



# VALPO

**DEPRESSION SCREENING OF YOUNG ADULT FRESHMEN STUDENTS**

by

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**EVIDENCE-BASED PRACTICE PROJECT REPORT**

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## DEDICATION

I dedicate this first and foremost to my daughter Moira. May you always know and believe that no dream is too big and that somewhere over the rainbow dreams really do come true. To my parents Roland and Corinne, you've always provided me with unconditional love and support, and have always encouraged me to pursue my dreams. It was with your never ending support that made this last year possible and for that I am forever grateful. Last but not least, to my brother and sister, Adam and Toni, thank you both for your love and support.

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## ABSTRACT

Depression is a mental health issue that requires prompt identification and treatment. According to the CDC, it is estimated that in the U.S .one in 10 adults suffer from depression (CDC, 2011) with 4.7% of young adults, 18-39 years, suffer from depression (CDC, 2006). Many young adults report that college life is often more stressful than anticipated and the demands placed not only academically, but also socially, adversely affect their psychological and physical health (Dyson & Renk, 2006). The purpose of this EBP project was to answer the PICOT question: How does a depression screening tool in combination with a treatment and referral protocol, implemented at a university student health center (SHC), influence health care provider behavior? The Stetler Model (Stetler, 2001) guided the EBP project and the Kotter and Cohen's (2002) eight steps for successful change provided the behavioral change theory. The project population consisted of fulltime freshmen college students enrolled at a Midwestern university during the 2012 fall semester. The intervention consisted of the administration of the Patient Health Questionnaire Two (PHQ-2) depression screening tool and implementation of a referral and depression treatment protocol. During the 12-week project, there were 225 freshmen clients seen in the SHC. A total of 213 (95%) were administered the PHQ-2 and 144 were given mental health pamphlets. This indicates a 64% adherence rate to the EBP protocol. A paired samples *t*-test was calculated to compare the initial PHQ-2 ( $m=4.5$ ,  $SD=1.62$ ) score to the follow-up PHQ-score ( $m=1.5$ ,  $SD=1.38$ ) for those clients ( $n=12$ ) who returned for their follow-up at the SHC. A significant decrease from initial PHQ-2 to follow-up was found ( $t(11) = 8.617$ ,  $p < .001$ ). The implementation of a routine depression screening tool and treatment protocol demonstrated to be more effective than having no protocol. Recommendations for the future include continued implementation and further research with regards to depression treatment/referral for the college population.

*Keywords: Depression, Patient Health Questionnaire (PHQ-2), protocol, freshmen*

## CHAPTER 1

### INTRODUCTION

It has been noted in the literature that the use of evidence based practice (EBP) guidelines by advanced practice nurses (APN's) proffers excellence in patient care while also providing the most probable course for achieving superlative health care outcomes by melding research evidence with clinical expertise (Stevens & Staley, 2006). Without the implementation of current best evidence, clinical interventions become rapidly obsolete often to the detriment to the patients (Melnyk & Fineout-Overholt, 2011). The steps of EBP process, coupled with the guidance from an EBP practice model and nursing theory allows the APN to effectively map out and accomplish the EBP journey. According to Melnyk and Fineout-Overholt (2001) the first step in the EBP process begins with the spirit of inquiry and the formation of a compelling clinical question. Next, the search for the best evidence is set forth in motion, and then critical appraisal of evidence commences. In the final three steps, the APN integrates the EBP protocol, evaluates the process, and disseminates EBP project findings.

At a Midwest university student health center (SHC), there was an identified need for an EBP project focused on changing provider behavior in relation to depression screening and treatment of young adult college students. The proposed change for this organization was the implementation of a depression screening tool accompanied by a treatment and referral protocol. With the implementation of both the screening tool and the protocol the SHC healthcare providers become equipped to not only promptly identify those students at risk for depression, but also swiftly intervene and implement an appropriate plan of care.

#### **Background**

Depression is a common mental health disorder that annually affects about 121 million individuals worldwide (World Health Organization [WHO], 2012). According to the Center for Disease Control (CDC), it is estimated that in the United States (U.S.) one in ten adults experience depression (CDC, 2011) with 4.7% of young adults aged 18 to 39 having depression



(CDC, 2006). In addition, during the spring of 2012, 31% of college students in the U.S. reported feeling so depressed that it was difficult to function (American College Health Association, (ACHA), 2012).

Depression is a serious mental health problem that requires prompt identification and treatment. Frequent effects of depression include; depressed mood, loss of interest, feelings of guilt or low self worth, disturbance in sleep or appetite, low energy, and poor concentration (WHO, 2012). A breakdown in mental health functioning has been shown to predispose individuals to reduced physical health including potentially damaging effects on the cardiovascular, endocrine, and immune systems, as well as an overall effect on daily functioning (Richardson & Puskar, 2012). Depression can also cause unnecessary suffering not only to the person but their friends and families as well (Brown & Schiraldi, 2004, Richardson & Puskar, 2012).

In 2008, college enrollment was at an all-time high with 18.6 million students attending classes (U.S. Census Bureau, 2011). Many young adults report that college life is often times more stressful than anticipated, and that the demands placed not only academically, but also socially, adversely affect their psychological and physical health (Dyson & Renk, 2006). The ACHA (2012) found that 86% of college students felt overwhelmed by all that they had to do. Untreated depression can influence a young adult's academic performance as well as their interpersonal relationships. Research has also indicated that depression during the first year in college has been shown to be a significant risk factor for the start of unhealthy life style behaviors including smoking initiation (Kenney & Holahan, 2008).

The prevalence of mental health conditions such as depression has been increasing over the past couple of decades among U.S. college students (Eisenberg, Hunt, Speer, & Zivin, 2011). The National College Health Assessment (NCHA) estimated that in 2012, seven percent of college students reported seriously considering suicide. In addition, it is estimated that 95% of college students who have reported suicidal ideation also have depressive symptoms (Downs &

Eisenberg, 2012). The increased prevalence of depression and resulting negative emotional and physical effects signifies a need for adequate screening and treatment from college health services (Yorgason, Linville, & Zitzman, 2008).

### **Statement of the Problem**

**Data from the literature supporting the need for the project.** The transition to college can be one of the most difficult transitions a young adult will make. This transition is often fraught with increased demands, which enhance the college student's vulnerability to depression (Lazenby, 2011). Dyson and Renk (2006) noted that while young adults are beginning their academic career they are also beginning their transition into adulthood. These adjustments have an emotional impact on young adults, making them particularly susceptible to experiencing stress and depression.

Homesickness is commonly experienced by many young adults making the transition to college life. Homesickness is most often associated with anxiety, depression, and loneliness, and can be particularly problematic when it begins to exacerbate preexisting mood disorders or precipitates new mental or physical health issues (Thurber & Walton, 2012). An academic environment that fosters a climate of social support and acceptance assists the undergraduate student in making the transition to college a successful one (Byrd & McKinney, 2012). Since freshmen students are navigating through such a stressful time, student health centers are presented with an opportunity to provide routine screening, treatment, and education regarding depression. Given that college years may be a critical period for developing lifelong coping skills and handling stress, it is important that effective stress management skills are taught (Brougham, Zail, Mendoza, & Miller, 2009). The implementation of routine depression screening allows the healthcare provider not only the ability to monitor a freshmen student's adaptation to college life; it also affords an opportunity to educate the student on stress management and adjusting to college life.

Healthy People 2020 (USDHHS, 2012) and ACHA Healthy Campus 2020 (ACHA, 2012) both advocate for improved depression screening and treatment rates among adults 18 years and older. The mission of Healthy People 2020 is to not only identify health improvement priorities, but also identify critical research, evaluation, and data collection needs (USDHHS, 2012). Healthy People 2020 provide science-based, ten year national objectives for improving the health of all Americans. Particularly increasing the proportion of primary care office visits that screen adults 19 years and older for depression (USDHHS, 2012).

ACHA Healthy Campus 2020 provides 10 year national objectives for improving the health on college campuses (ACHA, 2012). ACHA Healthy Campus 2020 national objectives focus on students, staff, and faculty on college campuses and are derived from Healthy People 2020. The objectives established by ACHA Healthy Campus 2020 were chosen based on severity and impact on academic performance, as well as their ability to motivate action on both the faculty and student level. The objectives of ACHA Healthy Campus 2020 were adapted from and aligned with the objectives of Healthy People 2020 (ACHA, 2012). Specifically looking at depression in college students, the goal for ACHA Healthy Campus mental health objective recommends a 10 percent improvement in not only depression diagnosis but also treatment of depression within college students (ACHA, 2012). This objective combined with the Healthy People 2020 objective to increase depression screening by primary care providers (USDHHS, 2012) support the need for more thorough depression screening for young adult college students

With the increased prevalence in mental health disorders in young adult college students and the recommendation for more thorough depression screening and treatment, there is no time like the present to implement an EBP project focused on changing SHC healthcare provider behavior. The college setting affords the student the opportunity to partake in activities that are not only career and social related but also presents an opportunity for health care

providers to provide outreach to a large number of young adults during an important period of their life (Hunt & Eisenberg, 2010).

According to Chung et.al., (2011) failure to identify depression, lack of adherence to treatment plans, and inadequate coordination among health and counseling services on college campuses may increase the risk of suicide. While there is a multitude of treatment options available, the quandary therein lies within the health seeking behaviors of young adult college students and the healthcare provider's current practices regarding depression screening and treatment. Student health centers offer a unique opportunity to address one of the most significant public health problems among young adults, by developing, evaluating, and disseminating best practices concerning depression identification and treatment (Hunt & Eisenberg, 2010).

**Data from the clinical agency supporting the need for the project.** Prior to the EBP project implementation a needs assessment was conducted to determine the viability of an EBP project focused on depression screening and treatment. It was found that the University SHC did not have a thorough depression screening, referral system, or treatment protocol in place.

At the site of EBP project implementation enrollment was approximately 3,000 undergraduate students per year. December 2011 through February 2012, the SHC had a total of 1,060 patient encounters, 74% of which were undergraduate students. Of the total 74% undergraduate, SHC patient encounters, freshmen students comprised 23% (Valparaiso University, Health Center Board Report, 2012). There were a total of only three referrals to the University counseling services during this three month time frame.

After meeting with the SHC director and staff, it was apparent that the integration of routine depression screening would not only benefit students presenting to the SHC, but would also assist the SHC staff with quicker identification and treatment of those students that are identified as being clinically depressed. A consensus was reached that the SHC would benefit from a depression screening, referral system, and treatment protocol. The integration of a

screening tool, and referral and treatment protocol, the SHC would also be complying with the ACHA Healthy Campus 2020 initiatives.

### **Purpose of the EBP project**

**Compelling clinical question.** The purpose of this EBP project was to increase not only the identification of depression in young adult college students, but also to enhance current referral and treatment processes. The objective of this EBP project was to answer the compelling clinical question: How does a depression screening tool and treatment protocol, implemented at a university health center, influence health care provider behavior? The project incorporated strategies to: (a) change health care provider behaviors towards depression screening, referral, and treatment, (b) implement the PHQ-2 and PHQ-9 depression screening tools and treatment protocol, and (c) evaluate the EBP project effectiveness.

**PICOT format.** The PICOT format was used to create the EBP project question. This format entailed identifying population of interest (P), intervention or issue of interest (I), comparison or intervention group (C), outcome of interest (O), and time frame (T) as demonstrated by:

P–The targeted population of interest for this intervention was young adults over the age of 18 years, who were fulltime freshman college students. Young adult college freshman students were targeted because mental health among college students represents a growing concern and the college years represent a developmentally challenging transition to adulthood (Hunt & Eisenberg, 2010).

I - The intervention of interest was the integration of a depression screening tool into existing SHC documentation and implementation of a referral and treatment protocol based on the students PHQ-2 and PHQ-9 depression screening results.

C–The comparison of interest was the current lack of routine depression screening and referral and treatment protocol use by the SHC health care providers.

O- The outcome of interest was an increase in the correct identification of depression among young adult college freshmen students, along with appropriate referral and treatment.

T- The time frame for this project was a four month time period starting September 10, 2012.

### **Significance of the Project**

With a sufficient amount of literature and the national objectives, the EBP project was constructed to address the identified need for improved depression screening, treatment protocol, and referral system for young adult college freshman students. The SHC's lack of routine depression screening and homogenous treatment and referral procedures provided a suitable forum for project implementation.

Current literature supports the need for improved mental health practices on college campuses not only because campus settings are able to offer a unique integrated setting for health and support services, but because fewer than 1 in 4 college students with mental health disorders are receiving appropriate mental health services (Downs & Eisenberg, 2012; Hunt & Eisenberg, 2010). According to Eisenberg & Chung (2012) detection and treatment of depression among college students has received little attention, and due to this inattentiveness, there is an increased risk of relapse, disability, and suicide.

It was anticipated that this EBP project would not only have a positive impact at the individual level, but also at the health care team, and an organizational level. The effects at the individual level will include appropriate identification and initiation of treatment of depression that will result in an overall positive influence on the health of young adult freshman students. The proposed change at the health team level allows the health care team members to not only be involved in EBP project, but also actively change provider behavior. In addition, it was expected that this EBP project protocol would have a positive impact on the University at an organizational level by allowing the University community to meet the proposed ACHA Healthy

Campus 2020 (ACHA, 2010) health care objective to increase the proportion of college students correctly screened, identified, and treated for depression.

Implementation of this EBP project will not only have a positive effect on the health of young adult college freshman students but will also add to current literature as it pertains to depression and college students. Findings from this EBP project will provide information to other university communities as well as other APNs who are considering pursuing EBP practice change for the screening, treatment and referral of depression in the college student population.

## CHAPTER 2

### FRAMEWORKS AND REVIEW OF LITERATURE

#### **Theoretical Framework**

Implementing a change in provider behavior is a process that can be fraught with resistance and undue stress. Kotter and Cohen (2002) propose that the key to organizational transformation lies in assisting people to alter behaviors; their Eight Stages of Change (ESC) provides a multi-step process when followed will result in successful organizational change. The ESC process consists of: (1) generate a sense of urgency, (2) build the guiding team, (3) get the vision right, (4) communicate for “buy in”, (5) empower action and remove barriers, (6) create short-term wins, (7) don’t let up, and (8) make the change stick (Kotter & Cohen, 2002). Campbell (2008) recognized that organizational change in health care can be successfully managed utilizing Kotter & Cohen’s dynamic, non-linear, eight step approach.

#### **Application of theoretical framework to EBP project.**

In the first step of ESC, Kotter & Cohen (2002) explain that creating a sense of urgency is crucial to obtain the desired cooperation within the organization. After careful examination of current SHC practices with regards to routine depression screening, the project leader and SHC director recognized that there was no time like the present to implement a practice change, thus fulfilling step one increasing a sense of urgency. In order to create this sense of urgency within the context of this project it was essential that the SHC clinical staff also understand not only the importance of depression screening, but furthermore how the implementation of a protocol would not impede their day-to-day workflow.

SHC staff consisted of two full-time nurse practitioners, a physician, a medical assistant, a registered nurse, a receptionist, and an office administrator. With active support from the SHC director the remaining SHC staff was brought in as part of the guiding coalition to develop a successful EBP project. Engaging SHC clinical staff in the development of the EBP project allowed the project leader to gain a better understanding of what would be feasible and realistic



with regards to project implementation. The inclusion of a concise protocol that was not labor intensive was vital to the project's success. In creating the guiding coalition, Kotter & Cohen (2002) reveals that no one individual is ever able to develop and communicate the vision, eliminate potential obstacles, generate short-term wins, lead, manage, and anchor changes.

During the third step, Kotter & Cohen suggest developing a vision to guide the change and promote understanding. Integrating not only routine depression screening but also a treatment protocol would allow for appropriate mental health care for each student who obtained care at SHC. The vision of this EBP project was to promote a better understanding of the importance of routine depression screening, along with prompt identification and treatment of those students currently suffering from depression. Providing the staff with a succinct screening tool will not only allow for rapid identification, but will also allow for a more comprehensive screening if deemed necessary. In examining the SHC's current practices and their climate for change the project leader was able to successfully navigate through the first three steps of Kotter & Cohen's (2002) ESC process; 1) increase a sense of urgency, 2) building the guiding team, and 3) get the vision right.

Employees will not make changes unless they believe that useful change is possible (Kotter, 2007). Effectively communicating with SHC staff the importance of routine depression screening and protocol as well as providing examples from the literature, enabled SHC staff to envision the potential effects of the proposed EBP project. Within the ESC fourth step, the change vision is conveyed. This can take place through several different forums on numerous occasions. Directly related to this project, speaking first with the director of the SHC and then with the essential office staff allowed for reiteration and enhanced understanding.

Step five of the ESC process, empowering a broad based action plan, entails overcoming obstacles that may possibly hinder the forward momentum of implementing a depression screening tool and referral protocol (Kotter & Cohen, 2002). These potential impediments may be avoided by providing timely feedback and demonstrating how the protocol

is generating a positive impact, which leads into step six. Generating short term wins assists in building momentum and shows people that hard work and sacrifices are paying off (Kotter, 1996). With weekly data collection the project leader was able to track SHC compliance with both the depression screening tool and treatment protocol. After data collection the project leader conveyed to the SHC director and office staff their weekly progress. Brief discussions were then undertaken as how to improve compliance with the EBP project change. It was also a time to examine what processes were not proving successful and what needed to be implemented in order to improve compliance with the practice change. It was through exploiting these short-term wins that SHC employee morale was heightened, thus continuing the forward momentum of the EBP project. .

When moving into the final two steps of the ESC process it is important to recognize that true success within an organizational change involves the organization's willingness and ability to continue with the implemented change (Kotter & Schlesinger, 2008) To ensure that the implemented change continues it is essential that the changes implemented are enmeshed with the current organizational culture to ensure continued success. If each of the previous seven steps within this process were successfully completed the continued implementation of routine depression screening and utilization of the treatment protocol will be inherent.

After the final data collection was completed, the project leader met with the SHC director to discuss the EBP project's future. It was determined that implementation would continue with minor changes to the treatment protocol with specific regards to the distribution of the mental health pamphlets. It was identified that while the pamphlets are an important part of the treatment protocol distribution to every freshmen student is not fiscally feasible; this small protocol adaptation was determined to be non-detrimental to the project's continued success. It was decided that pamphlets would be made available in the waiting room at the SHC for all college students who were interested, and that the healthcare providers would still distribute pamphlets based on PHQ-2 scoring protocol.

**Strengths and limitations of theoretical framework.** An identified strength of Kotter and Cohen's ESC process is that it is an easy to follow step-by-step approach to implementing successful organizational change. Within the context of this project, this model allows for extraneous factors such as organizational culture, communication, and goals to be taken into consideration and accounted for in a check list type approach. Mixon et al., (2005) utilized Kotter and Cohen's ESC process to merge three nursing programs into one larger program; they found that the model helped to identify, explain, and address significant steps needed to successfully navigate through change. The authors also found that participating in short-term wins helped to increase faculty cohesiveness and productivity throughout the change process (Mixon et al., 2005).

While this step-by-step approach may be an identified strength, it is also an identified limitation. Campbell (2008) identifies that the use of this model is interactive; one step can be used to accomplish another step, and relies on the skills and knowledge of who is employing the change. Kotter (2007) indicates that the change process goes through a series of phases that usually require a considerable length of time. The twelve-week time frame allotted for this EBP project implementation, coupled with the actual time it takes for organizational change to occur, and progression through each step within an appropriate amount of time may not be feasible. In addition, to successfully complete all eight stages, sustainability must be addressed while complacency is challenged.

### **Evidence-Based Practice Model**

**Stetler Model of Evidence-Based Practice (Stetler Model).** In addition to Kotter and Cohen's ESC process, the proposed EBP project was also be guided by the Stetler Model (2001). This model was originally published in 1976 as the Stetler/Marram model for research utilization (RU) at the University of Massachusetts. The model was originally created to assist in the application of research findings at the practitioner level rather than the organizational level of practice (Stetler, 1994). Since its original publication it has undergone several revisions which

focus on improving the appropriateness, feasibility, and manner in which research findings are utilized at an individual or group level (Stetler, 2001) with the most recent revision in 2009. With these evolving refinements the framework can now be utilized at both the practitioner and organizational level of practice (Stetler, 2009). According to Stetler (2010) the model is practitioner-oriented and consists of several criterion-based decision making steps to facilitate proper utilization of research and relevant clinical evidence. While the model may be practitioner-oriented it is also important to note that the model also applies to groups of practitioners on a committee or project team, as well as the activities of administrators, managers, educators, and other health care specialists (Stetler, 2010). This model was chosen for this project because of the group focus, which coincides with Kotter and Cohen's (2002) ECS process, as well as offering a methodical, comprehensive approach to designing and implementing EBP research.

The Stetler model consists of five phases of activity: (1) preparation, (2) validation, (3) comparative evaluation/decision making, (4) translation/application, and (5) evaluation. These stages will subsequently be addressed as they pertain to this EBP project implementation.

**Preparation stage.** After meeting with the director of the SHC, the project leader identified a need for a practice change involving the routine screening of young adult college students for depression. Once this need had been identified, current practice at the University's SHC was explored. It was determined that existing practices were subpar; no routine depression screening was being implemented, nor was there a consistent treatment protocol in place for those clients who screened positive for depression. Depression screening was initiated based on the healthcare provider's discretion, and often times were based off of subjective findings reported by the client. The healthcare provider would then decide whether or not to administer the PHQ-9 questionnaire. Follow-up for those clients who were diagnosed with depression was also noted to be lacking, since routine follow-up appointments were not monitored, nor was there any processes in place to monitor counseling center follow-up. After

the clinical problem was identified, it was important to identify the EBP project expectations and determine if undertaking a practice change focused on depression screening and protocol for young adult college freshman students was feasible. Moving forward in the preparation stage, the project team composed of the faculty advisor, project leader, and university SHC center staff was established.

**Validation.** According to Stetler (2001), once the need was identified, validation must occur. A thorough review of the literature was conducted with a utilization focus in mind. Evidence was then chosen and summarized as it related to the identified need. For this EBP project the literature appraisal focus began with depression screening in primary care. Once a broad base of evidence was established, the focus was then tailored to fit the specific needs of young adult college students. After sufficient evidence had been identified, project progression turned toward the third phase of the Stetler model.

**Comparative evaluation/decision making.** In this phase, decisions were made with regard to the identified evidence. According to Stetler (2010), it is important that items such as feasibility, current practice, and substantiating evidence are all taken into consideration. In addition, this step aligns with Kotter and Cohen's (2002) third step of developing a vision and change strategy. Stetler's third step prompts the project leader to evaluate the feasibility of proposed project interventions, including assessing the readiness of the organization, and urgency of current practice standards. In this case consent has already been received from the Director of the University's SHC. Once specific project details had been developed, buy-in was also achieved from the University's SHC staff, via ongoing communication during the project's development and implementation. This EBP project leader utilized specific interventions such as an educational session for health care providers, reminders, and printed materials to facilitate communication. Utilizing the findings from phase three, a recommendation for change was developed.

**Translation/Application.** In this step the project leader had to decide not only the type of change to be implemented but also how to effectively put into practice a depression screening tool and treatment protocol that would produce positive change at both an individual provider level and at an organizational level. An important factor was meeting with the clinical staff to discuss the proposed project as well as acquire their feedback, this action also aligns with Kotter and Cohen's steps four and five: communicating the vision and empowering employees. Monitoring progress at an individual level, the project leader decided that successful change would be evidenced by the health care provider's compliance with performing the depression screening tool and following the treatment protocol. Since the healthcare providers make up only a small portion of the SHC staff, it was important to also evaluate the SHC performance as a whole with regards to project implementation. This performance was evaluated by examining how the project implementation affected day to day practices, and how the SHC support staff was contributing to the success of the EBP project change. Half-way through project implementation it was noted that much of the responsibilities had fallen to that of the nurse and medical assistant within the office, with regards to ensuring that the PHQ-2 was completed, and that there was distribution of mental health pamphlets. After specifically examining the effects at the provider, and staff level, examining the potential effects at the organizational level was necessary. Increased awareness of depression and referral to university student counseling services will inexorably raise awareness throughout the university, subsequently increasing utilization of university counseling services.

**Evaluation.** The final phase, evaluation, consisted of evaluating the identified goals of the project, as well as for each intervention. Weekly data collection afforded the project leader the ability to monitor the healthcare provider's compliance with the PHQ-2 and their adherence to the treatment protocol. Initially, compliance and adherence were low, but after small implementation modifications, adherence was improved. In addition to collecting results/outcomes, an important step was evaluating the staff's opinions of project

implementation, and their perceived success of continued project implementation. The SHC Director was confident that the routine depression screening would be continued as well as the treatment protocol, with minor changes with regards to pamphlet distribution. Project results were then disseminated and recommendations for future practice implementation were dispersed. Increased awareness of depression and referral to university student counseling services will inexorably raise awareness throughout the university, subsequently increasing utilization of university counseling services. This also completes steps seven and eight in Kotter and Cohen's ESC process: consolidating gains, producing more change, and anchoring new approaches.

### **Literature Search**

**Sources for relevant evidence.** A search of relevant literature was conducted in order to obtain the best available existing evidence on depression screening and treatment practices in primary care and college students. Database sources examined included: Cochrane Collaboration and Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Proquest Nursing and Allied Health Source, MEDLINE via PubMed, and Joanna Briggs Institute Clinical Online Network for Care and Therapeutics (JBI COonNECT) (see Table 2.1). Key words utilized for this search included: students college, students undergraduate, students non-traditional, colleges, universities, depression tool, survey, questionnaire, scale, and screen, inventory student health center, campus health clinic, university health center, student health services, and primary care. Resources included clinical trials, descriptive studies, evidence based practice protocols, meta-analyses, peer-reviewed articles, practice guidelines, randomized control trials, systematic reviews, and qualitative studies. Within CINAHL and MEDLINE the combination of terms students college, students undergraduate, students non-traditional, colleges and universities, depression, tool, survey, questionnaire, scale, screen, inventory, student health center, campus health clinic, university health center, and student health services were all utilized. Inclusion criteria for this project incorporated references that

were: (a) written in English, (b) research, and (c) focused on depression screening. Excluded references were ones that primarily focused on utilizing: (a) pharmacological interventions and (b) did not pertain to depression screening.

CINAHL produced a total of seven articles and MEDLINE yielded a total of six. Since the initial search yielded a small volume of articles the search was broadened. For the articles that were selected, reference lists were reviewed for additional potential resources, hand search. After eliminating duplicates and those resources that did not meet the inclusion criteria, 10 abstracts were reviewed; six of which met both the inclusion and exclusion criteria. When searching the Cochrane database the terms “depression, college students, undergraduate students, non-traditional students, colleges, and universities” were utilized, unfortunately no appropriate resources were identified. A second search was conducted within Cochrane database utilizing “depression screening”; this resulted in identifying one review concerning screening and case finding instruments for depression. The JBI COOnNECT was also searched using the terms “depression and students”. This search unfortunately did not yield any appropriate resources and thus JBI COOnNECT was then searched utilizing the term depression, which yield one suitable clinical or research summary. Those articles that were deemed pertinent, full text copies were obtained for appraisal.

Additional websites were also reviewed to obtain clinical guidelines, these included: American College Health Association, U.S. Preventive Services Task Force, and National Institutes of Health. One clinical guideline was found published by the U.S. Preventive Services Task Force that met the criteria for inclusion.



**Table 2.1***Summary of Search Terms and Databases*

<i>Key Words</i>	<i>Cochrane Systematic Reviews</i>	<i>Cochrane Clinical Trials</i>	<i>CINAHL</i>	<i>MEDLINE</i>	<i>Proquest</i>	<i>JBI COnNECT</i>	<i>Hand Search</i>
Depression, Students, College, Students undergraduate, nontraditional, colleges, universities, student health center, campus health clinic, university health center, student health services, tool, survey, questionnaire, scale or screen	0	0	13	11	749		
Depression screening, primary care, adults	1		184	176	5	1	
<b>Inclusion Criteria:</b> Research articles Peer Reviewed English Language Published after 2000	1		4	4	0	1	1
<b>Exclusion Criteria:</b> Pharmacological Based Treatments, Older Adults, Pregnancy, Pediatrics, In patient health care, strategies for specific population, not replicable for targeted population			6	8			
<b>Total</b>	<b>1</b>		<b>4</b>	<b>4</b>		<b>1</b>	<b>1</b>

### Appraisal of Relevant Evidence

The Haynes “5S” Model (Haynes, 2007) was utilized to organize relevant research for this EBP project. The Haynes “5S” model is a pyramid comprised of five levels of clinical evidence. At the top of the pyramid are “Systems”, which include computerized decision support derived from specialty clinics and clinical departments. For this EBP project, there were no “Systems” resources available. Therefore, the next highest level of evidence on the “5S” Model was investigated.

**Summaries.** This level includes critically appraised topics and evidence based guidelines. While JBI COnNECT did not include any summaries specifically for depression screening for the young adult or college student, it did contain one summary “Depression: Assessment and Treatment” (Kunde, 2012).

Kunde (2012) developed the summary *Depression: Assessment and treatment*. The author sought out to explore what the best available evidence is in regards to assessment and treatment of depression. (AGREE Score (AS): 102). This document stated the overall objectives (AS:5), the health questions covered by the guidelines are specifically described (AS:5), and the population of interest is specifically described (AS:5). The development group of the guidelines is clearly described (AS:5), the views and preferences of the target population have been sought (AS:5), and the target users of the guidelines are clearly defined (AS:5).

Systematic methods were utilized in the search for evidence (AS:7), and the criteria for selecting the evidence was clearly described (AS:6). The strengths and limitations of the body of evidence were not clearly described (AS:3), neither were the methods for formulating the recommendations (AS:3). The health benefits, side effects, and risks were considered in the formulation of recommendations (AS:5), and there is an explicit link between the recommendations and supporting evidence (AS:6). The guideline was externally reviewed by experts prior to publication (AS:6) but there is no procedure for updating the guideline (AS:2). The recommendations are specific and unambiguous (AS:5), different options for management

are clearly presented (AS:6), and key recommendations are easily identifiable (AS:6). However, the guideline does not describe facilitators or barriers to its application (AS:2), nor did it provide advice and/or tools on how recommendations can be put into practice (AS:2). Resource implications have not been considered (AS:3), and the guidelines did not present monitoring or auditing criteria (AS:2). The views of the funding body have not influenced the content of the guidelines (AS:5), and the competing interests of the guideline development have been recorded and addressed (AS:5). Evidence included in this summary is comprised from clinical guidelines, Cochrane reviews, and a JBI COOnNECT systematic review. There were a total of ten best practice recommendations addressed by this summary. Those that were deemed pertinent to this project included:

1. Healthcare professionals should assess people with depression for their risk of suicide, and risk to others. (Grade B)
2. Inpatient treatment should be considered for people with depression who are at significant risk of suicide or self-harm. (Grade B).
3. In both mild and moderate depression, psychological treatment specifically focused on depression (such as problem-solving therapy, brief cognitive behavioral therapy and counseling) of six to eight sessions over 10 to 12 weeks should be considered. (Grade B).

Many of the recommendations included in the summary addressed pharmacological intervention and hence were excluded due to the EBP project focus. Those included above while not specific to the young adult college freshman, the recommendations can be easily applied to this target population.

The Agency for Healthcare Research and Quality (AHRQ) National Guidelines Clearinghouse, U.S. Preventive Services Task Force (USPSTF), had a recommendation *Screening for depression in adults* (USPSTF, 2002) (AGREE Score (AS):134). This document clearly stated the overall objectives (AS: 7), the health questions covered by the guidelines are

specifically described (AS: 6), and the population of interest is specifically described (AS:6). The development group of the guidelines is described (AS:6), the views and preferences of the target population have been sought (AS:6), and the target users of the guidelines are defined (AS:6). Systematic methods were utilized in the search for evidence (AS:6), and the criteria for selecting the evidence was clearly described (AS:6). The strengths and limitations of the body of evidence were clearly described (AS:6), as well as the methods for formulating the recommendations (AS:6). The health benefits, side effects, and risks were considered in the formulation of recommendations (AS:6), and there is an explicit link between the recommendations and supporting evidence (AS:6). The guideline was externally reviewed by experts prior to publication (AS:6) and the procedure was described with regards to updating the 2002 recommendations (AS:5). The recommendations are specific and unambiguous (AS:6), different options for management are clearly presented (AS:6), and key recommendations are easily identifiable (AS:6). The guideline does describe the facilitators and barriers to its application (AS:6), and it does provide advice and/or tools on how recommendations can be put into practice (AS:5). Resource implications have been considered (AS:5), and the guidelines does present monitoring or auditing criteria (AS:4). The views of the funding body have not influenced the content of the guidelines (AS:6), and the competing interests of the guideline development have been recorded and addressed (AS:6).

The key USPSTF recommendations included in the guideline were to:

1. screen adults for depression when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up. (Grade B)
2. not routinely screening adults for depression when staff-assisted depression care supports are not in place, however, there may be considerations that support screening for depression in an individual patient. (Grade C)

**Synopses.** The third level of the Haynes “5S” pyramid is the “Synopses” which include meta analysis, provide a brief description of original studies and reviews, and is an analysis of a

collection of results from individual studies. Common sources for “Synopses” include Cochrane Library: Database of Systematic Reviews, JBI COnNECT, PubMed, and CINAHL. While each of these databases was searched, there were no references that met the required inclusion and exclusion criteria.

**Syntheses.** This level of evidence includes cumulative reviews of single studies, known often times as “systematic reviews”. A search was performed and while there were no Cochrane Reviews that specifically addressed the PICOT questions and needs of the EBP project, there were two systematic reviews that were identified for appraisal.

O'Connor, Whitlock, Beil, and Gaynes (2009) conducted a systematic review to update the 2002 USPSTF recommendations for adult depression screening in primary care. The objectives of this review were clearly stated and the authors provided an analytic framework developed to answer the five clinical questions. The five questions reviewed were:

1. Is there direct evidence that screening for depression among adults and elderly patients in primary care reduces morbidity and/or mortality?
  - 1a. What is the effect of clinician feedback of screening test results (with or without additional care management support) on depression response and remission in screening-detected depressed patients receiving usual care?
2. What are the adverse effects of screening for depressive disorders in adults and elderly patients in primary care?
3. Is antidepressant and/or psychotherapy treatment of elderly depressed patients effective in improving health outcomes?
4. What are the adverse effects of antidepressant treatment (particularly SSRIs and other second-generation drugs) for depression in adults and elderly patients?

Funding was provided by the AHRQ. The authors worked closely with four USPSTF members to develop the analytic framework and key questions and six experts from various backgrounds appraised the systematic review. Two investigators reviewed a total of 4,088

abstracts, and 412 full-text articles. A total of 21 articles met both the inclusion and exclusion criteria and were utilized. These investigators rated the evidence utilizing quality criteria established by the USPSTF.

Overall O'Connor et al., (2009) found that there were identified benefits of programs that combine depression screening and feedback with the support of additional staff. This perceived benefit aligns with the USPSTF recommendation that depression screening should only be undertaken when adequate support systems are in place. In addition, these authors found that the most successful programs reported were those that included training and treatment protocols, patient educational materials, office staff training and participation, follow-up visits, and mental health referral. However, O'Connor et al., (2009) found no evidence that suggested any potential harm of routine screening for depression in adults or older adults. While many recommendations from in this review were not applicable to this particular setting and sample, the recommendations previously identified can be applied to young adult college students concerning routine depression screening.

Gilbody, House, and Sheldon (2009) conducted a systematic review, "Screening and Case Finding Instruments for Depression". This systematic review's objectives were to improve the: (1) recognition of depression, (2) management of depression, and (3) determine the outcome of screening on depression. A total of 12 randomized controlled trials, including 5,963 subjects were reviewed by these authors. Interventions included in the review specifically explored the impact depression screening tools had on: (1) recognition of depression, (2) management of depression, (3) outcome of depression, and (4) health care cost. Each clinical trial was reviewed by two researchers who independently determined if the study met the outlined inclusion criteria.

Gilbody et al, (2009) found that the most common depression screening instruments utilized were Beck Depression Inventory (BDI), General Health Questionnaire (GHQ), and Zung Self Rating Depression Scale (SDS). These authors found that routinely administered

depression screening instruments had questionable impact on the recognition of depression in the primary care setting. In general, the authors concluded that the impact of routine screening on depression was rarely reported and while some studies did report a positive impact on clinician management, little benefit could be ascertained for depression treatment outcomes. However, the authors did note that the long term benefits of routine depression screening have not been evaluated and that a larger scale randomized trial should be conducted to truly evaluate the effectiveness of depression screening tools (Gilbody et al., 2009). It is also important to note that those depression screening tools that were evaluated were more extensive screening tools than what would be utilized in the EBP project. It is important to consider that while these results may not be favorable to the proposed EBP project, the use of a routine depression screening tool can still be considered effective in facilitating appropriate management of psychological problems (Gilbody et al., 2009).

**Studies.** This is the lowest level of the Haynes “5S” model pyramid. Single studies consist of randomized controlled trials, cohort studies, case control studies, and case series/reports. Six single studies met both the inclusion and exclusion criteria for this EBP project. These included three randomized control trials, one pilot study, one retrospective analysis, and one cross sectional study. A table of study characteristics was developed for easy review (see Table 2.2)

Arroll et al. (2010) conducted a three arm randomized control trial, two experimental and one control group, for determining a screening tool for depression, for adult patients over the age of 18, in primary care. The study took place in a family practice setting in Auckland, New Zealand from 2006-2009. The goal was to determine the validity of the PHQ-2 and PHQ-9. The researchers found that those individuals with a score of two or higher on the PHQ-2 accurately detected more cases of clinical depression. In conclusion, the authors recommended that the PHQ-2 is an appropriate screening tool for depression and recommend that those individuals scoring a two or higher be administered the PHQ-9 for depression screening follow-up.

A pilot study conducted in eight college health centers by Chung et al., (2011) examined the utilization of the Chronic Collaborative Care Model (CCM) and Breakthrough Series (BTS) as an evidenced based approach focused on improving depression care amongst college students (see Table 2.2). The researchers evaluated whether: (1) treatment initiation occurred within four weeks of a depression diagnosis, (2) a mutually agreed upon plan was documented, and (3) a four week follow-up PHQ-9 reassessment was performed. The researchers fell short of their 80% screening goal, but were able to meet the predetermined goal of treatment initiation and administering a follow-up PHQ-9. Chung et al., (2011) found that the utilization of the CCM coupled with the BTS Learning Model enhanced and assisted in standardizing depression care within college health centers.

Eisenberg and Chung (2012) conducted a study to examine the adequacy of depression treatment among college students in the U.S. Data was collected via an online survey as part of the 2009 Health Minds Study. A random sample of students from 15 different colleges and universities participated. The researchers utilized the PHQ-2 to assess depressive symptoms experienced by students; if a student scored a four or above on the PHQ-2 they were considered a positive screen for clinical depression. Eisenberg & Chung found that 87% of students had some contact with a health provider in the past year, and that the use of counseling was more prevalent than the use of antidepressant medication. Overall, 52% to 65% of students were found to be receiving minimally adequate levels of care. Unfortunately, when the researchers compared among campus health services only 20% to 30% of depressed students were receiving minimally adequate treatment. In conclusion, the findings from the study indicated that there is an obvious need for improved intervention and policy for college students with depression. The use of the PHQ-2 and PHQ-9 are considered valid instruments, and should be considered for use when screening for depression. It was found that providing adequate, high-quality care to depressed students should be a priority for campus providers (Eisenberg and Chung, 2012).



Kroenke, Spitzer, & Williams (2003) evaluated the PHQ-2 module as a possible screening tool for depression in clinical settings. There were a total of 3000 primary care patient participants and 3,000 patients from Obstetrics-Gynecology clinics. Each patient completed the PHQ-2, PHQ-9, as well as a Medical Outcomes Study Short-Form General Health Survey (SF-20). It was determined that a PHQ-2 cut point of 3 or higher was comparable to the PHQ-9 diagnostic algorithm for any depressive disorder, with a sensitivity of 83% and specificity of 92% for those patients in the primary care setting . These results were also similar to those obtained from the obstetrics-gynecology clinics. In conclusion, the authors determined that the PHQ-2 is an appropriate screening tool that could be utilized to identify depression, but ultimately the PHQ-9 should be administered to determine a more definitive diagnose and address depression.

In a retrospective study by Klein, Ciotoli, & Chung (2011), the authors analyzed a primary care depression screening initiative at a university health center. The sample included undergraduate, graduate, and professional students who presented for medical visits at a university run health center. A two level approach to screening was implementing utilizing both the PHQ-2 and the PHQ-9. Of the original 3,713 patients, a total of 19.6% (731) screened positive on the PHQ-2 prescreen. All 731 students were subsequently administered the full PHQ-9. It was determined that out of the 3,713 students screened, 6.0% (224) were found to be clinically depressed. Klein, Ciotoli, & Chung (2011) found that implementing a systematic depression screening tool utilizing both the PHQ-2 and PHQ-9 was statistically significant, and well accepted by students and staff.

Lowe, Kroenke, and Grafe's (2005) cross-sectional study was designed to evaluate the effectiveness of the PHQ-2 for diagnosing and monitoring depression in patients 18 years of age and older (see Table 2.2). The study took place in seven different outpatient clinics and 12 family practice offices. All patients were asked to complete the PHQ-2 and then every third patient completed the Structured Clinical Interviews for DSM-IV (SCID). The authors determined

that the PHQ-2 demonstrated reliable use in clinical practice for routine depression screening and monitoring for adults.

The primary outcome of interest in all six single studies reviewed was focused on adequate depression screening and treatment practices within the adult population. Only one study focused on improving depression treatment within college health centers (Chung et al., 2011). Three studies used a randomized control methodology (Arroll et al., 2010; Eisenberg & Chung, 2012; Kroenke et al., 2003). Chung et al., (2011) conducted a pilot study that utilized the PHQ-9 in combination with the CCM and BTS learning model to improve depression care amongst college students. A retrospective analysis was conducted by Klein et al., (2011) to review a depression screening initiative that was conducted in a large urban university health center. The final study included was a cross-sectional study conducted by Lowe et al., (2005) to evaluate the effectiveness of the PHQ-2 as measure for diagnosing and monitoring depression.

Three out of the six studies reviewed were conducted within clinic settings (Arroll et al., 2010; Kroenke et al., 2003; Lowe et al., 2005). The other three studies were conducted on university and college campuses (Chung et al., 2011; Eisenberg & Chung, 2012; Klein et al., 2011). Having an equal proportion of studies that focused on depression screening practices within a college setting and primary care setting, allowed for more generalizability to be made to the adult population; and assisted in developing the EBP project.

Overall between all six studies the inclusion and exclusion criteria were consistent (Arroll et al., 2010; Chung et al., 2011; Eisenberg & Chung, 2012; Klein et al., 2011; Kroenke et al., 2003; Lowe et al., 2005). Sample sizes were adequate in each of the studies and ranged from 801 to 8488. Those studies that reported attrition rates, the attrition rates were low ranging from 13.2% to 20.2% (Arroll et al., 2010; Chung et al., 2011; Eisenberg & Chung, 2012; Kroenke et al., 2003; Lowe et al., 2005).

Five out of the six studies administered the PHQ-2 depression screening tool (Arroll et al., 2010, Eisenberg & Chung, 2012; Klein et al., 2011; Kroenke et al., 2003; Lowe et al., 2005)

to evaluate the effectiveness in determining depression. The one study that did not utilize the PHQ-2 administered the PHQ-9 (Chung et al., 2011). In this study, the authors were attempting to improve the approach taken toward depression treatment amongst college students; looking specifically at provider behavior.

The PHQ-2 was utilized for comparison in five out of the six individual studies. It was determined that a PHQ-2 score greater than two was the most sensitive for accurately diagnosing depression (Arroll et al, 2010; Eisenberg & Chung, 2012; Klein et al., 2011; Kroenke et al., 2003; Lowe et al., 2005). Arroll et al. (2010) found that the PHQ-2 had a sensitivity of 86% for diagnosing major depression, and Kroenke et al., (2003) found the PHQ-2 had a sensitivity of 83% in patients with major depressive disorder. While the PHQ-2 was considered an appropriate tool for routine depression screening, there was consensus that co-administering the PHQ-9 for PHQ-2 scores greater than two, was an appropriate intervention for the definitive diagnosis of clinical depression (Arroll et al, 2010; Klein et al., 2011; Kroenke et al., 2003). Arroll et al, 2010; Klein et al., 2011; Kroenke et al., 2003, also found that the use of the PHQ-9 helped to establish the likelihood of depressive disorders, as well as help determine severity, and facilitate treatment planning.

Klein, Ciotoli, & Chung, (2011) found that frequently cited barriers by health care professionals for not implementing systematic depression screening were concerns of inundating the system with newly diagnosed depressed students, or that students would not be open to completing screening instruments. Chung et al., (2011) asserts that utilization of mental health services and treatment of depression amongst students should be an important goal on all college campuses. Other implications of adequate depression screening identified by Chung et al., (2011) included the importance of collaboration between medical and counseling services, screening of at-risk students, and to identify outcomes driven to recognize gaps in treatment. Eisenberg & Chung (2012) found that while there was an identified need for significant improvement in depression screening and treatment for college students, the

implementation of routine depression screening measures such as the PHQ-9 would guide and improve treatment on college campuses. Approaches to increase depression care on campuses will also need to address the challenges inherent to campus settings. Varying levels of collaboration between medical care and mental health services must be addressed, and improved collaboration between campuses and community will need to be achieved (Eisenberg & Chung, 2012).

### **Best Practice Model Recommendation**

**Synthesis of appraised literature.** After reviewing the literature it was evident that even though there is a lack of literature specifically related to young adult freshmen college students, there is an identifiable need for routine depression screening and treatment for depression in college populations. While higher levels of evidence are lacking, there are several single studies that discuss the benefit and importance of depression screening, particularly in the young adult.

The majority of literature available for depression screening and treatment protocols address the importance of screening for depression in primary care settings and young adults (Arroll et al., 2005; Eisenberg et al., 2011; Eisenberg et al., 2007; O'Connor et al., 2009; Klein et al., 2003; Klein et al., 2011; Kunde, 2012). The best practice model developed for this project was synthesized from the evidence obtained from the review of literature. Kotter and Cohen's ESC process was utilized predominantly throughout the project development and implementation in order to ensure that feasibility and staff concerns were addressed. It was concluded that the introduction of the PHQ-2 to existing patient intake documentation would provide the university health center with an adequate tool to screen for depression and the addition of a treatment protocol that addresses appropriate recommendations based on PHQ-2 screening would assist the health care provider in implementing an appropriate plan of care.

**Answering the clinical question.** The best practice recommendation helped to answer the clinical question: What interventions would be most effective in meeting the projects established objectives? Integrating evidence obtained from the literature in the form of a quick

depression screening tool into pre-existing patient health questionnaire coupled with the implementation of a protocol that directly correlates to the scores obtained on the PHQ-2, would increase the likelihood of depression identification and referral. Working with the University's SHC Director and clinic staff to establish a mutually agreeable plan of action assisted the project leader in being able to answer the proposed clinical question. Data collected from weekly chart audits during and after project implementation provided the data necessary to determine the effectiveness of the interventions, which in turn ultimately determined if the best practice recommendation supported the clinical question.

**Table 2.2***Single Study Descriptions*

Reference	Design	Setting & Sample	Methods	Outcomes
Arroll et al. (2010)	<p><b>Randomized Control Trial</b></p> <p>Groups: - 2 experimental - 1 control</p>	<p><b>Setting:</b> -Family Practice Clinic -2006-2009</p> <p><b>Inclusion Criteria:</b> -16 years and older -Able to communicate in English</p> <p><b>Exclusion Criteria:</b> -Suffering from brain injury, dementia, terminal illness, or intoxication</p> <p><b>Sample</b> - N = 2,642</p>	<p><b>Intervention:</b> - Patients administered one of three randomly assigned assessment tools (PHQ-9, PHQ-2, control demographic questionnaire), along with Composite International Diagnostic Interview (CIDI). - After completing assessment tools and CIDI patients met with physician who would discuss results.</p> <p><b>Assessment Tools:</b> PHQ-9, PHQ-2, or control demographic questionnaire.</p> <p><b>Attrition:</b> -Power calculations suggested minimum sample of 5,500. -8,260 patients approached for study -7,757 consented to participate -2,642 completed PHQ-2 &amp; CIDI</p>	<p><b>Measurement:</b> Aggregate analyses performed</p> <p><b>Results:</b> - PHQ-2 score of 2 or higher 0.86 (86%) of those with major depression will be found positive on PHQ-2 screening Specificity 22% who do not will have false positive - Most cases of depression were detected when PHQ-2 score was 2 or higher and PHQ-9 score was 10 or higher - PHQ-2 sensitive for diagnosis of major depression although had a modest specificity - Recommended utilization of PHQ-2 with follow-up of PHQ-9 for those who score 2 or greater</p>

Reference	Design	Setting & Sample	Methods	Outcomes
Chung et al., (2011)	Pilot Study	<p><b>Setting:</b> Eight college health centers</p> <p><b>Inclusion Criteria:</b> -Students with diagnosis of Major Depression, Dysthymia, or Depressive Disorder -Score of 10 or greater on PHQ-9 -Self-report of impaired functioning due to depressive symptoms</p> <p><b>Exclusion Criteria:</b> Primary diagnosis of Bipolar Disorder, Schizophrenia, Eating Disorder, Alcohol or Substance Dependence</p> <p><b>Sample</b> - N = 801</p>	<p><b>Intervention:</b> Utilization of the Chronic Collaborative Care Model (CCM) and Breakthrough series (BTS) learning model to implement evidence based approach towards improving depression care amongst college students</p> <p><b>Assessment Tools:</b> PHQ-9 was utilized for depression screening, diagnosis, and severity monitoring</p> <p><b>Attrition:</b> -801 students met inclusion criteria. -755 students were active in treatment at 8-week reassessment -695 students were active in treatment at 12 weeks.</p>	<p><b>Measurement:</b> Aggregate analyses were performed at site level not individual level</p> <p>3 Treatment process measures include: - Treatment initiation within 4 weeks of diagnosis - Documentation of mutually agreed upon self-management goal - 4-week follow-up PHQ-9 reassessment</p> <p><b>Results:</b> Found that the project: - fell short of 80% goal of screening students - met 90% goal to initiation treatment at 4 weeks - 80% goal of administering a follow-up PHQ-9 within 4 weeks was a challenge</p>

Reference	Design	Setting & Sample	Methods	Outcomes
Eisenberg & Chung (2011)	RCT	<p><b>Setting:</b> 15 colleges and universities</p> <p><b>Recruitment:</b> -Advertising to colleges and universities</p> <p><b>Inclusion Criteria:</b> -Participating institutions were required to contribute their share of the cost of fielding the study</p> <p><b>Exclusion Criteria:</b> -Not included in article</p> <p><b>Sample</b> - N = 8,488</p>	<p><b>Intervention:</b> -Students asked to complete adapted version of PHQ-2 -Score of 4 or higher utilized as threshold for positive screen -Measure co-occurring conditions such as suicidal ideation, anxiety disorders, and substance abuse disorders -Measures for psychotherapy and access to adequate care were measured.</p> <p><b>Attrition:</b> -Default sample size was 1000 students at each campus - 19,110 students selected for study -8,488 students completed survey</p>	<p><b>Measurement:</b> -Taylor linearized variance estimator in Stata software -Proportions for depression care measures prevalence -Multivariable logistic regressions of treatment -Logistic regression to estimate relationship between minimally adequate treatment and supply of mental health providers on campus</p> <p><b>Results:</b> - 19% PHQ-2 &gt;4 - 7% with PHQ-2 =6 - Students receiving any treatment with PHQ-2 &gt;4, n=1524 -Students receiving adequate depression treatment n=593 -Determined that there was a low level of access to adequate depression screening and treatment</p>



Reference	Design	Setting & Sample	Methods	Outcomes
Klein et al. (2011)	Retrospective Analysis	<p><b>Setting:</b> -Large Urban University Health Center -January-April 2006</p> <p><b>Recruitment:</b> -Student health center's electronic health record was queried to identify patients seen in primary care (N=3713) -Records were then queried to identify if PHQ-2 was administered</p> <p><b>Inclusion Criteria:</b> -Age 18 years or older</p> <p><b>Exclusion Criteria:</b> -N/A</p> <p><b>Sample</b> - N = 3,713</p>	<p><b>Intervention:</b> -Patients were asked to complete PHQ-2 initial screen by patient service representative. -Patients who screened positive on PHQ-2, the PHQ-9 was then administered -PHQ-9 score of &gt;10, primary care provider reviewed results and confirmed diagnosis of depression if appropriate</p> <p><b>Attrition:</b> -N= 3,713 -After screening n=731 who screening positive on PHQ-2</p>	<p><b>Measurement:</b> -SPSS 15.0 -Descriptive analysis for demographic data - 731 patients screened positive on PHQ-2 prescreen</p> <p><b>Results:</b> - 224 students found to have clinical significant depressive symptoms based on PHQ-9 -115 students were not in current treatment -67 students referred for counseling appointment on campus within 1 month -Treatment found to be influenced by higher levels of severity -Systematic depression screening in primary care among college students is supported by this study -Brevity of PHQ-2 was well received &amp; follow-up with PHQ-9 was well accepted amongst students and providers</p>

Reference	Design	Setting & Sample	Methods	Outcomes
Kroenke et al. (2003)	RCT	<p><b>Setting:</b></p> <ul style="list-style-type: none"> <li>- General internal medicine clinics, family practice clinics</li> <li>- Seven OB/GYN clinics</li> <li>- May 1997-November 1998</li> </ul> <p><b>Inclusion Criteria:</b></p> <ul style="list-style-type: none"> <li>-Age 18 years or older</li> </ul> <p><b>Sample</b></p> <ul style="list-style-type: none"> <li>- N = 6,000</li> </ul>	<p><b>Intervention:</b></p> <ul style="list-style-type: none"> <li>-Patients asked to complete the PHQ-2 and medical outcomes study short form general health survey (SF-20)</li> </ul> <p><b>Attrition:</b></p> <ul style="list-style-type: none"> <li>-Primary care 3890 patients were approached <math>n = 3,000</math></li> <li>-OB/GYN 3636 patients were approached <math>n = 3,000</math></li> </ul>	<p><b>Measurement:</b></p> <ul style="list-style-type: none"> <li>-ROC curve analysis, analysis of covariance, Bonferroni's correction</li> </ul> <p><b>Results:</b></p> <ul style="list-style-type: none"> <li>-82.9% of patients with major depressive disorder had score of 3 or greater</li> <li>- 90% of patients without major depressive disorder have score less than 3</li> <li>-ROC analysis showed PHQ-2 in diagnosis major depressive disorder was 0.93 vs. 0.95 for PHQ-9</li> <li>-PHQ-2 score of 3 was optimal cut point for screening with follow-up of PHQ-9 for definitive diagnosis</li> </ul>

Reference	Design	Setting & Sample	Methods	Outcomes
Lowe et al. (2005)	Cross-sectional Study	<p><b>Setting:</b> -7 outpatient clinics and 12 family practices</p> <p><b>Inclusion Criteria:</b> -Age 18 years or older</p> <p><b>Sample</b> - N = 1619</p>	<p><b>Intervention:</b> -Patients were asked to complete the PHQ-2 and then every 3<sup>rd</sup> patient was asked to complete Structured Clinical Interviews for DSM-IV (SCID) -Based on SCID scoring three groups were formed: 1) major depressive disorder, 2) other depressive disorders, and 3) no depressive disorder, each patient was contacted after 12 months for follow-up assessment.</p> <p><b>Attrition:</b> -2050 eligible patients N= 1619 completed PHQ-2 -Every 3<sup>rd</sup> patient was then asked to complete Structured Clinical Interviews for DSM-IV (SCID) n = 520 -Follow-up assessment n = 167</p>	<p><b>Measurement:</b> -Chi-square tests and one-way analysis of variance</p> <p><b>Results:</b> -PHQ-2 <math>r = .67</math> to <math>.87</math> -PHQ-2 score of <math>\geq 3</math> had best sensitivity and specificity for major depressive disorder and any depressive disorder, sensitivity of 87% and specificity of 78% -Overall PHQ-2 demonstrated reliable use in clinical practice for depression screening</p>

**EBP Project Protocol**

The PHQ-2 will be integrated into existing client intake documentation currently being used by the health care providers at the SHC. The client will be instructed to complete this screening prior to being seen by health care professional. Once screening is completed, the health care professional will total the client's score on the PHQ-2 (see Table 2.3), if the client's PHQ-2 score is greater than one, the PHQ-9 will be administered and an appropriate treatment plan implemented based on PHQ-9 Scoring Guidelines (see Table 2.4). Based on client's PHQ-2 score and PHQ-9 score, an appropriate plan of care will be established by the health care professional based on the Treatment Protocol Guidelines (see Table 2.5). This protocol is not to take the place of clinical judgment but should be used as a guide to ensuring appropriate care of the young adult college freshman

**Table 2.3***Patient Health Questionnaire-2 (PHQ-2)*

<b>Over the past 2 weeks, how often have you been bothered by any of the following problems?</b>	<b>Not at All</b>	<b>Several Days</b>	<b>More Than Half the Days</b>	<b>Nearly Every Day</b>
1. Little interest or pleasure doing things	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
2. Feeling down, depressed or hopeless	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>

**Total** \_\_\_\_\_

**Table 2.4**  
*PHQ-9 Scoring Guidelines*

<b>PHQ-9 Score</b>	<b>Depression Severity</b>	<b>Proposed Treatment Actions</b>
<b>0-4</b>	<b>None-Minimal</b>	<b>None</b>
<b>5-9</b>	<b>Mild</b>	<b>Watchful waiting; repeat PHQ-9 at follow-up</b>
<b>10-14</b>	<b>Moderate</b>	<b>Treatment plan, referral to Student Counseling Center, and follow-up appointment within 2 weeks, and/or pharmacotherapy</b>
<b>15-19</b>	<b>Moderately Severe</b>	<b>Referral to Student Counseling Center Active treatment with pharmacotherapy and/or psychotherapy</b>
<b>20-27</b>	<b>Severe</b>	<b>Immediate referral to Student Counseling Center, initiation of pharmacotherapy, and, if severe impairment or poor response to therapy, expedited referral to a mental health specialist for psychotherapy and/or collaborative management</b>

Modified from Kroenke, K., & Spitzer, R.L. (2002). The PHQ-9: A new depression diagnostic and severity measure. *Psychiatric Annals*, 32, 509-521.

**Table 2.5**  
*Treatment Protocol Guidelines*

<b>Client PHQ-2 score is 0</b>	<b>No further screening is indicated. Pamphlets regarding Stress Management, Adjusting to College or Mental Fitness be distributed.</b>
<b>Client PHQ-2 score is 1-3</b>	<b>Administer the PHQ-9. Follow-up appointment for re-evaluation at SHC should be established, and pamphlets regarding Stress Management, Adjusting to College or Mental Fitness be distributed.</b>
<b>Client PHQ-2 score is greater than 3</b>	<b>Administer the PHQ-9. Follow-up appointment with SHC should be established. Referral to student counseling center. Distribution of pamphlets regarding Stress Management, Adjusting to College, or Mental Fitness be distributed.</b>

## CHAPTER 3

### IMPLEMENTATION OF PRACTICE CHANGE

#### Sample and Setting

The setting for this EBP project was a private, faith based university located in the Midwest. The University offers more than 70 academic programs in five different colleges, focusing on both graduate and undergraduate plans of study. The annual enrollment for this University is approximately 3,000 undergraduate and 1,100 graduate students. Sixty-four percent of the student population originates from outside of the universities state of origin, including, more than 40 international countries (Valparaiso University, 2012). The university's student body is comprised of 54% female and 46% male students (Valparaiso University, 2012).

For this EBP project, the population of interest was young adult, college students. The target population was freshman students entering the University during the fall semester of 2012.

#### Outcomes

The USDHHS (2011) establishes national benchmarks for the improvement of Americans health in the document Healthy People 2010 (USDHHS) (2011). Mental health objective number 11 of Healthy People 2020 is to increase depression screening by primary care providers (USDHHS, 2011). In addition, AHCA Healthy Campus 2020 recommends increasing the proportion of college students that report depression and receive treatment (ACHA, 2012). According to Eisenberg & Chung (2012) detection and treatment of depression among college students has received little attention; due to this inattention, there is an increased risk of depression relapse, disability, with suicide as an inevitable sequela. Based on USDHHS and AHCA recommendations, there were several outcomes of interest evaluated within this EBP project. The primary outcome of interest was a measurable improvement in the number of freshman college students routinely screened at the University's SHC for depression. With the addition of a screening tool prompt identification, education, and referral of those



clients suffering from depression can occur. Along with the screening tool, a depression treatment/referral protocol was also initiated to guide health care providers in treatment planning based on the patient health questionnaire two (PHQ-2) and patient health questionnaire nine (PHQ-9) scoring. Therefore, the second outcome of interest in this EBP project was measuring the effectiveness of the depression protocol in assisting with the development of a plan of care that included client education, referral and follow-up.

### **Intervention**

The Stetler model (Stetler, 2001) was used to guide this EBP project. The Stetler model provides a series of decision making steps to be used by the practitioner when designing an EBP project. The model consists of five phases. Preparation, the first phase, allows the project leader to define and ascertain the priority need for the health care organization. When developing this EBP project, it was important to first conduct a needs assessment of the University's SHC. This initial assessment included collecting information regarding current depression screening and treatment practices. After discussions with key stakeholders, the project leader found that there was no routine screening for depression and no formal protocol for the treatment or referral for those students demonstrating symptoms of depression. After determining that there was an identified need, it was important to next examine the priorities of the EBP project. The first identified priority was to increase routine depression screening for clients presenting to the SHC. Secondly, it was important to implement a more uniform treatment plan for healthcare providers, so as to not only improve client outcomes, but to also improve the standards of care within the SHC. A final priority identified, was to develop an EBP project that would not only align with the ACHA Healthy Campus 2020 guidelines but would also allow the SHC to successfully meet these objectives.

The next phase of the Stetler model is validation. In this phase the project leader assesses each source of evidence for its level of credibility, applicability, and operations details (Stetler, 2001). From the needs assessment it was determined that there was an identifiable call

for not only a routine depression screening tool, but that the SHC would also benefit from a protocol that guided appropriate treatment and referrals. This appraisal aligns with the USDHHS Task force recommendation for depression screening, accurate diagnosis, effective treatment, and follow-up for adults (USPSTF, 2002). The majority of literature available for depression screening and treatment protocols address the importance of screening for depression in primary care settings and young adults (Arroll et.al., 2005; Eisenberg et.al., 2011; Eisenberg et.al., 2007; O'Connor et. al., 2009; Klein et.al., 2003; Klein et.al., 2011; Kunde, 2012).

Comparative evaluation and decision making comprise phase three of the Stetler model. In this phase, the project leader organized and summarized the findings from the literature search. The degree of feasibility was examined and decisions were made as to whether or not specific study findings would be appropriate for use within the SHC setting. It was concluded that there was sufficient evidence through the literature search to support the implementation of a routine depression screening tool, as well as a treatment and referral protocol. The use of the PHQ-2 was examined in several studies (Arroll et.al., 2010; Eisenberg & Chung, 2012; Klein et. al., 2011; Kroenke et.al., 2003; Lowe et. al., 2005) and revealed positive findings for identification of depression in the adult population. It was then concluded that the introduction of the PHQ-2 to existing client intake paperwork would provide the university health center with an adequate tool to screen for depression, and allow the SHC to comply with ACHA recommendations.

During the Translation/Application phase, the project leader summarized the evidence and determined the applicability to the current EBP project needs; specifically determining the method and level of use, as well as the appropriateness of the evidence for implementation at the SHC. After synthesizing the information, the project leader determined the screening tool implemented should be one that was not too cumbersome for SHC staff and clients. The Patient Health Questionnaire-2 (PHQ-2) was examined in several studies (Arroll et.al., 2010; Eisenberg & Chung, 2012; Klein et. al., 2011; Kroenke et.al., 2003; Lowe et. al., 2005) and revealed

positive findings for identification of depression in the adult population. Study findings coupled with PHQ-2 and PHQ-9 proposed treatment actions, an EBP project protocol was developed. After a thorough review of the literature it was decided that a basic two question initial screening test for depression, PHQ-2 would be an appropriate tool to utilize in implementation (Richardson & Puskar, 2012). The PHQ-9 is based on the diagnostic criteria for major depressive disorder in the *DSM-IV*, and is used to assist in the diagnosis of depression and deriving a severity score to help guide treatment (Richardson & Puskar, 2012).

The PHQ-2 is a two question self-report depression screening tool that consists of two items assessing the presence or absence of anhedonia or depressed mood over the past two weeks (Klein, Ciotoloi, & Chung, 2011). The PHQ-2 is designed specifically for screening depression versus establishing a final diagnosis or severity. Scoring consists of totaling responses from the two assessment questions and can range from zero to six. Kroenke, Spitzer, & Williams (2003) identified that a total score of three on the PHQ-2 was an optimal cut point for further depression assessment to be conducted. This determination is based on specificity and sensitivity of the PHQ-2 compared to that of the PHQ-9 (0.93 vs. 0.95). Chung et.al, (2011) utilized the first two questions of the PHQ-9 to increase depression identification and treatment in eight college health centers. It was found that utilization of either the PHQ-2 or the first two questions of the PHQ-9 for routine depression screening provided an opportunity for early depression identification and treatment.

Based on the review of literature it was determined that those clients who score greater than three on their PHQ-2 questionnaire should be evaluated further. This would require the health care provider to administer the full PHQ-9, and based on the findings develop an appropriate plan of care. The PHQ-2 has demonstrated to be an effective tool for screening, but for definitive diagnosis it is recommended that the PHQ-9 is administered. This is because the PHQ-9 includes all nine symptoms based on the *DSM-IV* (Kroenke, Spitzer, & Williams, 2003). This information coupled with the fact that the SHC health care providers were already utilizing

the PHQ-9, assisted with the decision to integrate continued use of the PHQ-9 into the treatment and referral protocol.

With an appropriate assessment tool identified, a treatment protocol was developed. It was determined that education would play an integral part in this EBP protocol. According to Lazenby (2011), education increases awareness and possibly prevents depressive episodes. Of equal importance is providing education and treatment to those students who may score between zero and three on the PHQ-2. Clients that were scored as a zero on their PHQ-2 were provided handouts focused on stress management, healthy coping for college students, or mental fitness. In addition, these individuals were provided an information sheet that outlined the available mental health resources on campus. For those who received a score between one and three, further evaluation was recommended in the form of administering the full PHQ-9. Interventions at this stage included stress management, healthy coping, or mental fitness handouts, referral to counseling services if deemed appropriate by healthcare provider, and a return appointment for follow-up. Individuals that would score greater than three would require administration of the PHQ-9, education, an individualized treatment plan, immediate referral to counseling services, and a two-week follow-up appointment. It is important to note that the protocol does not replace clinical judgment, but rather is simply a tool that will ensure consistent identification, education and treatment.

In the final phase, Evaluation, the project leader appraised each project goal; looking specifically at the feasibility and sustainability of the proposed project. Weekly data collection sessions afforded the project leader the ability to track healthcare provider behavior and response to change. It was through these weekly sessions that the project leader was able to maintain a sense of teamwork that mimicked that of the Stetler Model and Kotter & Cohen's change process.

After week three, it was noted that compliance with PHQ-2 scoring and adherence to the treatment protocol was lacking. It was evident that healthcare providers were not implementing

and acknowledging the PHQ-2 scoring. Modifications were made in order to increase adherence to the treatment protocol these included: having the SHC ancillary staff place the pamphlets on the chart prior to the clients appointment, and before the NP or physician would see the client, the MA or RN were to make sure that the PHQ-2 had been completed. At the end of each weekly data collection session the project leader discussed with the SHC staff their progress and what changes were needed to increase compliance. Additional modifications were made during weeks six thru eight which included: the MA or RN ensuring that the PHQ-2 was completed and scored, mental health pamphlets were distributed, and that the PHQ-9 was administered.

### **Planning**

During project planning and implementation Kotter & Cohen's Eight Steps for Successful Change (2002) were utilized to ensure success of the EBP project. In order to implement successful change within the SHC the project leader used this model to engage healthcare providers in understanding the need for change, recruit them to be part of the guiding team, and finally create and implement a change that would continue past the project completion.

In concordance with the first three steps of this model, the project leader conducted meetings with the University's SHC director and staff in order to determine the feasibility, urgency, and goals for the EBP project. After the initial meeting with the SHC director and faculty advisor, an in-depth analysis and review of the literature was conducted to discover evidence and recommendations concerning effective depression screening and treatment for young adult college students in the primary care setting. The project leader then assembled the guiding team and developed the vision (Kotter & Cohen, 2002). A project plan was carefully scripted and reviewed by the project advisor and SHC staff. Staff in-services were conducted one week prior to implementation for the purpose of not only educating staff about the upcoming changes, but also to communicate with key team members for the purpose of establishing "buy-

in” for the project. An amicable and feasible plan was decided upon and a project timeline was established for implementation.

Weekly chart audits were conducted to identify and collect data. Data that was collected during this audits included age, gender, PHQ-2 scores, pamphlet distribution rate, PHQ-9 scores if appropriate, prescribed treatment plan, and if follow-up appointments were scheduled and followed through by clients.

In addition, time was set aside to discuss staff concerns, and create what Kotter and Cohen (2002) call short-term wins. Short term wins for this EBP project included monitoring PHQ-2 administration; since the PHQ-2 was integrated into each system assessment sheet, it was important that health care providers were still addressing the PHQ-2 and treating appropriately. Once PHQ-2 administration was at 100% the next short term win was to ensure the use of the treatment protocol based on PHQ-2 scoring. Generating short term wins assisted in building staff morale, maintaining a level of engagement, and to ensure that the staff remained centered and focused on the goals of the project so that the ultimate project initiative is fulfilled. The project leader also provided reinforcement (e.g. baked goods) at the end of each week to help keep the project momentum in a forward positive fashion.

According to Kotter and Cohen (2002), two important steps are “Don’t let up” and “Make it stick”. During these steps the EBP project leader continued to motivate and encourage SHC staff. While celebrating short-term wins in an essential step in this process, it is of equal importance to keep staff focused on long term implementation and utilization. While the project is only conducted over a four month period, it was important to encourage staff to continue with implementation. Recruiting key team plays such as the SHC director was crucial in ensuring that implementation will continue and new staff will be oriented to the depression screening and protocol practices.

### **Recruiting Sample**

In the U.S. between 2005 and 2006 approximately 4.7% of persons aged 18-39 were diagnosed with depression (CDC, 2008). During the spring of 2012, 31% of college students in the U.S. reported feeling so depressed that it was difficult to function (ACHA, 2012). The transition to college can be one of the most difficult transitions a young adult will make. This transition is often fraught with increased demands, which enhance the college student's vulnerability to depression (Lazenby, 2011). With this important transition acknowledged, freshmen college students, 18 years of age and older were chosen as the sample for this EBP project.

### **Data**

Collection of data was conducted at the SHC prior to project implementation to determine baseline depression screening and treatment rates during the previous fall semester. Assessment of change was evaluated through chart audits conducted on a weekly basis by the project leader. At the end of each week, a list of freshmen clients seen in the SHC was obtained from the SHC staff and charts were acquired for all freshman clients seen the previous week. Each client was then assigned a participant code number. Each participant's charts were reviewed to determine if the PHQ-2 was completed, the score received, and if the EBP project protocol was implemented. In addition, demographic data including, age and gender was collected.

Management of data was conducted on a weekly basis. Data collected at the end of each week was compiled into an Excel spreadsheet that contained age, gender, PHQ-2 score, PHQ-9 scores, treatment protocol used, referral frequency, and follow-up. Data entered were de-identified and the program password protected. At the completion of the data collection period, data were then transferred into SPSS-19. Additionally a paired sample *t*-test was utilized to compare initial and follow-up PHQ-2 scores.

### **Protection of Human Subjects**

Prior to the start of the EBP project implementation, the project leader underwent Institutional Review Board (IRB) training through the National Institutes of Health (NIH) web-based training course "Protecting Human Research Participants". In addition, approval from Valparaiso University's IRB committee was obtained prior to implementation of proposed EBP project. Eligible participants for this project included young adult college freshman students over the age of 18. Data was obtained via weekly chart audits. Subject confidentiality and anonymity was of the utmost importance and maintained lest the results of the study be compromised. No individual participants' identifiers such as name, birth date, or social security numbers were utilized in data collection. During the EBP project, all data were kept in a secured location with only the EBP project leader having access to his information. At the conclusion of the project, all collected data were destroyed.



## CHAPTER 4

### FINDINGS

The purpose of this EBP project was to increase not only the identification of depression in young adult college students, but also to enhance current treatment and referral processes. The objective of this EBP project was to answer the compelling clinical question: How does a depression screening tool and treatment protocol, implemented at a university SHC, influence health care provider behavior? Data were analyzed using the SPSS-18 statistical program. Descriptive analysis of the project participant's demographics was conducted. A paired-samples *t*-test was calculated to compare initial PHQ-2 scores to follow-up PHQ-2 scores. Data was then analyzed to determine measures of central tendency.

#### Sample Characteristics

Two hundred twenty-five freshmen clients, ranging from age 18 to 36 years ( $M = 19.18$  years) were seen in the SHC during a 12-week project period. There were a total of 142 female freshmen and 83 male freshmen clients seen by providers at the SHC during this time period.

#### Changes in Outcomes

Out of the 225 freshmen clients seen at the SHC during the 12-week time period, 213 (95%) were administered the PHQ-2 questionnaire (see Table 4.1). A total of 144 clients were given mental health pamphlets, this demonstrates a 64% adherence rate to the EBP protocol. Of the 213 clients 19 females (79.2%) and five males (20.8%), for a total of 24, scored greater than 0 on the initial PHQ-2 screening (see Table 4.2). Ten clients (41.9%) out of the 24 were administered the PHQ-9. Thirteen clients (54.2%) out of the 24 were referred to the counseling center, and 12 (50%) out of the 24 were recommended follow-up appointments. Of those 12 clients returned for follow-up appointments.

#### Statistical testing and significance

Statistical analysis was performed to answer the PICOT question. Descriptive analyses were conducted to make comparisons between male and female freshmen students. A paired-

samples *t*-test was calculated to compare the mean initial PHQ-2 score to the mean follow-up PHQ-2 score ( $n=12$ ) for those clients who returned for their follow-up appointment at the SHC. The mean on the initial PHQ-2 was 4.5 ( $SD=1.62$ ), and the mean for follow-up PHQ-2 was 1.5 ( $SD= 1.38$ ). A significant decrease from initial PHQ-2 to follow-up PHQ-2 was found ( $t(11) = 8.617, p < .001$ ). A more comprehensive analysis of the implications will be discussed in Chapter 5.

### **Findings**

Overall, the implementation of a routine depression screening tool and treatment/referral protocol demonstrated to be more effective than having no protocol in place. These results indicate that the implementation of the aforementioned protocol allowed healthcare providers at the SHC to not only identify an increased number of freshmen students at risk for depression, but also provide a consistent approach to treatment and management, for those clients who were identified at risk. The interpretation and significance of the results from the analysis will be further discussed in Chapter 5.

**Table 4.1***Routine Screening Outcomes*

	Total <i>n</i> (%)
<b>Seen at SHC (<i>n</i>=225)</b>	
Female	142 (63.1%)
Male	83 (36.9%)
<b>PHQ-2 Screening (<i>n</i>=213)</b>	
Female	134 (62.9%)
Male	79 (37.0%)
<b>Pamphlet Administration (<i>n</i>=144)</b>	
Female	92 (43.1%)
Male	52 (24.4%)
<b>Treatment Protocol</b>	
Score >0	24 (11.2%)
PHQ-9 Screening	10 (41.6%)
Referral Student Counseling Center	13 (54.1%)
Follow-Up Visit at SHC	12 (50%)
<b>Follow-Up PHQ-2 Scoring (<i>n</i>=12)</b>	
Score >0	7 (58.3%)
Student Counseling Center Appointment	5 (41.6%)

**Table 4.2***Follow-up PHQ-2*

	Initial score >0 on PHQ-2	Follow-Up Appointment Student Health Center	Follow-Up PHQ- 2 Score >0	Counseling Center Appointment
Gender				
Female	19 (79.2%)	11 (45.8%)	6 (25%)	5 (20.8%)
Male	5 (20.8%)	1 (4.1%)	1 (4.2%)	—

## CHAPTER 5

### DISCUSSION

This EBP project was designed to answer the PICOT question: How does a depression screening tool and treatment protocol, implemented at a university health center, influence health care provider behavior? This chapter provides an explanation of the project findings from Chapter 4, evaluates the theoretical and EBP framework utilized to guide this EBP project, and offers implications for future projects.

#### **Explanation of Findings**

Data for this project were collected through weekly chart audits and then analyzed using SPSS-18. The data were reviewed for demographic characteristics, PHQ-2 administration rates, PHQ-2 scores, pamphlet distribution rates, and protocol adherence rates which included referral and follow-up appointments. Data analysis was limited due to the partial availability of client demographic data, lack of prior routine depression screening, and no depression treatment protocol within the SHC.

A total of 225 freshmen clients were seen at the SHC during the 12-week time period with 213 freshmen clients screened for depression using the PHQ-2 questionnaire. There was a 64% adherence rate to the EBP protocol use with 144 freshmen clients receiving mental health pamphlets on the stressors of college life. Pamphlets were utilized to increase the client's awareness to the stressors of college life and depression, as well as to give them tactics in which to effectively cope during stressful periods. Pamphlets are easily accessible, inexpensive, effective, and one way healthcare providers can educate clients about identification, treatment, and prevention of depression.

The PHQ-2 demonstrated reliable use in clinical practice for routine depression screening and monitoring for adults and college students in several studies (Eisenberg and Chung, 2011; Klein, Ciotoli, & Chung, 2011; Kroenke, Spitzer, & Williams, 2003; Lowe, Kroenke, & Grafe's, 2005) and reproducible results were seen within this EBP project. After reviewing

and evaluating the current literature it was determined that a PHQ-2 score greater than two was the most sensitive for accurately identifying those at risk for depression (Arroll et.al, 2010; Eisenberg & Chung, 2011; Klein et.al., 2011; Kroenke et.al., 2003; Lowe et.al., 2005). A total of 24 (11.2%) freshmen clients scored greater than zero on the PHQ-2, indicating that they were at an increased risk for depression.

Those clients scoring greater than 0 on the PHQ-2, ten were administered the PHQ-9. According to the treatment and referral protocol, for those clients scoring greater than zero on their PHQ-2, the healthcare provider was to administer the PHQ-9 to determine if a definitive diagnosis of depression would be warranted. Integration of the PHQ-9 in the treatment protocol was based on results of studies conducted performed by Arroll et al. (2010), Chung et al. (2011) and Eisenberg & Chung (2011), these researchers found that the PHQ-9 was a depression screening tool with good reliability in the diagnosis of depression because it is based on the diagnostic criteria for major depressive disorder in the *DSM-IV*. A score greater than 10 had a sensitivity and specificity of 88% for diagnosing major depression (Chung et al., 2011). Kroenke & Spitzer's (2002) PHQ-9 scoring guidelines directed the development of the treatment and referral protocol. With support from the literature it was determined that a PHQ-9 score of 10 and greater is indicative of major depression and required immediate action. Seven clients scored greater than 10 on their PHQ-9 indicating that they were suffering from moderate severity depression. While there were only ten clients administered the PHQ-9 and seven of them scoring greater than 10, a total of 13 (54.1%) were referred to the counseling center based on either their PHQ-2 score or PHQ-9 score with 12 (50%) clients returning for follow-up at the SHC.

Of the 12 clients that reported to the SHC for follow-up, paired-samples *t*-test analysis comparing the initial PHQ-2 scores ( $m = 4.5$ ), and the follow-up PHQ-2 scores ( $m = 1.5$ ) was conducted. It was noted that the mean PHQ-2 score decreased by three points. A significant decrease from initial PHQ-2 to follow-up PHQ-2 was found ( $t(11) = 8.617, p < .001$ ),

demonstrating that this data can be found clinically significant. At follow-up the re-administering of the PHQ-2 allows healthcare providers to monitor a client's response to interventions, and current mental state (Arroll et al., 2010).

Routine use of a depression screening assessment can improve the quality of treatment, and facilitate effective treatment (Smith, Rosenstein, & Granaas, 2001). Overall, the implementation of this EBP project which included the routine depression screening tool and treatment/referral protocol demonstrated to be more effective than previous SHC practices of no routine screening and treatment protocol for depression. When comparing these results to the previous no routine depression screening practices at the SHC, these findings demonstrate a significant change in not only screening, but also with regards to treatment and referral.

December 2011 through February 2012, the SHC only made a total of three referrals to the University counseling center. With the implementation of the routine assessment, as well as the treatment and referral protocol there was an increase in the number of referrals made to the University counseling center over a 12 week time frame. These changes align with the Health Campus 2020's goals of increasing the proportion of students who are diagnosed with depression and are receiving care (ACHA, 2012).

Implementation of a systematic depression screening tool and treatment/referral protocol that utilized both the PHQ-2 and PHQ-9 was statistically significant and well accepted by students and staff. Several comments were made with regards to the positive impact it has had on identifying not only freshmen clients at risk, but other SHC clients as well. The literature also demonstrated a consensus that co-administering the PHQ-9 for PHQ-2 scores greater than two, was an appropriate intervention for the definitive diagnosis of depression (Arroll et al, 2010; Klein et al., 2011; Kroenke et al., 2003).

Education about healthy lifestyle choices will assist clients in developing effective coping techniques and a healthier lifestyle (Lazenby, 2011). Pamphlet distribution played only a small role in the protocol, it was essential that healthcare providers appropriately refer clients to the

counseling center so as achieve the optimal effects of preventive counseling for depression.

These tactics were not only outlined in the pamphlets provided to freshmen clients, but were an integral part to the treatment and referral protocol.

### **Evaluation of the Applicability of the Theoretical and EBP Framework**

Two frameworks guided the development, implementation, and evaluation of this EBP project: the Stetler Model of Evidence-Based Practice (EBP) and the Kotter and Cohen's (2002) Eight Stages of Change (ESC). An evaluation of the applicability of each framework as it pertains to this EBP project will be completed in this section.

**Stetler Model of Evidence Based Practice.** The Stetler Model of EBP Practice (2001) provided the framework to facilitate proper utilization of research and relevant clinical evidence. The Stetler Model introduced a methodical, comprehensive, five phase approach to designing and implementing EBP research. Progression through the five phases of the Stetler Model of EBP Practice (2001) was also facilitated with the use of Kotter and Cohen's ESC (2002) process.

In the preparation stage, an initial meeting with the director of the SHC was conducted to discuss the feasibility of the project and review the current depression screening and treatment protocol practices. After meeting with the SHC director, a need was identified to develop and integrate routine depression screening and treatment protocol into SHC practices. The current practices of the SHC did not include routine depression screening nor was there any consistent treatment/referral processes in place.

After identifying the need for routine depression screening and protocol it was also important that the project leader consider the feasibility of practice change. To determine feasibility, the validation stage of the Stetler model guided the DNP student to conduct a thorough review of the literature with a utilization focus in mind. The literature appraisal began with depression screening and treatment in primary care and once a broad base had been established, the focus was then tailored to meet the specific need of young adult college



students. Through the comparative evaluation phase of the Stetler model, the evidence from the literature was reviewed, and project development began. The DNP student took into consideration not only the feasibility of the project but also current practice standards. The importance of integrating a depression screening tool that was quick, effective, and user friendly had been stressed to the DNP student by the SHC staff. Keeping these criteria in mind, the DNP student was able to identify a depression screening tool that met the needs of the organization, demonstrated reliability, and would fulfill the needs of this EBP project.

Educational sessions for the SHC healthcare providers and staff were conducted to communicate literature findings and project recommendations. During these sessions it was also important to acquire staffs feedback with regards to project feasibility. These meetings were important to successfully completing the translation/application phase of the Stetler model. It was decided that successful change would be evidenced by the health care provider's compliance with performing the depression screening tool and following the treatment protocol. At the mid-point of the project implementation, it was noted that the majority of the project responsibilities had fallen to that of the nurse and medical assistant. This change in roles improved project implementation and provider compliance. The final phase, evaluation, was fulfilled through; weekly data collection sessions that afforded the project leader with the ability monitor compliance. Early on in data collection it was noted that compliance by the healthcare providers was low, after modifying staff roles, and having the SHC ancillary staff take a more active role adherence began to improve. It wasn't until after a SHC staff meeting and marked adherence rates that the project leader was made privy to the information that the ancillary staff had decided to take sole responsibility for ensuring project implementation and adherence.

Overall the Stetler Model served as an effective framework to guide this EBP project. Each phase of the model served as a guide for the DNP student to ensure that all requirements for the EBP project would be met. While the Stetler Model may be practitioner-oriented, it is also easily applied to groups of practitioners, project teams, administrators, managers, educators,

and other health care specialists (Stetler, 2001). The perceived strengths of this model align with the consensus regarding the ease of use and applicability of EBP. Romp and Kiehl (2009) utilized the Stetler (2001) model to revitalize a preceptor program at a tertiary medical center. The authors found that the application of the Stetler model resulted in improvement of nurse's satisfaction and assisted in effectively applying EBP.

**Kotter and Cohen's Eight Stages of Change.** Kotter and Cohen's ESC (2002) served as the theoretical framework for this EBP project. The ESC process consists of eight stages. Utilization of the ESC allowed the DNP student to develop an EBP project that would take into account the barriers to organizational change and ensure success. In addition, the use of this model assisted the DNP student in considering extraneous factors such as organizational culture, communication, and goals of the SHC staff to be taken into consideration during project development.

According to Kotter and Cohen the first step of the ESC is "generating a sense of urgency" this was achieved by providing a brief in-service to the SHC director and staff about the importance of routine depression screening and treatment protocol within the college population. During this in-service the SHC staff provided the DNP student with feedback regarding the feasibility and implementation of the project. Recommendations were made regarding realistic goals and expectations as to how freshmen clients visit's would be tracked, ensuring that the PHQ-2 was completed, and how pamphlet distribution would be handled. Initially storage containers were created and placed in the SHC provider work area with all necessary supplies, i.e. pamphlets, counseling center cards, copies of the PHQ-9, and laminated copies of the protocol. These containers proved to be more of a hindrance and despite being brightly colored were overlooked. The guiding team consisted of two full time nurse practitioners, a physician, one medical assistant, one registered nurse, a receptionist, and an office administrator. Without active support from all members of the SHC center, the implementation of this EBP project would not have been successful.

After careful examination of the current SHC practices with regards to routine depression screening and input from the SHC staff; the project leader and SHC director recognized that there was not time like the present to implement a practice change. To fulfill step three in the ESC process it was crucial that the project leader developed a feasible and realistic EBP project. Getting the vision right was crucial in ensuring success of the EBP project. Integrating not only routine depression screening but also a treatment protocol allowed for appropriate mental health care for each student who sought care at the SHC. The underlying vision of the EBP project was to promote a better understanding of the important of routine depression screening, along with prompt identification. Effective routine communication with SHC staff was important in making certain that the EBP project was implemented to its fullest.

Weekly communication with the SHC staff occurred during data collection; during these times staff brought forth concerns with implementation and suggestions for improvement. These weekly communications not only allowed for successful transition through steps four and five in the ESC process. During these weekly data collection sessions it was also a time for the project leader to divulge the SHC's progress with regards to PHQ-2 administration, pamphlet distribution, and protocol adherence. Weekly updates not only allowed the project leader to create short-term wins but also demonstrate to the guiding team the dedication to the success of the project. Successful changes implemented were noted with regards to PHQ-2 administration and pamphlet distribution, with much of these responsibilities shifted to the ancillary staff, healthcare providers were able to focus more on the treatment and referral protocol. While adherence to PHQ-9 administration and referral were suboptimal, there was improvement and with continued implementation the project leader is confident that there will be increased acceptance and administration. To ensure that the implemented EBP project changes are continued it is essential that these changes are enmeshed with current organizational culture.

After the final data collection was completed the project leader met with the SHC director to discuss the EBP project's future. It was determined that project implementation will continue but with minor changes in the depression screening procedure, mental health pamphlet distribution, PHC-9 assessment, and referral protocol for mental health follow-up for those identified at risk for depression. For example, during the EBP project every freshmen client received a pamphlet; the recommendation was to have the pamphlets given only to those who scoring greater than zero on the PHQ-2 thus identifying a need for mental health support. In addition, it was recommended that pamphlets be readily available in the waiting rooms for all students presenting to the SHC. While there was increased adherence to PHQ-2 administration, not every client was given the PHQ-9 for further evaluation, nor were they referred to the counseling center. It is recommended that for the true effects of the treatment and referral protocol to be seen, health care providers need to continue to make a conscious effort to further screen those at risk clients, and refer appropriately.

Application of the ESC served as a suitable framework to guide this EBP project. The step-by-step approach of the ESC model was an identified strength because, if each of the steps is successfully completed, continued implementation of routine depression screening and utilization of the treatment protocol will be inherent. The twelve-week time frame allotted for this EBP project implementation, coupled with the actual time it takes for organizational change to occur, and progression through each step within an appropriate amount of time may not be feasible, and was identified as a weakness. It is recommended that perhaps a greater period of time would allow the SHC staff to progress through each of the stages more naturally, thus allowing the change in provider behavior to be more gradual and readily accepted.

### **Strengths and Limitations of the EBP Project**

**Strengths.** Implementation of the EBP project depression screening tool and treatment protocol in a SHC was effective at identifying those students at risk for developing depression.

The support from the SHC staff and their enthusiasm made the project possible. The Kotter and

Cohen ESC model (2002) provided support in development and implementation of a project that promoted the involvement of all members of the SHC staff and fostered a positive relationship between the SHC, the university counseling center, and the DNP student. The implementation compliance also assists the SHC in meeting ACHA Healthy Campus 2020's goals of increasing the proportion of college students that report depression and receive treatment (ACHA, 2012). The goals and objectives established by the ACHA not only intend to improve college student's wellbeing, they were also developed to have a lasting impact on the entire campus community (ACHA, 2012). A total of 86.1% of students included in the national college health assessment reported feeling overwhelmed by all that they had to do, and 31.3% of students reported feeling so depressed that it was difficult to function (ACHA, 2012). During one weekly data collection session, a SHC provider shared that she had not previously considered the "prevalence of depression on campus".

While data collection was only taking place on freshmen clients, all clients that reported to the SHC were assessed for depression using the PHQ-2 questionnaire. It was suggested to the healthcare providers that adherence to the project protocol should still be followed with these clients so as to ensure that all clients reporting to the SHC are receiving appropriate treatment. It was also divulged that one of the SHC's providers had identified several junior clients that were experiencing depressive symptoms and utilized the treatment and referral protocol to guide these clients' plan of care.

**Limitations.** The utilization of Kotter & Cohen's ESC model was effective in guiding the project development and implementation; however, the model did not account for the delegation of the protocol duties. PHQ-2 administration and scoring, mental health pamphlet distribution, and protocol adherence were all dependent on the health care provider's commitment and implementation of the treatment/referral protocol. SHC provider staff consisted of one full time NP who was not only providing care to clients but was also the SHC director, a part-time NP that only worked 24 hours a week, a part-time NP provider that only worked one afternoon a

week, and a part-time physician that provided care two afternoons per the week. This staffing model as well as the surmounting list of duties on the only full time provider might have contributed to decreased protocol administration and adherence.

Another contributing factor that effected project implementation could be seen within the SHC's current documentation process. The SHC utilizes several different intake sheets that are based on the presenting client's complaints. Because of the multiple intake sheets, the project leader had to ensure that the PHQ-2 was integrated into each of the intake sheets. The integration of the PHQ-2 into each intake sheet presented another challenge due to the fact that there was limited space available on each intake sheet. With limited space, the PHQ-2 was integrated into the top of each form, above the provider's space to document findings. In addition, while an attempt was made to centrally locate the PHQ-2 on each form, each provider still needed to be aware of the PHQ-2 location.

Finally, the SHC had limited space. For quick reference the project leader placed in the common work station, storage containers specifically filled with all the necessary protocol information and supplies. Unfortunately these storage containers became more of a hindrance, taking up valuable work space and were overlooked and underutilized. Within the first few weeks of the project's implementation it was evident that the healthcare providers were struggling to acknowledge PHQ-2 scores and the distribution the appropriate mental health pamphlets. In addition, based on the PHQ-2 score the healthcare provider were to either distribute pamphlets to the client, or would administer the PHQ-9. The EBP protocol then guided the provider based on the PHQ-9 scoring, which could include referral to the University's student counseling center. After facilitating discussion between the SHC providers, and office staff it was determined that PHQ-2 scoring would be completed by the medical assistant (MA) or registered nurse (RN) performing client intake. In addition, the pamphlets would be placed on the chart for the healthcare provider to distribute after reviewing the clients PHQ-2 score.

Reiteration of the importance of utilization of the treatment and referral protocol was revisited

with the healthcare providers, and it was through constant reminding of the SHC staff that headway was made with regards to protocol adherence. The providers openly admitted when they had fallen short, and “old habits die hard”, nevertheless it was with the guidance of the Kotter and Cohen’s ESC process that the project leader was able to modify provider behavior. There was a steady improvement noted after these procedural changes were implemented, however it was still evident that there would be a greater effort needed to ensure that the change in SHC healthcare provider would continue.

At week eight of project implementation there was a substantial improvement in PHQ-2 administration and scoring, pamphlet distribution, PHQ-9 administration and scoring, and treatment/protocol adherence. The DNP student discovered through a conversation with the MA that the SHC staff had a meeting that included discussion of the EBP project in progress and ways to improve adherence. The MA then divulged that the majority of the responsibility for the project implementation had been placed on ancillary office staff i.e. RN, MA, and SHC administrative assistant. This shift in project responsibilities ensured that the PHQ-2 was completed and scored, that pamphlets were distributed, PHQ-9 was administered, and if need be appropriate referrals and follow-up appointments were made. With this additional information future project designs should take into account the rate of change, and the role of each member of the guiding team. Equal distribution of project roles should be delegated, and in the initial stages of project implementation a friendly reminder system should be in place, so as to remind the healthcare providers of their role and importance to the success of the EBP project implementation.

An additional limitation was the availability of demographic data that would have assisted in project evaluation. Initially more demographic data was intended to be collected, but after the first week of data collection it was noted that only a minimal amount of background information was routinely collected by the SHC staff when a student was seen at the clinic. After a discussion with the SHC director and staff it was decided upon that it was not feasible to change

the routine intake paperwork to include more demographic data such as race and academic major. Comparisons would have liked to been made between race, major, and depression risk. Studies indicate that there a number of demographic factors that contribute help seeking behaviors, Eisenberg and Chung (2012) found that Asian, African American, and Hispanic students were less likely to seek mental health treatment, and that people aged 18-29 were less likely to receive mental health care. Hunt and Eisenberg (2009) identify that while mental health clearly varies across certain demographic and social factors, there is little known with regards to how it varies more specific to the college setting and in correlation to workload.

### **Implications for the future**

**Practice.** Based on the EBP outcomes achieved through this project, it is recommended that implementation of routine depression screening and utilization of the treatment/referral protocol continues at this university SHC. Greater investments in student mental health services need to be made, which include effective mechanisms that identify those clients at risk for depression (Eisenberg, Golberstein, & Gollust, 2007). It is also recommended that these project findings motivate other college campuses to evaluate their current practice standards with regards to depression screening and treatment. While data collection for this project focused specifically on freshmen clients it is important to emphasize the applicability of this treatment and referral protocol for all students who present to a university SHC.

The PHQ-2 was easily integrated into existing client intake paperwork, serving not only as an initial assessment but affords the healthcare provider the ability to monitor a student's mental well being over the academic year. Finally, a continued collaboration should be maintained between the SHC and student counseling center because of these organizations serve the student population and provide crucial services. If collaboration can be maintained it will enhance the efforts and goals of this EBP project, and continue to provide thorough effective care to students. Currently identified barriers to collaboration include location; both the SHC and counseling center are located in two separate buildings on campus, and secondly the



organizational cultures and business models of these services differ. Collaboration could be fostered by providing educational sessions at freshmen orientation to both students and parents, discussing the transition into college, and the roles that not only the students and parents play in fostering a healthy transition, but also the support that both the SHC and counseling center have. The relationship between the SHC and counseling center will be maintained through the implemented EBP project, and the shared interest in improving mental health.

The relationship between healthcare providers and the support staff such as the MA's and RN's that work within the SHC are critical to ensuring successful implementation. Each person plays an integral role, and with clear definition of roles early on will eliminate any ambiguity that could potentially impede project success. As previously stated, clearly delineating the roles of each SHC staff member will help to ensure that administration and adherence are at superlative compliance.

**Theory.** The Stetler Model of EBP (2001) provided the necessary support for project development but it was ultimately Kotter and Cohen's ESC model (2002) that provided the necessary framework for integrating effective organizational change. All eight stages provided direction for the project and allowed for anticipation of what difficulties could potentially be encountered during the planning and implementation of the project. As a result of the EBP project implementation there was a health care provider practice change for depression identification and treatment that occurred within the SHC. Not only are students being routinely screened for depression, a change has also occurred within the healthcare providers attitudes surrounding depression screening and treatment.

It is important to note that the Kotter and Cohen ESC model (2002) is a business model, with little literature available to support its use in health care. Based on the results of this EBP project it is recommended that the Kotter and Cohen ESC model (2002) continue to be utilized in future projects and research conducted within college health care. Through conversations

conducted during weekly data collection sessions the DNP student was able to glean from providers their feelings towards project implementation. These weekly meetings were conducted based on the Kotter and Cohen's ESC model (2002) that encouraged empowering action and creating short-term wins. Initially providers would report how they were falling short of project expectations, but as implementation progressed the providers were quick to identify how they had complied with administration, and how they were finding the treatment and referral protocol beneficial in treating all clients that reported to the SHC. For future projects it is recommend that perhaps a pre and post evaluation be conducted with healthcare providers regarding project implementation and the perceived benefits.

**Research.** Additional areas for further research were identified during EBP project development, implementation, and evaluation. Further research needs to be conducted with regards to PHQ-2 depression screening tools as it specifically relates to the college population, the effectiveness of mental health pamphlet distribution, as well as tactics that could be implemented to improve follow-up for those clients who are identified as high risk. Another area of future research would be to conduct studies to determine the effectiveness of the PHQ-2 depression screening tool and treatment protocol with all levels of university students reporting to a SHC. Finally, further research needs to be conducted with regards to other effective screening and treatment tools appropriate for young adult college students.

**Education.** Continuing education efforts should focus on enlightening SHC staff and providers about the prevalence of depression in young adult college students, proper identification of at risk students, and effective interventions that can be utilized to treat those experiencing depression. Educational components should also be integrated into freshmen orientation programs, in order to not only educate students, but parents as well about the stressors that can occur as the young adult makes the transition to college life. New college students entering their first year in a university setting also are beginning their transition to adulthood, making them more vulnerable to stress and maladaptive behaviors (Dyson & Renk,

2006). It is important that SHC's and counseling centers, have a better understanding of how to assist students with decreasing their levels of stress and prevent depressive symptomology. According to Hunt & Eisenberg, (2010) colleges and universities offer a venue for prevention and treatment, which can help young adults on a path to success and well-being. Keeping this in mind the SHC should continue to encourage and support the university's student counseling center, as well as their own efforts in properly identifying those students at risk for depression.

### **Conclusion**

Routine depression screening and treatment/referral protocol was integrated into a university SHC. Data was collected on a weekly basis on those freshmen clients reporting to the SHC. The Stetler Model of EBP (2001) and Kotter and Cohen's ESC (2002) process guided the development, implementation, and evaluation of this EBP project. Overall the EBP project had a positive impact on current depression screening and referral processes, and indubitably answered the proposed PICOT question. A total of 225 freshmen clients were seen over the twelve week period. A total of 24 clients scored greater than 0 on their PHQ-2 and ten were administered the PHQ-9, seven of which scored greater than ten. A total of 13 clients were referred to the appropriate university mental health resource, based off the scores from the PHQ-2 and PHQ-9, as well as the healthcare provider clinical judgment. This is 24 clients who may not have been previously identified as at risk for depression without the implementation of this EBP project. In addition, for the 12 clients who returned for follow-up, a significant decrease from initial PHQ-2 to follow-up PHQ-2 was found.

While this EBP project was successful, there is a definite indication for further research into appropriate identification and treatment of depression within the young adult college population. Depression is a serious mental health disorder that affects the college student, and demands an increased awareness and effective treatment strategy. EBP strategies that are effective in educating, treating, and changing healthcare provider behavior are essential in influencing depression screening and treatment. Implementing these evidence-based strategies

within a university SHC will not only influence provider behavior but will have a positive impact on the health of the freshmen college student.

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**BIOGRAPHICAL MATERIAL****Marlee R. Steele**

Ms. Steele graduated from Valparaiso University with a Bachelor of Science degree in nursing in 2005. Throughout her nursing career, she has worked on a medical, surgical, orthopedic floor as a staff nurse and charge nurse. In 2009, she returned to Valparaiso University, to pursue her Doctorate of Nursing Practice, specializing in Family Nurse Practice, with plans for completion in 2013. Marlee is a member of Sigma Theta Tau, Zeta Epsilon chapter and Midwest Nursing Research Society (MNRS). She completed a poster presentation of her DNP project, "Depression Screening of Young Adult Freshmen Students," at the annual the 2012 Northwest Indiana Nursing Research Consortium and at the 2013 annual MNRS conference in March. After becoming a board certified family nurse practitioner, Ms. Steele has interests to work in the primary care setting.

**ACRONYM LIST**

ACHA: American College Health Association

AHRQ: Agency for Healthcare Research and Quality

BDI: Beck Depression Inventory

BTS- Breakthrough Series

APN: Advanced Practice Nurse

CCM- Collaborative Care Model

CDC: Centers for Disease Control

CINAHL: Cumulative Index to Nursing and Allied Health Literature

EBP: Evidence Based Practice

ESC: Eight Stages of Change

GHQ: General Health Questionnaire

IRB: Institutional Review Board

NCHA: National College Health Assessment

NIH- National Institutes of Health

PHQ: Patient Health Questionnaire

SDS- Self Rating Depression Scale

SHC: Student Health Center

USDHHS: United States Department of Health and Human Services

USPSTF: U.S. Preventive Services Task Force

WHO: World Health Organization