2013

Evaluation of Depression Screening Practices for College Women in a Primary Care University Health Clinic

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EVALUATION OF DEPRESSION SCREENING PRACTICES FOR COLLEGE WOMEN IN A PRIMARY CARE UNIVERSITY HEALTH CLINIC

Capstone Report

A Capstone Report submitted in partial fulfillment

of the requirements for the Doctorate Degree of Nursing Practice in the

College of Nursing at the University of Kentucky

by

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Dedication

I would like to dedicate my final Capstone Report to my husband and to my mother, who have offered me their unconditional encouragement, support, and love throughout the course of my doctoral studies.

Acknowledgements

I would first and foremost like to acknowledge Dr. Sharon Lock, who has served not only as my capstone committee chair, but also as my faculty advisor throughout the course of my doctoral studies. Her wisdom and mentorship have been fundamental in the successful completion of this report, and her dedication to me as her student advisee will be forever appreciated. I would also like to thank Dr. Mollie Aleshire and Ms. Lori Molenaar for taking time out of their busy clinical and academic schedules to provide their time and expertise in assisting me with the completion of this report. Finally, I would like to acknowledge two of my colleagues, Dr. Dana Benedict and Dr. Lexie Dampier, who provided me both technical and emotional support throughout the capstone process.

Table of Contents

List of Tables

Capstone Report Introduction

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University of Kentucky

Introduction

According to the Centers for Disease Control and Prevention (CDC), an estimated 9.1% of the United States' adult population meets the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria for major depressive disorder. Depression and depressive symptoms can cause serious mental, physical, emotional and functional distress. Mental disorders, including depression, are increasing in frequency and intensity in the college student population. College-aged women appear to be particularly vulnerable to depression. Results from the spring 2012 American College Health Association's National College Health Assessment survey revealed that 12.9% of college women reported being treated for depression within the past year, compared to only 6.9% of their male counterparts. This prevalence is approximately 42% higher than that of the general population.

Primary care providers play an important role in addressing this issue, as they are the principal health care contacts for more than 50% of patients with mental illnesses. Guidelines from the 2009 United States Preventative Services Task Force recommend screening all adults (age 18+) for depression in primary care when depression care supports are in place. However, current screening rates for depression in the primary care setting from are estimated at only 1.6 to 3.3% (United States Department of Health and Human Services, 2012a). *Healthy People 2020* Mental Health and Mental Disorders objective 11.1 specifically addresses the disparity of depression screening in primary care, and challenges primary care providers to improve depression screening by 10% by the year 2020.

This capstone report presents three manuscripts which focus on depression screening practices for college women in the primary care setting. The first manuscript presents a literature review pertaining to depression in college women, including risk factors for depression, consequences of depression, and depression screening practices in this population. The second manuscript presents a critical analysis of the United States Preventative Services Task Force's guideline recommendations for screening for depression in adults in primary care, using a modified version of the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument (2001). The literature obtained from these first two manuscripts led to a descriptive study, which examined depression screening practices and barriers at a primary care university health clinic in the southeastern United States. The third and final manuscript details this study, and presents some practical implications for improving depression screening rates in this at-risk population.

Standardized Depression Screening for College Women in Primary Care: A Review of the Literature

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Introduction

According to recent data published by the Centers for Disease Control and Prevention (CDC), an estimated 9.1% of the United States' adult population meets the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria for major depressive disorder (CDC, 2010). The prevalence of depression in the primary care setting is estimated at 5 to13% (O'Connor, Whitlock, Gaynes, & Beil, 2009). College women appear to be at even higher risk for depression. Women are 70% more likely to develop depression in their lifetime than men (Kessler, Berglund, Demler, Jin, & Walters, 2005), and one of every three American women between the ages of 18 to 24 may be significantly depressed (Peden, Hall, Rayens, & Beebe, 2000). Of those young women who develop major depression, twenty percent develop their first symptoms by age nineteen (Munoz et al., 1995). Primary care providers play an important role in addressing this issue, since they are the principal contacts in the health care system for more than 50% of patients with mental illnesses (Nimalasuriya, Compton, & Guillory, 2009). Although half of all adult patients with mental illness depend on their primary care provider to manage and treat their condition, screening rates for depression in this setting from 2005 to 2010 were estimated at only 1.6 to 3.3% (United States Department of Health and Human Services, 2012a). For these reasons, interventions to aid in the detection, diagnosis, and treatment of depression in college women are warranted.

Approximately half of young adults in the United States enroll in some form of post-secondary education (U.S. Department of Education, 2005). The prevalence of depression among students on college campuses is estimated at 17.3% (Eisenberg, Hunt,

& Speer, 2013). In the 2010 to 2011 National Survey on Drug Use and Health (NSDUH), young adults (age 18 to 25) were found to experience higher rates of depression and serious thoughts of suicide than any other subgroup (Substance Abuse and Mental Health Services Administration, 2012). The purpose of this paper is to analyze and present evidence regarding the use of standardized screening methods in primary care for the improved identification of depression in college women.

Methods

Literature Search

An electronic review of the literature was conducted from multiple databases, including CINAHL, Medline, PubMed, TRIP, and PsycINFO. Google and Google Scholar were also utilized to perform searches related to depression in college women. The search was performed using the following key words: depression, college women, students, screening tools, Beck Depression Inventory, Patient Health Questionnaire-9, and national depression guidelines. The literature search was performed with no regard to the year in which the studies were published, and no searching of unpublished data was performed. The resulting list was searched manually against inclusion/exclusion criteria. Reference lists and citations of included studies were also included in the literature search.

Inclusion/Exclusion Criteria

The evidence reviewed was obtained from systematic reviews, randomized or nonrandomized experimental studies, or non-experimental studies. Articles published prior to 1990 were excluded. The following aspects of depression were included in the literature review search: depressive symptoms; prevalence of depression; factors

contributing to depression; effect of depression screening on detection, treatment rates, and patient outcomes; and gender differences in mental health. Only study findings that were statistically significant ($p \leq 0.05$) were included in the review.

Scope of Problem

Prevalence, Morbidity, Mortality, and Cost

The American College Health Association (ACHA) began researching the population of college and university students in 2000 when they released their first National College Health Assessment (NCHA) Survey (ACHA, 2012). Since that time, NCHA surveys have been conducted biannually in the spring and fall semesters. The ACHA-NCHA currently provides the largest known data set on the health of college students, with over 140 public and private institutions in the United States included in the spring 2012 survey. Results from the spring 2012 survey revealed that12.9% (n= 7,459; total n=57,822) of college women reported being treated for depression within the past year, compared to only 6.9% of their male counterparts. When retrospectively examining survey responses over a three year period (spring 2009 to spring 2012), the reported depression rates for college women average 11.8%, with rates trending upward starting in spring 2011. When compared to depression rates for the general primary care population of 9.1%, the rates for depression in college women in spring 2012 are approximately 42% higher (CDC, 2011; ACHA, 2012). In the spring 2012 survey, depression, anxiety, stress, and sleep difficulties were among the most frequently self-reported student conditions which negatively influenced academic performance. Of the 9,540 students who identified themselves as depressed, 78% (7,459) were women. Over one-third (33.4%) of college women reported feeling so depressed that it was difficult to function

at least one time in the past school year, and 7.2% seriously considered attempting suicide (ACHA, 2012). Suicide is the leading cause of death in college students (Turner, 2011).

Depression is the leading cause of medical disability for individuals ages 14 to 44 in the United States and the economic burden of this disease is significant, totaling over $83 billion dollars annually (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003; Greenberg et al., 2003). Of this $83 billion, $26.1 billion is due to the direct medical costs of depression, $5.4 billion to suicide-related mortality, and $51.5 billion to workplace costs from lost productive time (Greenberg et al., 2003). Individuals who experience symptoms of depression are more than twice as likely to take sick days, averaging seven fewer weeks of work per year and a loss of $10,400 of income annually by age 50 (Adler, et al., 2006; Greener & Guest, 2005; Smith & Smith, 2010). In a lifetime, this can equate to a loss of income totaling $300,000 for each individual suffering from depression (Smith & Smith, 2010). Medical treatment costs for depressed individuals are estimated to be nearly double those of non-depressed individuals (Simon, VonKorff & Barlow, 1995) and costs for treatment of non-mental diagnoses are higher in patients diagnosed with depression (Welch, Czerwinski, Ghimire & Bertsimas, 2009).

Population-Specific Risk Factors for Depression

College women are at increased risk for depression for many reasons. In a study of 184 college women, Beeber (1998) found the greatest percentage of students with significant depressive symptoms were those in their first year of college. These symptoms were specifically attributed to separation from home, establishing new relationships, and the stresses associated with the addition of new roles and

responsibilities (Beeber, 1998). In a later study, Beeber (1999) found that college women (N=213) who had higher perceived stress and lower perceived social support had lower levels of self-esteem, and in turn, higher levels of depression. Negative life events, especially those drawn from the women's performance in interpersonal relationships, were also strongly associated with depression (Beeber, 1999).

The strong socialization of women to form interpersonal relationships places them at increased risk for violence by an associated partner. Women, in general, are more likely to be victims of interpersonal violence (Simonds, 2001). Nationwide, one in five (20.4%) female college students have been forced to have sexual intercourse during her lifetime, and college women are over five times more likely to be sexually assaulted than college men (CDC, 1997). Neurobiological and psychological changes caused by interpersonal traumas, as well as increased risk of unemployment, reduced income, and impaired social relationships, place assaulted women at increased risk of depression (Simonds, 2001).

Gender role has also been found to influence the experience of depression. Androgyny, the tendency for females to express both masculine and feminine characteristics, has been found to offer resistance to some of the negative effects of life stressors and to the overall experience of depression (Brazelton, Greene & Gynther, 1996). In a study of 186 college females, Brazelton et al. (1996) found positive correlations between depression and femininity, as females who had higher femininity scores (measured by the Behavioral Self-report of Femininity)(Greene & Gynther, 1994) were more depressed (measured by the BDI-II) than their female classmates who tended to express more masculine qualities (Brazelton et al., 1996).

Boggiano and Barrett (1991) also studied gender differences in the college student population. In their first study, they evaluated attributional styles, or the extent to which an individual attributes causes of negative events to internal, stable, and global factors. The women in the study were found to have more maladaptive attributional styles, i.e., they were more likely to blame negative events on internal or self-generated causes. In their second study, Boggiano and Barrett (1991) examined the students in the context of actual vs. ideal self. As predicted, the overall discrepancy between actual and ideal self was higher for females. Reasons for these discrepancies included female dissatisfaction with body image and concern over interpersonal relations (Boggano & Barrett, 1991). Other sources of stress and possible risk factors for depression in college females are economic strain, academic hardship, social demands, increased awareness of pending vocational choices, chronic medical conditions, traumatic events, and family and/or personal history of major depression (Vazquez et al., 2008).

Impact of Depression

Physical impact. Depression can negatively affect college women in a variety of ways, including physically. In a study of 91 outpatient women, Nakao and Takeuchi (2008) found that nausea (51%), shortness of breath (38%), and low back pain (36%) were commonly manifested somatic symptoms of women who were diagnosed with major depression. In another study of 452 female employees, fatigue, psychomotor retardation, headache, back pain, abdominal pain, joint or limb pain, dizziness, chest pain, and palpitations were major symptoms identified by those with diagnosed depression and there was a positive correlation between the prevalence of depression and the number of somatic symptoms (Nakao & Takeuchi, 2008). Other somatic symptoms

of depression include changes in appetite, weight gain or loss, muscle cramps, restlessness, lethargy, loss of libido, and digestive problems that do not ease with treatment (National Institute of Mental Health, 2011).

Lett et al. (2004) conducted a review of the evidence and identified depression as "a significant and independent risk factor for coronary artery disease (CAD)" in both healthy patients and those already diagnosed with CAD (Lett et al., 2004, p. 311). Smoking, alcohol consumption, and physical inactivity are three significant risk factors associated with CAD, and depression is associated with increased rates of all three (Lett et al., 2004). One study included in the review found that women, especially younger women, were at higher risk for mortality after myocardial infarction than were men. Furthermore, compared with nondepressed patients, depressed patients were more than twice as likely to have a cardiac event within 12 months after coronary artery bypass grafts (Vaccarino et al., 2001). This is significant, in that heart disease is the leading cause of death in females, regardless of race (CDC, 2009).

Mental, emotional and functional impact. Along with physical sequelae, most depressed individuals suffer from a variety of mental, emotional, and functional impairments. These often include feelings of sadness, hopelessness, guilt, and anxiety, anhedonia or loss of interest in once enjoyable activities, poor behavioral follow through with activities of daily living, changes in interpersonal relationships, insomnia, irritability, difficulty concentrating and difficulty with learning and recalling information (National Institute of Mental Health, 2011). Vazquez, et al. (2008), reported that college women who met the *DSM-IV* criteria for major depressive disorder reported the following mental, emotional, or functional deficits: depressed mood (86.5%), anhedonia (52.6%),

alteration of sleep (78.9%), fatigue (57.9%), feelings of worthlessness or of excessive or inappropriate guilt (39.5%), impaired concentration (60.5%), and thoughts of death (21.1%) (Vazquez et al., 2008).

To assess the functional effects of depression, Heiligenstein et al (1996) conducted a study on academic impairment in depressed college students. Sixty-three students (29 men, 34 women) completed the Beck Depression Inventory-II to assess levels of depression and the work role section from the Social Adjustment Scale-Self Report (SAS-SR)(Schooler, Hogarty, & Weissman, 1978) to assess academic impairment. Of the students who were depressed, 58 (92%) were found to have academic impairment as defined by the revised use of the SAS-SR. Impairment was defined as missed time from class, decreased academic productivity, and significant interpersonal problems at school. Of those with academic impairment, 9 (16%) were classified as mildly depressed, 25 (43%) as moderately depressed, and 24 (41%) as severely depressed. Thus, students with moderate to severe depression more likely to encounter problems in the academic setting (Heiligenstein et al., 1996).

Results

Evidence Regarding the Use of Standardized Depression Screening

Screening for depression in adults: Recommendations from the United States Preventive Services Task Force. Pigone et al. (2002) conducted a systematic review of fourteen randomized controlled trials to determine whether standardized screening for depressed adults in primary care led to improved detection, treatment, and outcomes. These trials were divided into three categories: 1) patients screened and results provided to physician, 2) patients screened and results, along with treatment recommendations,

provided to physician, and 3) patients screened, feedback provided to physician, and systematic guidelines implemented for the improvement of depression treatment and follow-up. Screening for depression in primary care led to improved patient outcomes, particularly when support systems were in place to ensure adequate treatment and follow-up care (Pigone et al., 2002). The use of standardized screening increased rates of depression diagnosis by 10 to 47% (Pigone et al., 2002). Mixed results were obtained on the effects of screening on treatment rates, but no study found that screening decreased rates of treatment. Finally, of the seven studies which implemented systematic treatment guidelines after initial screening, all found that the proportion of patients meeting diagnostic criteria for depression at follow-up was lower in the experimental group than in the control group, suggesting improved outcomes. However, only three of these reached statistical significance (Pigone et al., 2002). The review supported the use of several brief, accurate, and easy-to-use screening tools to identify depression, including the Beck Depression Inventory, Center for Epidemiologic Studies Depression Scale, General Health Questionnaire, Medical Outcomes Study Depression Screen, Primary Care Evaluation of Mental Disorders, Symptom-Driven Diagnostic System-Primary Care, and Zung Self-Depression Scale (Pigone et al., 2002).

O'Connor, Whitlock, Gaynes, and Beil (2009) conducted a follow-up review for the USPSTF to update evidence about the benefits of screening for depression. Evidence was obtained from fair-to-good quality meta-analyses, systematic reviews, randomized controlled trials, controlled clinical trials and observational studies which were conducted in the United States (or other similarly developed countries) in the primary care setting. The authors concluded that screening for depression in primary care settings when staff-

assisted depression care supports were available was likely to improve depressive symptoms and remission in the adult population (O'Connor et al., 2009). This is a grade B recommendation based on the USPSTF grading scale, indicating that there is "high certainty that the net benefit is moderate or moderate certainty that the net benefit is moderate to substantial" (USPSTF, 2009). Staff-assisted depression care supports included case management, mental health specialist involvement, additional training for primary care clinicians, treatment protocols provided at time of screening, patient educational materials, and office staff training. The lowest level of effective staff-assisted depression care support identified in the review consisted of a screening nurse who notified physicians of positive screens, and then set in motion a protocol that referred patients for additional mental health treatment. O'Connor and associates found many screening tools had good sensitivity and fair specificity for use in primary care; however, they found insufficient evidence to recommend one screening tool over another. The task force recommended that clinicians choose the evidence-based tool which best fits their practice, population, and preference. For patients with positive depression screens, a full diagnostic interview, using *DSM-IV* criteria is recommended to determine the presence or absence of specific depressive disorders. Screening in settings where there were no depression care supports was not recommended. This review provided the basis for the most recent depression screening guidelines released by the USPSTF (O'Connor et al., 2009).

Screening for depression in general practice and related medical settings.

Hickie et al. (2002) conducted a meta-analysis which sought to answer whether or not screening tools could accurately and efficiently identify patients with depression and

if outcomes of depressed patients improved in settings where screening tools were utilized. Four key reviews were selected based on the inclusion/exclusion criteria provided. The analysis concluded that evidence favored the use of standardized screening to identify depression in primary care, under the condition that positive screens were followed up by a thorough assessment using formalized diagnostic criteria (such as the *DSM-IV* diagnostic criteria for depression). Additional research findings suggested standardized screening should be limited to practices who commit to using the provided information to seek out enhanced mental health care for those patients determined to require it (Hickie et al., 2002).

An interactive web-based method of outreach to college students at risk for suicide. Hass and associates (2008) administered an electronic version of PHQ-9 to a group of 1,162 college students who volunteered to participate online. Of the participants, 834 (71.8%) were women. A total of 981 (84.4%) students were identified as high or moderate risk for depression; of these, only 13.6% were receiving current psychotherapy and 21.1% were currently on medication for depression, anxiety, or stress. After identification as either high or moderate risk for depression, 276 students participated in online dialogue sessions with a counselor. After completion of these sessions, a total of 132 students (13.5%) entered depression treatment. This alternative method for depression screening shows promise for identifying college students who are at risk for depression/suicide and encouraging them to seek treatment.

Gap Analysis, Limitations, and Future Research

While a growing body of evidence examines the use of standardized screening for depression in all adults, limited research exists regarding the use of screening in the

subpopulation of college students, specifically, college women. Very few studies examine the effects of screening alone on patient treatment rates and outcomes, since most incorporate a treatment intervention as a study variable. Other gaps include a lack of randomized, controlled trials evaluating the frequency with which depression is underdiagnosed in primary care. This information would be helpful in determining the clinical benefits of depression screening (USPSTF, 2009). Furthermore, data concerning current clinician practices related to depression screening would aid in determining barriers to implementation of standardized screening, provider opinions, suggestions, and feedback. Program design information, addressing the appropriateness of validated depression screening instruments for select populations would aid clinical practices seeking to incorporate standardized depression screening in primary care. Finally, there is little evidence which explores possible harms or adverse effects of depression screening in primary care, and such information would help to ensure the delivery of safe and effective care (USPSTF, 2009).

Conclusion

College women are at risk for depression for multiple reasons, including gender influences, increased life stress, academic hardship, social demands, and economic strain (Beeber, 1999; Vazquez et al., 2008) . An estimated 28 to 42% of college women are depressed during a given year (Boggiano & Barrett, 1991; Peden et al., 2000), making this an at-risk population that must be considered in the development, assessment, implementation, and evaluation of interventions to reduce morbidity and mortality from depression. While limited research exists evaluating the benefits of standardized depression screening in college women, there is evidence to support the practice in the

general adult population and the recommendation is currently supported by national guidelines (USPSTF, 2009). Although further research is warranted, implementing standardized screening methods to assess for depression in college women in primary care settings is a measure with the potential to promote identification of depression, and subsequently facilitate its diagnosis and treatment in this vulnerable population.

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Guideline Analysis: Screening Adults for Depression in Primary Care

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Introduction

The most recent data from the American Foundation for Suicide Prevention (AFSP) reveal that an estimated nineteen million Americans are suffering from depression at any given time. More Americans suffer from depression than from heart disease, cancer, or HIV/AIDS (AFSP, 2013). Depression can cause serious mental, physical, emotional and functional distress (Nakao & Takeuchi, 2008; National Institute of Mental Health, 2011). The prevalence of depression for patients in the primary care setting is estimated at 5 to 13% (O'Connor, Whitlock, Gaynes, & Beil, 2009), but screening rates for depression in this population from 2005 to 2010 are estimated at only 1.6 to 3.3% (United States Department of Health and Human Services, 2012a). According to the National Alliance on Mental Illness (NAMI), approximately two-thirds of those suffering from depression do not get the help they need, increasing their risk for suicide (Duckworth, 2009). In 2010, suicide deaths accounted for 14.3% of all deaths occurring in the state of Kentucky (AFSP, 2010). Primary care providers play an important role in addressing this issue, since they are the principal contacts in the health care system for more than 50% of patients with mental illnesses (Nimalasuriya, Compton, & Guillory, 2009). For these reasons, it is imperative for primary care providers to be involved in developing, analyzing, implementing and evaluating current, evidence-based guidelines pertaining to depression screening and diagnosis. This paper uses a modified version of the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument (2001) to critically analyze the 2009 United States Preventative Services Task Force's (USPSTF) recommendation on depression screening in adults entitled "Screening for

Depression in Adults: U.S. Preventative Services Task Force Recommendation Statement."

Guideline Objective

The USPSTF's 2009 guideline for depression screening provides an update from the previously released 2002 version of the guideline. The investigators sought to examine gaps in evidence identified in the previous review and to provide a summary of the most current scientific evidence pertaining to depression screening in adults. Specifically, the investigators sought to update direct evidence regarding screening programs for depression in primary care and examine evidence pertaining to the harms of screening for depression. Evidence pertaining to adverse events related to depression treatment in adults and older adults was also examined; however, for the purposes of this analysis, the evidence pertaining specifically to depression screening will be discussed (USPSTF, 2009).

Stakeholder Involvement

This guideline was developed by the United States Preventative Services Task Force, which, at the time the guideline was published, was comprised of thirteen physicians and two PhD-prepared nurses, all of whom had public health/science backgrounds (USPSTF, 2009). Four investigators were responsible for performing the systematic review that was used to develop the guideline recommendations. These investigators were a psychologist, a psychiatrist, a board certified preventative medicine physician, and a Masters-prepared preventative medicine researcher. These investigators worked in tandem with four liaisons from the USPSTF at key points in the review process. These liaisons assisted in refining the analytic framework of the review,

resolving issues concerning scope and approach to research, and with compiling the final draft of the review. The liaisons were not specifically identified in the review. While the investigators involved in compiling the evidence were certainly qualified, the prevalence of depression in primary care is significant; therefore, including primary care practitioners in the development process may have been beneficial.

Rigor of Development

Evidence Search Methods

The investigators first developed an analytic framework and five key questions (KQ) to guide their evidence search. These questions included:

> 1) Is there direct evidence that screening for depression among adults and elderly patients in primary care reduces morbidity and or mortality? 2) 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? 3) What are the adverse effects of screening for depressive disorders in adults and elderly patients in primary care? 4) Is antidepressant and/or psychotherapy treatment of elderly depressed patients effective in improving health outcomes? and 5) What are the adverse effects of antidepressant treatment (particularly SSRIs and other second generation drugs) for depression in adults and elderly patients? (O'Connor et al., 2009, p. 79)

For the purposes of this analysis, only KQ1-3 will be discussed, as they pertain specifically to depression screening. After developing the framework and key questions, the investigators performed a search of systematic reviews, meta-analyses, and evidence-based guidelines pertaining to depression screening, treatment, and associated harms.

Searches were performed using the Database of Abstracts of Reviews (DARE), MEDLINE, PsycINFO, and the Cochrane Database of Systematic Reviews from 1998 through December 2007. For KQ 1-3, randomized controlled trials and clinical controlled trials of depression screening in primary care from 1998 to 2007 were also searched using MEDLINE, PsycINFO, and the Cochrane Collaboration Registry of Clinical Trials.

Evidence Selection Criteria

Inclusion criteria differed according to each key question, but were guided by design-specific quality criteria based on USPSTF methods and by NICE and Oxman criteria for systematic reviews. For grading systematic reviews, inclusion criteria were met if there was a clear review question, if the literature search strategy was clearly outlined, if there were explicit inclusion/exclusion criteria listed for articles, if the studies were appropriately summarized and all relevant studies were present, and if the authors' conclusions were supported by the data they found. For grading RCTs, inclusion criteria were met if the trials had random assignment of subjects, groups had similar characteristics at baseline, the intervention was clearly specified, outcomes assessors were blinded, adherence and crossover were reported and appropriate statistical analysis was reported. There were several additional inclusion and exclusion criteria which varied according to each specific key question. These criteria concerning screening practices were covered by the following categories: *populations and disorders, settings, screening, outcomes, study designs, quality, language and costs*. The population of interest was general population, non-pregnant adults (age ≥18 years) who were treated in primary care settings in the US and other similarly developed countries. Diagnoses of interest

included: Major Depressive Disorder, Dysthymia, and Depression NOS. Patients who were at high-risk for depression, pregnant, or suffered from other psychiatric disorders were excluded. The setting of interest was primary care. Inpatient psychiatric and other non-health care settings were excluded. For articles evaluating screening, randomized controlled trials and clinical controlled trials of screening programs comparing screened versus unscreened patients were included. Of these articles, only studies which used a depression-specific screening instrument were included. Any interventions not evaluating screening were excluded for KQ 1, 2, & 3. Health outcomes of interest included depressive symptoms, quality of life, functional assessment, suicidality, remission, and change in health status. For KQ1 and KQ2, searches were limited to RCTs and well-designed non-randomized controlled trials. For KQ3, CCTs and high-quality observational studies were included. Studies that met the USPSTF criteria for "poor" quality were excluded, as well as all non-English language abstracts and articles.

After the completion of the literature search, all abstracts were reviewed by two investigators, and were evaluated against the inclusion and exclusion criteria. A total of 4,088 abstracts and 412 complete articles were reviewed for all KQs, and a total of 248 for KQ 1-3. Articles which met inclusion/exclusion criteria were rated by two investigators for quality according to USPSTF standards. A total of nine articles met the inclusion criteria for KQ 1-2, and no articles were found meeting criteria for KQ 3 relating to potential harms from screening. For KQ 1 relating to the effects of depression screening on morbidity and mortality, one fair-quality RCT met inclusion criteria, as it was the only trial which compared outcomes in screened patients to non-screened patients (Williams, Mulrow & Kroenke, 1999). The study found mixed results. Among patients

who were depressed at baseline and screened, more seemed to have reached remission at a 3-month follow up appointment than those who were not screened. However, of those patients who were not depressed at baseline, outcomes were similar in both the experiment and control groups. For KQ 2, relating to the impact of screening for depression and providing clinician feedback, two good quality and six fair-quality articles were included. Of the eight included articles, five included advanced depression care supports for patients who screened positive for depression (beyond clinician feedback to the patient) and three included clinician feedback/intervention only. The studies which did not include advanced depression care supports did not find significant differences in depression remission rates, while trials which included care supports found significant improvements at varying interval follow-ups.

Procedure for Updates

To update guideline recommendations, the USPSTF Topic Prioritization Group begins a reevaluation process for guideline topics two years after they were originally published. First, a 1to 2 page summary of the topic is drafted, which includes the previously published recommendation statement, an estimate of the topic's disease burden, topic's relevance to primary care and preventative medicine, and a brief literature review of new evidence on the issue. Next, the group deems the topic either active or inactive, depending on its relevance to present day clinical practice and its public health burden. The topics which remain active are then sent to all USPSTF members and other appropriate stakeholder organizations for review, and the stakeholders are responsible for categorizing each topic as high, moderate, or low priority for review in the next 12 to 18 months. Stakeholders prioritize each topic based on their public health relevance, their

potential impact on current clinical practice, the amount and availability of new evidence, and the need to maintain a balanced variety of guideline topics. After topics are prioritized, they are sent to the full USPSTF membership for a final vote, and are updated accordingly, based on the results (AHRQ, 2008).

Clarity and Presentation

Key Recommendations

Recommendation 1: Screening with staff-assisted care supports. Based on the evidence obtained from the review by O'Connor et al. (2009), the USPSTF (2009) formulated a recommendation supporting standardized screening for adults in primary care when "staff-assisted depression care supports are in place to ensure accurate diagnosis, effective treatment, and follow-up" (USPSTF, 2009, p. 784). This is a grade B recommendation, which means there is high certainty that the intervention will provide moderate benefit to the patient. Staff-assisted depression care supports included but were not limited to: case management staff, ability to provide referral to mental health specialist(s), additional mental health training for primary care clinicians, standardized depression treatment protocols, patient educational materials, and additional training for office staff (USPSTF, 2009). The task force found that screening improves the likelihood for an accurate diagnosis of depression in primary care, and that practices which combined depression screening with staff-assisted care supports had better overall patient outcomes (O'Connor et al., 2009; USPSTF, 2009).

Recommendation 2: Screening without staff-assisted depression care supports. The USPSTF (2009) does not recommend standardized depression screening for adults when "staff-assisted depression care supports are not in place" (p. 784). This is

a grade C recommendation, which means the USPSTF advises against routinely providing the service and that there is a high level of certainty the benefit of the intervention is small (USPSTF, 2009). The basis of this recommendation stems from a fair amount of evidence retrieved which demonstrated that screening without depression care supports did not improve overall patient outcomes (O'Connor et al., 2009; USPSTF, 2009).

Screening tools. Although O'Connor et al. (2009) did not update the evidence in regards to the accuracy and usability of depression screening instruments in primary care, the previous review conducted by Pigone et al. (2002) found there was insufficient evidence to recommend one depression screening tool over another, as several tools, including the Zung Self-Depression Scale, Beck Depression Inventory, General Health Questionnaire, and Center for Epidemiologic Study Depression Scale, were found to have good sensitivity and fair specificity. However, the evidence did suggest that shorter screening instruments, such as the two question screen on mood and anhedonia, may be as effective as longer questionnaires (Pigone et al., 2002). The task force recommended the provider choose the tool which is most appropriate for their practice, considering personal preference and patient population. No matter which tool is used, the provider is advised to follow all positive depression screens with a full diagnostic interview based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* to aid in accurate diagnosis of depressive disorders (USPSTF, 2009).

Appropriateness of Recommendation Based on Evidence

Based on the evidence obtained by O'Connor and associates (2009), one may conclude that the recommendations put forth by the USPSTF were reasonably formulated

and based on a foundation of science. All evidence used to create the recommendations met rigorous inclusion criteria and quality standards set by the USPSTF and by the principal investigators. The recommendations are clear, concise, and easily outline the steps providers should take to ensure their patients receive adequate depression care. The recommendations not only direct the provider when to screen adults for depression, but also clarify when screening is not recommended.

Application

Organizational Barriers

The largest foreseeable barrier to implementing standardized depression screening in the primary care setting is obtaining provider buy-in. Many providers may feel that their appointment windows do not provide ample time to adequately screen patients for depression. Further, clinicians may view depression screening unnecessary for patients who present with episodic complaints. However, many depressed adults may present with very few or no signs of the disorder, or they may present with somatic symptoms that can easily be misdiagnosed (Nakao & Takeuchi, 2008). The United States Department of Health and Human Services has recognized the importance of depression screening in primary care, and has included improving depression screening as one of the *Healthy People 2020* objectives (United States Department of Health and Human Services, 2012b).

Standardized screening of adult patients for depression is recommended by the USPSTF in environments where "staff-assisted support systems are in place to assure accurate diagnosis, effective treatment, and follow-up" (USPSTF, 2009, p. 784). This illuminates another possible organizational barrier; practices which may not have the

resources for onsite case management or behavioral health staff are at a disadvantage. While in-house staff supports are not a requirement, many rural practices may not even have sufficient supporting agencies for which to send their referrals. Although many clinicians in primary care may be well-versed at diagnosing and treating depression, the USPSTF guideline states that standardized screening is only recommended for practices with established support systems in place. Clinicians who have been successfully diagnosing and managing depressed patients for years may view this as a waste of their time, or as an insult on intelligence; however, evidence shows that this process is effective (O'Connor et al., 2009).

Patient-Specific Barriers

A foreseeable patient barrier to this practice change is patient failure to complete the selected depression screening tool. Patients may see a depression screening tool as a waste of time, especially if they scheduled their original primary care visit for other reasons. Additionally, many patients fear the stigma that can often be associated with mental illness, and may refuse to be screened at all (NAMI, 2003). Patient follow-up with the available depression support care service (for a variety of reasons) could also be recognized as a potential barrier. In a NAMI survey of 3,430 persons with mental illness, 65% of respondents were unemployed. 71% of patients with mental illness were living on an annual income of less than $20,000, and 1-in-5 were living on less than $5,000/year (NAMI, 2003). Of respondents with private insurance, 56% reported that their coverage for mental illness was inadequate (NAMI, 2003). For these reasons, patients may be unable or unwilling to utilize depression care supports, even if there are mental health providers readily available in their geographic region.

Cost Implications

Depression is the leading cause of medical disability for individuals ages 14 to 44 in the United States, and the economic burden of this disease is significant, totaling over $83 billion dollars annually (Stewart, Ricci, Chee, Hahn, & Morganstein, 2003; Greenberg et al., 2003). Of that, $26.1 billion was due to direct medical cost, while $5.4 billion was spent on costs associated with suicide-related mortality (Greenberg et al., 2003). The largest component of the economic burden, however, is found in the workplace, where lost work productivity, from both absenteeism as well as presenteeism, accounts for $51.5 billion dollars or 62% of the overall burden (Greenberg et al., 2003). Individuals who experience symptoms of depression are more than twice as likely to take sick days, averaging seven fewer weeks of work per year and a loss of $10,400 annually by age 50 (Adler, et al., 2006; Greener & Guest, 2005; Smith & Smith, 2010). In a lifetime, this can equate to a loss of income totaling $300,000 for each individual suffering from depression (Smith & Smith, 2010). On the business side, depressed employees result in an average combined annual loss of 200 million work days; costing their employers $17 to $44 billion dollars a year (Leopold, 2001). When examining depression screening from a cost utility analysis perspective, assuming a sensitivity and specificity for the detection of major depression of 84% and 85%, it is estimated that one-time screening has a cost utility ratio of $45,000 per quality-adjusted life year (QALY) gained (Pignone et al., 2002). When support services are provided to individuals with positive depression screens additional benefits resulted at a cost savings of $10,000 to $35,000 per QALY gained (Pignone et al., 2002). This can also be calculated as an average cost gain of $51.84 per depression-free day (Pignone et al., 2002).

Editorial Independence

The evidence report by O'Connor et al. was conducted by the Oregon Evidence-based Practice Center (EPC) under contract to the Agency for Healthcare Research and Quality (AHRQ) and the USPSTF. Funding was provided by the AHRQ. The USPSTF clearly states that they are "an independent, voluntary body", (USPSTF, 2009, p. 789) and all recommendations made were completely independent of the United States government decisions. The investigators declared no conflicts of interest while conducting the research (O'Connor et al., 2009).

Implications

Similar Guidelines

Institute for Clinical Systems Improvement. Trangle and associates (2012) developed guideline recommendations for the Institute for Clinical Systems Improvement (ICSI) for depression in adults in primary care. The guideline was developed from a critical review of the literature, which included systematic reviews, randomized controlled trials, meta-analyses, regulatory statements, depression guidelines from other organizations, and other pertinent literature (Trangle et al., 2012). These guidelines recommend clinicians not only to routinely screen for depression, but to develop strategies to suspect a diagnosis of depression even if patients do not present with complaints of depressed mood. While the USPSTF guidelines do not provide explicit instructions for the clinician on how to choose validated depression screening instruments, the ISCI guidelines do offer two specific recommendations for screening in both routine settings and in high-risk patients with multiple comorbidities. For routine screening settings, the PHQ-2 can be used as a first-line screening tool for detection of

depression. If the PHQ-2 screen is positive, the PHQ-9 should subsequently be administered. The PHQ-9 is also the screening tool of choice for patients at increased risk for depression, or with multiple comorbidities. The PHQ-9 is a validated tool for both the initial detection of depression and for continued monitoring of depressive symptoms in the primary care setting. While explicit recommendations for which screening instruments to use are helpful, the data supporting these recommendations are based on low-quality evidence (Trangle et al., 2012).

Recommendation for Practice

The USPSTF is a trusted and respected agency, known for obtaining high-level evidence for the development of clinical practice guidelines in the primary care setting. Although the practice guideline from the ICSI is more explicitly detailed in regards to which screening tools to use, these recommendations are based on low quality evidence (Trangle et al., 2012). Based on the quality of evidence obtained, one may reasonably conclude that the USPSTF guideline serves as a valid, evidence-based resource for primary care providers who seek expert guidance on how to best identify patients with depression. Further research is warranted to determine the most appropriate depression screening instruments for use in primary care.

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Evaluation of Depression Screening Practices for College Women in a Primary Care University Health Clinic

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Introduction

Depression and depressive symptoms can cause serious mental, physical, emotional and functional distress (Nakao & Takeuchi, 2008; National Institute of Mental Health, 2011). According to the Centers for Disease Control and Prevention (CDC), an estimated 9.1% of the United States' adult population meets the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* criteria for current major depressive disorder (CDC, 2010). More Americans suffer from depression than from heart disease, cancer, or HIV/AIDS (American Foundation for Suicide Prevention, 2011). Mental disorders, including depression, are increasing in frequency and intensity in the college student population (Hunt & Eisenberg, 2010). Specifically, college-aged women appear to be particularly vulnerable to depression.

The American College Health Association (ACHA) began researching the population of college and university students in 2000 when they released the first National College Health Assessment (NCHA) Survey (ACHA, 2012). The ACHA-NCHA currently provides the largest known data set specifically related to the health of college students, with over 140 public and private institutions in the United States included in their spring 2012 survey. Results from this survey revealed that 12.9% (n= 7,459; total n=57,822) of college women reported being treated for depression within the past year, compared to only 6.9% of their male counterparts (ACHA, 2012). This prevalence is approximately 42% higher than that of the general population (CDC, 2010; ACHA, 2012). Of the 9,540 students who identified themselves as depressed, 78% (7,459) were women. Additionally, over one-third (33.4%) of college women reported

feeling so depressed that it was difficult to function at least one time in the past school year, and 7.2% seriously considered attempting suicide (ACHA, 2012).

Depressive symptoms in women during late adolescence and early adulthood can be contributed to a variety of factors, including emotional reactivity, genetic vulnerability, negative body image, and greater tendency to dwell on depressed mood (Hyde, Mezulis, & Abramson, 2008). These gender-specific factors, combined with factors specific to college students, such as separation from home, establishing new relationships, and the stressors associated with the addition of new roles and responsibilities, increase the risk for depression in this population (Beeber, 1998). Additional manifestations of depression which have been identified in college women include stress and anxiety (Kessler, Berglund, Borges, Nock & Wayne, 2005), previous psychiatric diagnosis (Smith & Blackwood, 2013; Karsten et al., 2011) chronic disease (Katon, 2011) and obesity (Sanchez-Villegas et al., 2012). As a result of their depression, college women often develop maladaptive coping strategies, such as alcohol use disorder (Agrawal et al., 2013) and risk-taking sexual behavior (Langille, Asbridge, Kisley, & Wilson, 2012). For these reasons, it is imperative for health care providers to be involved in developing, analyzing, implementing, and evaluating current, evidence-based guidelines for screening and diagnosing depression.

Current guidelines from the United States Preventative Services Task Force (USPSTF) recommend screening all adults (age 18+) for depression in primary care when depression care supports are in place (USPSTF, 2009). Screening rates for depression in the primary care setting from 2005-2010 are estimated at only 1.6-3.3% (United States Department of Health and Human Services, 2012). Primary care providers play an

important role in addressing this issue, as they are the principal contacts in the health care system for more than 50% of patients with mental illnesses (Nimalasuriya, Compton, & Guillory, 2009). Despite existing data on the prevalence of depression in college women, there is scant available research assessing provider utilization of evidence-based depression screening in this at-risk population. The purpose of this paper is to describe the results of a retrospective chart review and subsequent advanced practice provider focus group, examining depression screening practices and barriers at a primary care university health clinic in the southeastern United States.

Retrospective Chart Review

Objectives

The primary objective for the retrospective chart review was to determine if primary care providers in a university student health service were screening college women in accordance to national guideline recommendations for adults. Provider screening practices for women who presented with risk factors or manifestations of depression were explored. In addition, practices relating specifically to provider screening methods, such as use of a validated depression screening instrument versus informal clinical interviewing techniques were also evaluated.

Methods

Study design and data extraction. The design of this study was a descriptive, retrospective chart review. After obtaining Institutional Review Board (IRB) approval, systematic sampling was used to abstract the first 50 electronic medical records of patients meeting the specified inclusion/exclusion criteria. Medical record numbers which ended in the number "2" were selected until a total of 50 charts were obtained for

abstraction. Medical records were selected from visits which occurred between January 15, 2012 and October 31, 2012 at the selected student health clinic.

Medical records were reviewed for the following patient/visit information: 1) previously documented history of depression/anxiety, 2) presenting chief complaint, 3) current prescription for antidepressant medication(s), 4) significant risk factors for/ possible signs of depression, 5) provider documentation of depression screening (regardless of presenting chief complaint), 6) screening documentation with a validated instrument versus informal clinical interview techniques, 7) positive screens which were followed by formal *Diagnostic and Statistical Manual-IV* diagnostic criteria for depression and 8) documentation of provider recommendations for treatment based on a diagnosis of depression. A data extraction form was used to collect this data (see Appendix A). All data were extracted by the principal investigator. Data were de-identified prior to being recorded on the data extraction form, and the principal investigator was therefore unable to trace any protected health information back to its originating medical record. All protected health information was accessed electronically and no printing or recording of protected health information occurred.

Inclusion and exclusion criteria. Female students over the age of 18 who were seen in the university health clinic for a patient visit occurring January 15, 2012 through October 31, 2012 were eligible for inclusion. All chief complaints (not just mental health chief complaints) were included, as the USPSTF guidelines recommend standard screening regardless of presenting medical condition. All racial and ethnic backgrounds were included. Males were excluded, since college women were the population of interest for the purposes of this study. Females who were less than 18 years of age were

excluded, as the USPSTF guideline recommendations for adults pertain to persons over the age of 18.

Results

Types of visits. Of the fifty patient visits abstracted, visits can be divided into three categories: Episodic, preventative, and follow-up. Episodic visits accounted for the largest proportion, totaling 32/50 (64%) of the total extracted patient visits. Episodic visits can be further described by the following five categories: Upper respiratory infection/headache 37.5% (n=12), genitourinary/gynecological 34.4% (n=11), musculoskeletal 12.5% (n=4), dermatology 12.5% (n=4) and cardiology 3.1% (n=1). Preventative visits accounted for 14/50 (28%) of the total patient visits. These preventative visits can be further divided into the following categories: Annual with pap (50%), contraceptive initiation (35.7%), employment physical (7.1%), and sports physical (7.1%). Finally, follow-up visits constituted the smallest proportion of total patient visits, totaling 4/50, or 8% of the total. Follow-up visits were related to gynecological (75%) and upper respiratory (25%) diagnoses. The mean age of the women whose charts were reviewed for the study was 21.7 years.

Previous history of depression and current antidepressant prescription. To determine previous history of depression (major depressive disorder), documentation was reviewed in two places. When patients present for their first visit to the clinic, they are required to complete an electronic annual medical history, which remains in the patient database until the following year when it is updated again by the student at registration. Any previous medical history listed by the student is automatically populated into each visit note and appears at the top of any note entered by the provider. Additionally, on the

home screen of each electronic patient medical record, a summary of each ICD-9 code which has ever been recorded for the patient is listed in chronological order. If a patient had a diagnosis of depression listed in the electronic medical history or a recorded ICD-9 code for major depressive disorder, they were considered to have a previous history of depression. In total, 9/50 students (18%) met this criteria.

In addition to current medical diagnoses, all current prescription medications are listed at the top of each visit note, and these medications are reviewed and updated by the provider at each student encounter. If patients had an antidepressant listed for the visit note which was abstracted for review, it was considered to be a current prescription. Of the 50 medical records reviewed, 3/50 students (6%) were currently prescribed antidepressant medications, each of which was a selective serotonin reuptake inhibitor (SSRI).

Significant risk factors or manifestations of depression. The following risk factors or manifestations of depression were identified in the review: risk-taking sexual behaviors, substance abuse, stress or anxiety, previous psychiatric diagnosis, chronic disease, and obesity. These factors have been found in the literature to be associated with depression in college women, and were considered to be "red flags" for depression by the principal investigator. A total of 26/50 women (52%) presented with at least one risk factor or "red flag" for depression, while 16% percent had two or more risk factors. Table 1 summarizes these findings. High risk sexual behavior, history of a previous psychiatric diagnosis, and substance abuse were the most commonly noted depression risk factors for this population. Notably, of the five young women who were found to have substance abuse behaviors, all were related to binge drinking; no illicit drug use was

reported. Of the women with previous psychiatric disorders, nine diagnoses of depression, two diagnoses of anxiety disorder, one diagnosis of post-traumatic stress disorder (PTSD), and one diagnosis of anorexia nervosa were identified.

Screening. After retrospectively reviewing the 50 medical records according to the methods above, the principal investigator found that 0/50 patients were screened for depression, neither by use of a standardized screening tool, nor by use of informal interview techniques. No ICD-9 diagnoses of major depressive disorder were made during the 50 visits which were reviewed. One patient who reported significant anxiety and stress (related to school demands and homesickness) was referred for an appointment with student behavioral health, but there was no documentation of depression screening or questioning regarding suicidal ideation in this individual.

Provider Focus Group

Objectives

There were four objectives for the advanced practice provider focus group. First, the principal investigator sought to review with the providers the most current depression screening recommendations from the USPSTF. The second objective was to disseminate data obtained from the retrospective chart review to the providers and to offer a forum for discussion of the results. The third objective was to assess providers' perceived barriers to depression screening and treatment within the clinic. Lastly, the fourth objective was to assess provider recommendations for methods to increase rates of depression screening in this setting.

Methods

Study design and data extraction. Providers from the student health clinic were recruited via email to participate in a live focus group. All physician (MD) and advanced practice registered nurse (APRN) providers involved in direct patient care were invited to participate. Informed consent was obtained prior to the commencement of the focus group. Information was disseminated by the principal investigator using a PowerPoint presentation. In addition to reviewing current guideline recommendations and presenting data obtained from the chart review, the principle investigator requested provider feedback to the following three questions:

1. What are some perceived barriers to depression screening at this facility?
2. What are some perceived barriers to depression treatment at this facility?
3. What are some suggestions for ways depression screening and treatment can be improved at this facility?

An IRB approved student colleague of the principal investigator recorded field notes from the focus group session. The participants were encouraged to speak freely, and each provider was assigned an arbitrary number so that comments could be recorded using only that number, not the providers' names. This method ensured data were de-identified and could not be traced back to specific providers.

Inclusion and exclusion criteria. All advanced practice providers (MDs and APRNs) involved in direct patient care at the primary care student health clinic were invited to participate in the focus group, pending their willingness to sign an informed consent waiver. Only providers who were willing to participate in the group on a voluntary basis were included. Patient care providers who were not qualified to diagnose

depression in this setting (nurses, nursing assistants, medical/nurse practitioner students etc.) were excluded. Resident physicians were excluded from this study on the basis that they were not permanent clinic employees. A total of nine providers, including six physicians and three APRNs participated in the study.

Results

Perceived screening barriers. The providers identified five barriers to depression screening, three of which related specifically to clinician practice, and two related to patient preference. Five of the nine clinicians cited a lack of time to investigate depressive symptoms as the largest barrier to screening. While providers generally agreed that the appointment slots at the clinic allowed enough time to assess and treat the patients' presenting complaints, many felt they did not have extra time to spend administering and interpreting depression screening instruments. Two providers identified a lack of readily available depression screening tools as a barrier to screening. One of these providers commented that they were unaware of any depression "templates" in the current electronic medical record, and that if there was nothing to prompt them to perform a depression screening, they often tended to focus only on the patient's chief complaint. One provider identified a personal dislike of standardized screening instruments as a barrier, stating "…standardized screening tools tend to lead to more standardized screening tools. I prefer a less formal approach."

In addition to depression screening obstacles surrounding clinician practice, providers identified two patient-related barriers to depression screening in the student health primary care setting. Several clinicians felt that students, especially females, were often resistant to depression screening out of fear that they would be forced to forever

carry a diagnosis of depression forward on their medical record. Many agreed that students with health care majors, particularly medical and psychology students were especially hesitant to accept a diagnosis of depression. Providers felt students not only feared the social stigma that can be associated with depression, but were concerned future employers might view them as less qualified candidates for potential career opportunities. Additionally, providers found that students were hesitant to accept a diagnosis of depression out of fear for lifelong increased health and life insurance premiums. One provider asserted, "You can screen and tell [patients] they are depressed until you are blue in the face, but some of them just don't want to hear it."

Providers identified decreased patient satisfaction as the second patient obstacle to depression screening in their clinic. A provider noted "some patients already think we ask them too many questions, and we have received several comments in our satisfaction surveys asking us to reduce the amount of unrelated screenings that we perform during their visits." Providers currently query patients annually for a complete, up-to-date medical and family history, social history, medication list, and for any food and/or drug allergies. Per clinic protocol, in addition to the annual history information questions, all patients must be screened for tobacco use at each visit and patients with gynecology complaints must be screened for intimate partner violence at each visit.

Perceived treatment barriers. Providers identified two practice-associated barriers to depression treatment and six patient-associated barriers. As with depression screening, lack of time was identified as the biggest practice barrier to depression treatment. Providers did not feel they had enough time to address multiple patient complaints in the appointment time they were given. Two providers cited a lack of

available student behavioral health appointments as a barrier to patients receiving adequate treatment for depression. One provider asserted that she has had to schedule patients' behavioral health appointments several weeks in advance. Other providers generally felt that behavioral appointments were reasonably accessible, and a few agreed that the most effective way to have patients evaluated in a timely matter was to accompany them upstairs to the behavioral health clinic and request that they be seen by a provider as soon as possible.

Several patient barriers to depression treatment were identified. A repeating theme of student reluctance to accept a depression diagnosis was noted, and providers felt students were hesitant to be treated for the same reasons: fear of stigma, potential employment discrimination, and costly insurance premiums. Additionally, providers felt that several students, although willing to admit they were depressed, declined treatment with antidepressant medications out of fear of a negative reaction from their parents. One provider remarked that she even received a telephone call from an "irate" parent, "demanding" to know why her daughter was started on antidepressant therapy. Most providers agreed that they had been involved in similar situations. Providers felt many students, while accepting a depression diagnosis and seeing significant symptom reduction with antidepressant therapy, discontinued their medications as a result of adverse side effects-primarily weight gain and sexual dysfunction. Finally, providers found that many students felt they simply did not have the time or the money to pursue depression treatment. Full-time students are mandated to purchase the student health fee as part of their undergraduate tuition, and are thus eligible for free visits with primary care and behavioral health providers. However, other services such as ongoing

counseling sessions are not always provided by behavioral health. Providers noted some antidepressant medications were not covered under the health fee. Providers also stated that part-time students are not automatically covered under the student health fee, and must either pay this health fee out-of-pocket (separate from their tuition), or pay for health care visits on a fee-for-service basis.

Suggestions for improvement. Providers had several suggestions for increasing depression screening in their practice. All of the providers favored incorporating some type of depression screening template into the electronic health record. While many thought it prudent to incorporate the two question screen for mood and anhedonia (formally known as the Patient Health Questionnaire-2 Item) into the electronic check-in process, others were hesitant. "This goes back to patient satisfaction scores, and students just do not like to be asked questions which are unrelated to the reason for their visit." While a few providers did oppose mandatory screening for every patient at check-in, all were in favor of leaving depression screening "pamphlets" in the waiting room and having students willingly bring their concerns, if any, to the attention of the provider. One provider suggested incorporating a template which could be accessed by the clinicians if patients presented with signs or symptoms of depression, either in their presenting chief complaint, or in their history of present illness. Not only did providers unanimously agree this was a good idea, but many expressed disbelief that there was not already a depression template in the electronic medical record. Providers also identified university outreach and screening as a component to raising student awareness of depression. Fraternity and sorority outreach, as well as depression screening "fairs" were suggested and supported by all of the providers.

Discussion

Despite a patient population which displayed a host of risk factors, the clinicians in this study did not provide evidence-based depression screening in accordance with national guidelines. The results from this study are similar to findings of other studies. The United States Department of Health and Human Services (HHS) estimated that from 2005 to 2010, only 1.6 to 3.3% of all primary care visits included depression screening (HHS, 2012). *Healthy People 2020* Mental Health and Mental Disorders (MDHD) objective 11.1 specifically addresses the disparity of depression screening in primary care, based on data from the 2007 National Ambulatory Medical Care Survey which found depression screening rates in the primary care setting at only 2.2% (CDC, National Center for Health Statistics, 2007). *Healthy People 2020* objective MHMD-11.1 challenges primary care providers to make a marginal 10% improvement in depression screening, and established a goal of 2.4% by the year 2020 (HHS, 2012).

While episodic complaints constituted the majority of visits (64%) in this study, providers should be mindful that depression does not always present with the "textbook" symptoms of depressed mood and loss of interest in pleasurable activities (NIMH, 2011). Depressed individuals, especially women (Silverstein, 1999; Betrus, Elmore & Hamilton, 1995), often experience vague or somatic symptoms of depression, such as nausea, shortness of breath, headache, back pain, abdominal pain, joint or limb pain, dizziness, chest pain, and palpitations, (Nakao & Takeuchi, 2008). Bearing this in mind, several of the episodic visits examined in this study could have potentially been a result of depression somatization.

In addition to identifying some less common presenting symptoms of depression, providers should also familiarize themselves with some "red flags" with which depressed patients might present. Alarmingly, 52% of the women in this study presented with at least one risk factor for depression. Risk taking sexual behavior, defined as having multiple lifetime sexual partners or current unprotected sexual intercourse with >1 partner (CDC, 2012; Langille, Asbridge, Kisley, & Wilson, 2012) was the most commonly presenting risk factor for depression, noted in 24% (n=12) of college women in the study. Not only are these hazardous sexual practices a risk factor for depression, but untreated depression may actually potentiate the risk for such behaviors (Khan et al., 2009). Twenty percent of the young women in this study had a previous history of a psychiatric disorder, and three of these women were receiving treatment with antidepressants at the time of their visit. Providers should be especially vigilant for depressive symptoms in these patients, as a previous history of depression (n=9), anxiety disorder (n=2), PTSD (n=1), anorexia nervosa (n=1) and other mood disorders are shown to increase the risk for developing depression later in life (Smith & Blackwood, 2013; Arcelus, 2011; Karsten et al., 2011; Kessler et al., 1995). Alcohol use disorder, present in 10% (n=5) of women in the study, has been shown as both a risk factor for and consequence of depression. Agrawal et al. (2013) found that young women who abuse alcohol are also more likely to have thoughts of suicide. Also noted in this population, 11.5% (n=3) of women had stress and/or anxiety documented as a current symptom, 7.7% (n=2) had at least one chronic disease, and 3.8% (n=1) were obese, increasing their risk for developing depression (National Alliance on Mental Illness, 2009; Katon, 2011; Sanchez-Villegas et al., 2012).

Preventative visits, while accounting for a lesser proportion of the total visits (28%) for this study, provide the perfect opportunity for clinicians to assess patient's overall sense of well-being, including their psychosocial well-being. Clinicians identified time constraints as the primary reason why depression screening was not performed, and while it may not be feasible for providers at this institution to screen patients at every visit, screening at preventative visits is not an unrealistic feat. As the principal health care contacts for more than 50% of patients with mental illness (Nimalasuriya et al., 2009), primary care providers must become proficient at identifying signs and symptoms of depression, regardless of their patients' chief reasons for seeking medical care.

Limitations

The major limitation for this study is the lack of generalizability due to the small sample sizes, both for the number of charts which were retrospectively reviewed and for the number of providers who were recruited for the focus group. However, quality improvement (QI) does not require a large sample size. The Institute for Healthcare Improvement (IHI) (2013) maintains that for quality improvement, sample sizes should be current, accessible, and readily obtained. Furthermore, quality improvement resources are better allocated for testing and implementing the desired change, rather than obtaining a larger than necessary sample size (IHI, 2013). An additional limitation to this study involves the lack of a private method with which providers could use to convey their personal perceptions surrounding depression screening at their practice. While a discussion forum is certainly an effective forum in which to collect data, providers might have been more candid with their opinions and/or suggestions given the opportunity to respond privately versus sharing openly in a room of their peers. Future studies should

consider including an anonymous survey or comment sheet which providers could complete at the conclusion of the discussion group.

Implications for Practice

Clinicians cited a lack of time to investigate depressive symptoms as the largest barrier to depression screening in this primary care university health setting. Strategies which focus on increasing the time-effectiveness of depression screening might include: incorporating brief screening instruments to be completed by students during the electronic registration process, developing electronic depression templates which can be accessed by providers when needed, and streamlining the process for referring students to behavioral health. Primary care providers could also consider making follow-up appointments for patients who present with episodic chief complaints and co-occurring depressive symptoms. Measures to promote awareness of depressive symptoms and to decrease the stigma associated with depression in this population are also warranted. Campus interventions might include depression screening fairs, awareness campaigns targeting fraternity, sorority, and other large student organizations, and strategically-placed educational materials in health clinics, libraries, dormitories and other places where students may gather. Web materials which can be accessed in private, including depression education, screening instruments, campus and local resources, and suicide hotline contact information should be made readily available to students. Further research at colleges and universities nationwide should be conducted to identify barriers to depression screening in the vulnerable population of college women.

Table 1

"Red Flags" for Depression Identified in Total Sample

Parameter	Measures	Results
Risk-taking sexual behavior	Multiple lifetime sexual partners and/or current unprotected sexual intercourse with >1 partner (CDC, 2012)	• 24% (n=12)
Previous psychiatric diagnosis	Documented in annual medical history or selected visit note	• 20% (n=10)
Substance abuse	Illicit drug use; average of >1 alcoholic beverage per day and/or >4 drinks per occasion for women (CDC, 2012)	• 10% (n=5)
Current stress or anxiety	Documented as current symptom for visit note in review	• 6% (n=3)
Chronic disease	Documented in annual medical history or selected visit note	• 4% (n=2)
Obesity	BMI >30 (CDC, 2012)	• 2% (n=1)

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Capstone Report Conclusion

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Conclusion

As described in the first manuscript, college women are at risk for depression for a multitude of reasons, and depression can have serious mental, functional, emotional and financial consequences in this population. While limited research exists evaluating the benefits of standardized depression screening in the population of college women, there is evidence to support the practice in the general adult population. The 2009 United States Preventative Services Task Force guidelines recommend screening all adults (age 18+) for depression in primary care when depression care supports are in place. The second manuscript detailed a critical analysis of these guideline recommendations using a modified version of the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument (2001). Based on the quality of evidence obtained, one may reasonably conclude that the United States Preventative Services Task Force guidelines serve as a valid, evidence-based resource for primary care providers who seek expert guidance on how to best identify patients with depression. The final manuscript detailed the results of a descriptive study, examining depression screening practices and barriers at a primary care university health clinic in the southeastern United States. Several barriers to depression screening in the population of college women were identified, and included several provider-specific and patient-specific barriers. The largest barrier to depression screening identified in the provider focus group was a lack of time to investigate depression and depressive symptoms. Therefore, strategies which focus on increasing the time-effectiveness of depression screening are implied. Provider recommendations for improving screening rates in their institution included incorporating a depression screening template into the electronic health record, incorporating the PHQ-2 into the

electronic registration process, placing depression screening "pamphlets" in the waiting room for students to access, and increasing campus outreach projects which promote depression awareness and screening.

Approximately half of young adults in the United States enroll in some form of post-secondary education. The prevalence of depression among students on college campuses is estimated at 17.3%. Primary care providers play an important role in addressing this issue, since they are the principal contacts in the health care system for more than 50% of patients with mental illnesses. Although half of all adult patients with mental illness depend on their primary care provider to manage and treat their condition, screening rates for depression in this setting are estimated at only 1.6 to 3.3%. Implementing standardized depression screening methods for college women in primary care is a measure with the potential to promote identification of the disorder, and subsequently facilitate its diagnosis and treatment. Further research at colleges and universities nationwide should be conducted to identify additional site-specific or patient specific barriers to depression screening in this setting, and to formulate site-specific recommendations for improving depression screening rates in the vulnerable population of college women.

Appendix A: Data Extraction Tool			
Date of Review:	Chart Review #:		
Age:	Gender ☐ Female		
Screening Assessment			
	YES	**NO**	**COMMENTS**
Previously documented history of depression/anxiety?			
Presenting Chief Complaint (list):			
Currently prescribed antidepressant medications?			
Significant risk factors for or possible signs of depression? (list):			
Did provider screen for depression?			
Did provider screen using a validated depression screening tool?			
Was the depression screen positive?			
Did the provider follow a positive screen with American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders- Fourth Edition (DSM-IV)* criteria?			
Did the provider recommend treatment for patients with diagnosis of depression?			

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