., 2021; Wynter et al., 2021). That trend was also portrayed in this clinical study. The number of female students were double the number of male students referred to counseling services (see Figure 6).

### **Strengths of Project**

The main strength of the project was the identification of depression in students on a university campus, whereas there was no previous screenings taking place in the student health center. Nine cases were identified and referred to counseling services prior to the student experiencing any untoward events, such as worsening psychological issues, self-harm, or destructive behavior.

A secondary strength was the improved communication between students and clinician in the student health center. Asking direct questions, enabled students the opportunity to address psychological issues without their need to initiate the discussion. They may not have considered themselves to be suffering with depression, yet screened positive based on their symptoms and thoughts.

Another strength was the improved communication pathways between the student health center and the counseling center. This project allowed a more seamless overall assessment of both physical and mental well-being in the university students. By focusing on both physical and mental attributes, the treatments can be tailored and individualized.

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### **Discussion of Limitations**

The main limitation of the project was the inability to screen every student that matriculated through the student health center. This was a direct result of global pandemic, COVID-19. There were multiple students that came for only COVID testing. During testing times, there was no computer access, the provider was in full personal protective equipment (PPE), and the students were strictly swabbed for the virus and released from the center while waiting for the results. Although 100 charts were able to be retrospectively examined, there were many more students anticipated from the start of the planning stage.

### **Generalizability**

The results of the study were pertinent and relatable; however, the results do lack generalizability to other university campuses. The demographic population of this campus is predominately white females. Females make up 68 percent of the campus. The ethnic demographics also makes this study lack generalizability. The campus consists of white students 74%, Hispanic 9%, Asian 3%, Black or African-American 3%, and other 11%. Additionally, colleges can vary greatly in terms of financial statuses and the type of educational programs that are offered. For example, certain majors may be more susceptible to depression due to rigorous course loads.

### **Sustainability**

As this was a quality improvement project, there is great sustainability. The depression screening tools were permanently embedded into the EHRs the student health center utilizes. Any future provider would easily be able to screen students during their visit to the center. The tools will allow the provider to see in real-time if the student is exhibiting signs of depression

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based on their questionnaire score. Additionally, the counseling center is willing to immediately see any student that needs an urgent mental health evaluation.

### **Actions to Minimize Limitations**

If a student was unable to be screened for depression while they were there for COVID testing, the center would try to screen them at another opportunity. For instance, if their COVID testing was negative, they would often be brought back to the center for a more comprehensive exam, which would include initiation of the PHQ-2 and PHQ-9, if applicable. It was not always possible, but every effort was put forth.

### **Effects of Limitations on Results**

As every student was not able to be screened, the results of the project may be skewed. There were less students screened than initially planned. Additionally, if a student came for COVID testing and they tested positive, they were sent to an isolation space on campus, and were not able to be screened in the clinic. Unfortunately, some of those cases may be the ones most exhibiting signs of depression, especially as they were now physically isolated, which may also lead to social isolation and feeling of depression.

### **Post-Implementation Insights**

The project identified nine cases that needed to be referred to counseling services. These students were able to get an almost-immediate appointment with the on-campus counseling department once recognized through the screening process. The design was not perfect, nor without impediments, but there were also some factors that improved the process.

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### **Barriers**

The leading barrier once the project was implemented, was the occasional unwillingness to answer the depression screening questions. During well visits, students were very receptive to answering the questions. There were a few instances, where a student was displeased to answer the questions if they were there for a simple problem visit, unrelated to any mental health issues.

As discussed, COVID-19 was a limitation of the project, but it also presented as a barrier to identification of depression and proper management. For instance, if a student presented to the student health center for COVID testing and the test was positive, the student now needed to be isolated to prevent the spread of infection. This may not only increase the risk for mental health episodes, it also exhibited a barrier to proper evaluation and treatment of depression.

### **Facilitators**

The embedment of the depression screening tool into the EHR, enabled the screenings to be conducive and convenient for both student and provider. During the student visit, the depression screening tool was visible as soon as the EHR was accessed with the patient in the exam room. This allowed a private atmosphere for the student to answer the two questions of the PHQ-2. If the PHQ-2 screened positive, the atmosphere was also favorable to administer the PHQ-9. Furthermore, there was time to discuss a mental health referral, if indicated, without the student feeling pressured, which helped eliminate stigmatism.

Another facilitator of the project was the improved communication pathways between the student health center and the counseling center on campus. The two departments worked closely together to manage new and continuous cases of mental health issues. The synergy of this partnership most benefits the students of the university.

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### **Interpretation**

The project results are consistent with studies that show depression screening in university students is advantageous to capturing cases of depression that otherwise may have gone unnoticed. It is estimated that approximately twenty percent of university students are suffering with depression (Chiriboga & Rosenberg, 2020). An expected outcome of this quality improvement project was to capture a similar percentage of students to the global statistic. As stated, this project referred nine students to counseling services, which was less than expected, yet still very impactful.

### **Reasons for Differences between Observed and Expected Outcomes**

The main reason for the difference between observed and expected outcomes was directly related to the COVID-19 pandemic. Screenings were not possible on all students due to the COVID demands of the health center. COVID demands such as testing and contact tracing left less than desired opportunities to screen students for depression. Additionally, many students that contracted COVID illness were not screened; and these students may have been the most impacted by mental health concerns due to isolation and poor health.

Another potential cause for the less than expected number of students captured is due to the sample size. The three-month time frame for data collection barely yielded the 100 student charts for review. Two charts needed to be eliminated as they did not meet the inclusion criteria for the project. Perhaps if there were more screenings done in that time frame, the results would have yielded a more typical representation of depression cases.

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### **Inferences of Strength of Data**

The outcomes of the project were very beneficial to the students of the university. The data collected proved the worth of the project in terms of capturing these identified mental health concerns and referring the student to the appropriate resources. The causal mechanisms of improved communication between the student, provider and counseling services helped facilitate the success of the project. Consistent and ongoing screening will likely propagate even more cases captured in the future.

### **Ways to Improve Outcomes in the Future**

Consistency and an atmosphere conducive for screening is likely to improve outcomes of capturing previously unrecognized depression in a university student. Allowing a student to be comfortable during the screening process will reduce a student's resistance to answering the screening questions. Additionally, trying to screen those most vulnerable, such as those socially isolated or ill, will also enhance outcomes.

### **Implications**

Depression is prevalent in all settings globally. However, depression is especially common on university campuses. Comparing the age groups of 18–29-year-olds in the general population versus university students, university students have greater rates of depression (Worfel et al., 2016). It is imperative to capture all depression cases, but especially cases of new onset, as college students would not have had any ongoing treatment. This early detection will help prevent any ill-effects, such as self-harm or destructive behavior.

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### **Practice and Future Research**

This quality improvement project established in the student health center needs to be continuously ongoing for all current and future students of the university. The desired vision statement for practice would be to improve outcomes of depression in students on a university campus, and advance overall campus awareness of mental health issues, while decreasing the stigmas attached to depression. There also needs to be improved attempts to screen students that may be suffering with isolating effects of the continuing COVID-19 pandemic.

A topic for future research would be to have a screening event in the student health center that could capture students that did not matriculate through the center, but rather just came for screening. Researching the effects of the pandemic in the upcoming years would also be a beneficial topic that would help in the future for combatting known stressors related to isolation and illness.

### **Healthcare Policy**

Considering one in five college students have depression, screening for this disorder is of utter importance (Chiriboga & Rosenberg, 2020). Screening needs to be accessible, done in a time-sensitive manner, and the resources need to be available to refer these students for treatment. Therefore, the need for legislation to improve access for screenings and mental health evaluations, along with increasing funding efforts to support this population is crucial. The ability to increase public awareness through programs, activities, improved screenings, and ease of referrals in a timely manner can be possible with increased university mental health funding.

Policy change should include a clear understanding of the problem and solutions. It will strive to empower individuals to accept and follow the social change. The change should be an

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evolving, ongoing process for success (Patton et al., 2019). The policy proposal for universities will include an increased awareness, more diligent, accurate screenings, and will strive to encompass positive outcomes for the student population.

Increased funding will allow for more resources across a university campus. University health clinics and counseling centers will afford better access for the students. Improved finances will also allow incorporation of more university-wide programs that may help decrease the negative stigmas so often attached to mental health care. Increasing awareness will benefit all students, in addition to the overall local community. There will not be a negative impact on the local economy due to continuance of productivity by the university students. Additionally, family and friends of the students will also benefit from improved students' moods and positive behaviors.

### **Quality/Safety**

The US Preventative Services Task Force (USPSTF) found evidence that screening for depression greatly improves clinical outcomes (Siu & USPSTF, n.d.). Furthermore, the USPSTF also found that having enough resources to meet the demands of depression treatment and follow-up is also crucial (Siu & USPSTF, n.d.). Henceforth, this quality improvement project follows current quality and safety guidelines set forth for depression screenings in university students.

There needs to be a push to control and eliminate barriers to screenings and treatment of depression across university campuses. This can be accomplished with changes to the organizational infrastructure. Limitations of counseling services due to high-demands, time-constraints, lack of counselors or psychiatrists, and lack of access to evidence-based treatment,



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are all obstacles that should be addressed by involving the president and cabinet members of a university. Their awareness and support will enable received funds to be distributed sufficiently for the necessary mental health needs of the campus.

Improved community collaborations will also benefit the students of a university in multiple facets of their lives. A streamlined approach between on-campus counseling centers and non-campus mental health centers is crucial for the overall well-being of the students if they need further care than just the campus resources. Additionally, community physical activity programs may also engage students suffering with depression. Involving local parks, recreations centers, and community event planners will enable students to experience a sense of comradery that will benefit the overall inner psyche.

Increased awareness of depression is of extreme importance in terms of screening and proper management. This includes education to inform students of the signs of depression and then offering them utilization of resources available on campus. Faculty and staff of the university should have trainings on how to recognize depression in students and be knowledgeable of the referral process for depression evaluations. Campus policies and procedures should be thoughtfully reviewed at the start of each academic semester and evaluated for efficiency.

### **Recommendations and Conclusions**

Depression in university students is a monumental health issue that can have devastating effects. Improved management and identification of depression is the most important step in preventing adverse events. This quality improvement project has shown great benefit to the students of the selected university. The results of the project demonstrated recognition of

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depression cases that would otherwise not have been captured in such a timely manner. It enabled the students to be referred to the appropriate resources prior to experiencing any untoward events of depression. Continued, consistent screenings at every student encounter are the ultimate recommendation. The continuation of this project will sustain improved quality of life through the necessary depression screening intervention.

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**Appendices**

**Appendix A**

*Data Collection Sheets*

Participant	Age Range: 18-20 21-24 25-30 31-40 41-60 60-89	Gender: Male=1 Female=2 Other=3	Ethnicity	First year Student: Yes=1 No=2	Previous history of depression: Yes=1 No=2
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19...100					

DEPRESSION SCREENING OF UNIVERSITY STUDENTS

Participant	PHQ-2 Administered: Yes=1 No=2	PHQ-2 Score	PHQ-9 Administered: Yes=1 No=2	PHQ-9 Score	Depression Symptoms Identified: Yes=1 No=2	Referral to Counseling Services: Yes=1 No=2
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
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16						
17						
18						
19...100						

## DEPRESSION SCREENING OF UNIVERSITY STUDENTS

**Appendix B***Timeline of DNP project*

<b>DATE</b>	<b>EVENT</b>
October 31, 2020	Project idea initiated
December 2, 2020	Meeting with Chairperson (Dr. Kern) to finalize DNP project idea
December 6, 2020	DNP Feasibility form signed by Chairperson
February 25, 2021	CITI training completed
March 17, 2021	EHR meeting to discuss depression screening
April 7, 2021	EHR meeting to embed screening tools
April 28, 2021	Review tools in newly formatted EHR
May 13, 2021	3-way conference call: Chairperson, IRB faculty (Dr. Wunderlich), self
May 25, 2021	Meeting with Maryville statistician (Dr. Pahls) to review statistical tests (none applicable)
May 27, 2021	On-line communication with chair to review use of Descriptive Statistics, in lieu of statistical tests
June 10, 2021	Practice Site IRB submitted
June 17, 2021	Practice Site IRB approval obtained
June 28, 2021	Maryville IRB submitted to chair
July 18, 2021	Maryville IRB approved by faculty (Dr. Snell) and sent to committee
August 12, 2021	Maryville IRB approval granted for DNP project
August 13, 2021	Started utilizing EHR for students
August 15, 2021- November 15, 2021	Data Collection period
November 16, 2021- December 15	Retrospective Chart Review

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November 17, 2021	Online meeting with Chairperson to review project
January 17, 2021	Meeting with Chair to review Raw Data from collection
February 1, 2021	Meeting with Chair to review status of project
March 26, 2022	Completion of DNP poster
April 6, 2022	Final approval by Chairperson of DNP paper
April 10, 2022	Completion of video presentation of DNP project
April 17, 2022	Final approval of video presentation of DNP project
April 30, 2022	Doctoral degree presented for work on project