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UNIVERSAL DEPRESSION SCREENING IN  
STUDENT HEALTH CENTERS ACROSS U.S. COLLEGE CAMPUSES:  
PREVALENCE AND CHARACTERISTICS ASSOCIATED WITH USE

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## Abstract

Universal depression screening at university student health centers can increase identification and treatment of depression among college students, but the rates of screening in these settings were, until now, unknown (Shepardson & Funderburk, 2014). The U.S. Preventive Services Taskforce (USPSTF), American College Health Association, and other organizations have recommended that all primary care settings universally screen for depression, provided that necessary supports are in place (USPSTF, 2016; ACHA, 2010). Notably, others disagree (Joffres et al., 2013; Mitchell et al., 2009; Gilbody et al., 2005). An online survey was electronically mailed to 493 college health center directors and/or medical directors of public 4-year universities in the U.S. Survey respondents represented 40 states and included 131 respondents (N = 131). The prevalence of universal depression screening among college health centers of public 4-year universities in the U.S. was 64.2% (54-74%; 95%). Characteristics associated with universal depression screening use clustered around greater resources, such as larger student populations and healthcare staff, greater perceived financial resources, and lower estimations of time it takes to screen. Additional factors associated with universal screening use included: respondents' awareness of the USPSTF recommendation, agreement with the evidence base supporting universal depression screening, and a belief that codified standards of care aid in effectively serving patients. Leading reasons for not universally screening for depression were: lack of mental health support available, lack of providers and support staff available to assist, reluctance from providers and staff due to process change, concerns about liability, and concerns about the time and space screening takes in the clinic. Perceived barriers to—and reasons for not—screening were endorsed at significantly different rates among screeners and non-screeners in the following domains: estimation of time required to screen, lack of providers and support staff, and lack of financial resources. Ninety percent of respondents estimated that *less than half* of students seen in student health centers experience mental health concerns. Discussions around universal depression screening adoption in student health centers should address resource concerns, awareness regarding the evidence base and USPSTF recommendation for universal depression screening, as well as information about the average time it takes to screen and prevalence estimates of mental health concerns in primary care. Future directions for research are addressed.

## Universal Depression Screening in Student Health Centers across U.S. College Campuses: Prevalence and Characteristics Associated with Use

Depression is a leading cause of disability worldwide, and presents a major public health concern for everyone; the United States university student population is no exception. Major depressive disorder has a 12-month prevalence of 6.6% among adults in the U.S., and a lifetime prevalence of 16.2% (SAMHSA, 2015; Kessler et al., 2003). The estimated 12-month prevalence of depression in the U.S. college student population is more than double the overall population, at 13.8% for undergraduate students and 11.3% for graduate students (Eisenberg et al., 2007a). Some estimates report it to be as high as 18.8% in some college student populations (American College Health Association - ACHA, 2005). Beyond human costs associated with depression, such as risk for suicide and diminished quality of life, the economic burden of depression is staggering. An estimated \$83.1 billion was spent on depression-related costs in 2000, including direct medical costs, suicide-related mortality, and workplace costs (Greenberg et al., 2003).

Roughly 50% of individuals suffering from depression do not receive treatment and only 20% of individuals suffering from depression receive adequate treatment (Kessler et al., 2003). Clearly, many people suffering from depression do not get the help or treatment they need. Compounding the problem of low treatment rates is the fact that the vast majority of people who do seek treatment for depression do so in primary care, family medicine, general internal medicine, pediatrics, and obstetrics-gynecology clinics (Blount, 1998; Byrd, O'Donohue & Cummings, 2005; Strosahl, 1998; Walker & Collins, 2009). These primary care settings were not designed to address mental health concerns (Goldman, Nielsen & Champion, 1999). Though college health center primary care clinics were also not initially designed to address mental health concerns, they are where many college students in need of mental health services initially present

(Alschuler, 2008). In fact, it is estimated that the majority of college students visiting a primary care clinic have behavioral health needs (Shepardson & Funderburk, 2009). This is likely because many students with mental health concerns feel more comfortable or feel less stigma seeing a primary care professional rather than a mental health professional (Tucker et al., 2008; ACHA, 2010). Furthermore, a number of mental health concerns initially present with physical symptoms, such as pain, headaches, sleep issues, gastrointestinal problems, and other somatic complaints, which brings individuals into primary care for treatment (Barkow et al., 2004).

Universal screening for depression is defined as systematic screening for depression for each patient, regardless of referral question. Within primary care, universal screening helps physicians and support staff identify patients who may be at risk for a range of mental health concerns (Lakkis, 2014). Since more than half of high school graduates in the United States attend college and since students use student health centers at higher rates than counseling services (Eisenberg et al., 2007a), universal systematic screening for depression in college-based primary care presents a potential opportunity to identify and help treat individuals who might not have otherwise sought treatment for their depression (Alschuler et al., 2008; Eisenberg et al., 2007b).

In summary, depression is common among the general U.S. population and even more so among college students. Despite their prevalence, depression and related mental health concerns are undertreated, and when treatment *is* provided, it is often done in primary care settings. Student health centers may be an ideal location for the early identification and treatment of behavioral health problems, including depression, among college students (ACHA, 2010). Although universal depression screening has potential to increase identification and treatment of depression, legitimate skepticism exists about its benefits (Mitchell et al., 2009; Joffres et al., 2014).

The present study examined the prevalence of universal depression screening in primary care student health centers. By surveying the attitudes and beliefs of student health center directors, we identified the most frequently endorsed helpful practices of those student health centers universally screening, as well as the reasons that schools choose *not* to screen and the most frequently endorsed barriers of those health centers not currently screening. We examined concurrent predictive factors for use or nonuse of universal depression screening, such as: the number of health care providers in the clinic (a proxy for university resources), the degree of health care integration between mental and physical health within the student health center, and respondents' attitudes and beliefs regarding treatment of mental health concerns in primary care. We intend to further the discussion of universal depression screening use in primary care settings of student health centers with the data that this study provides. With more information about student health center characteristics associated with use and nonuse of screening, as well as better understanding health center directors' attitudes and beliefs regarding screening and provider job duties, we hope to advance clinic and policy conversations on the use and utility of universal depression screening.

The sections that follow will examine the literature surrounding college students and depression as it relates to suicide, rural settings, and models of integrated care, as well as current evidence for and against the use of universal depression screening.

### *Depression and College Students*

Mental disorders drive one-half of young adults' disease burden in the U.S., and most mental disorders have their first onset by 24 years of age (WHO, 2008; Kessler et al., 2005). College students exhibit heightened risk factors for depression (Alschuler et al., 2008). Additionally, students with mental health issues account for approximately 50% of annual

withdrawals from college (Phillip et al., 1992). National surveys of undergraduates document high rates of self-reported depression, as well as other behavioral health concerns, such as sleep problems and high stress (ACHA, 2012). A recent survey of students by the American College Health Association found that 46% of students surveyed reported feeling hopeless, and 37% reported feeling so depressed within a 12 month period that it was difficult to function (ACHA, 2010). These mental health concerns impair students' quality of life and negatively impact their academic performance (Hysenbegasi, Hass & Rowland, 2005). Research suggests that mental health burden among college students will likely rise in years to come, as the rates of mental and behavioral health concerns among college students are increasing (ACHA, 2012; ACHA, 2008; Benton et al., 2003).

Despite their prevalence among college students, mental health concerns remain under-recognized and undertreated. In one study, for example, fewer than half of college students who screened positive for major depression or anxiety disorders received mental health services in the previous year (Eisenberg, et al., 2007b). College is filled with many stressors for students, including living for the first time away from family, making new friends, adapting to new schedules, and finding ways to succeed academically. Untreated mental health concerns have significant negative implications for academic success, productivity, substance use, and social relationships (Weitzman, 2004; Kessler et al., 1995; Wang, et al., 2007; Hunt & Eisenberg, 2012).

### *Depression and Suicide*

Depression is a major risk factor for suicide. Estimates indicate that approximately 60% of suicide victims experience major depressive disorder and other mood disorders (Harwood et al., 2001; Henriksson, 1993). The impacts of depression, suicide attempts, and completed suicides have obvious severe consequences for affected students, and for family, friends, faculty, staff, and



entire college campus communities. The breadth of suicide's negative reach is evidenced by the fact that suicide is the second leading cause of death for 15-34 year olds (CDC, 2013). A number of healthcare systems issues increase the risk of violent or suicidal episodes on campuses and contribute to mental health concerns. These issues include a failure of the system to identify patients with depression, inadequate mechanisms to track and maximize adherence to treatment when it is recommended, and inadequate coordination among medical and counseling services on college campuses (Shuchman, 2010; Chung et al., 2011). Systems-level failures are especially important and concerning because the majority of people who commit suicide visit a health professional within a relatively short period before taking their own lives (Luoma et al., 2002; Pirkis & Burgess, 1998). Recent research among adults in the U.S. suggests, for example, that as many as 83% of individuals who attempted suicide visited a primary care physician within one year of their attempt, and nearly 40% visited a primary care physician within one week of their attempt (Ahmedani, 2015).

Incidents of suicide among U.S. college students have grown over recent years (CDC, 2013). Additionally, suicidal ideation is high in this population, as it is estimated that 6% of undergraduates and 4% of graduate students reported serious consideration of suicide in the previous 12 months, and 18% of college undergraduates reported consideration of a suicide attempt at least once within their lifetimes (Drum et al., 2009). As the second leading cause of death for college-aged students, suicide represents a major public health concern for U.S. universities and colleges.

### *Depression and Rural Settings*

Rural settings present multiple unique challenges for the delivery of health care. These challenges include scarcity of providers due to limited resources, long distances between

communities, and limited access to health care services (Haustein et al., 2007; Weinhold & Gurtner, 2014). Additional barriers to help-seeking in rural populations include attitudes and values that reflect stoicism and independence (Judd et al., 2006). These attitudes and values may be antithetical to seeking help for depression and other mental health concerns. Consistent with this possibility, recent research suggests that adults living in isolated rural communities demonstrate higher levels of self and public stigma and are less open to psychological treatment than adults in urban areas, even when controlling for education, employment and income (Stewart et al., 2015). Thus, rurality appears to affect one's willingness to seek treatment for mental health problems—an important observation given that many of the U.S.'s college campuses are either in rural settings and/or have students coming from rural backgrounds. Many students attending colleges in rural states come from rural backgrounds, where mental health resources are not as plentiful as in urban settings, or where potential loss of privacy occurs from individuals seeking services from professionals in a small and dually-dependent network (Jameson & Blank, 2007).

In Montana, between one-half and three-quarters of students attending college at the flagship public universities come from in-state communities (Retrieved from <http://admissions.umt.edu/>; <http://www.montana.edu/admissions/>). Montana is an example of a predominantly rural mountain west state (U.S. Census, 2010), and thus evidences some of the rural health care challenges outlined above. According to the Montana Youth Risk Behavior Survey (2013), 26.4% of high school students in Montana reported that they felt so sad or hopeless almost every day for two weeks or more that they stopped doing some of their usual activities. Suicide is the second leading cause of death for young people in the United States, and Montana consistently ranks among the top five states for highest rate of suicide in the country (American Association of Suicidology, 2014). Consistent with national statistics, 17% of Montana high

school students have “seriously considered attempting suicide” (17% at the national level; Montana Youth Risk Behavior Survey, 2013). Student health centers in rural states such as Montana present a unique window for reaching students with mental health concerns who may have previously had limited access to care in rural settings.

### *Depression and Integrated Care Models*

Blount (1998), and more recently Collins and colleagues (2010), describe integrated primary care as the union of physical and behavioral health services to more completely manage the array of problems patients present in primary care settings. The integration of primary and mental health care services has resulted in cost savings and positive clinical outcomes in health care settings across the country (Walker & Collins, 2009). One recent study found better outcomes for individuals treated for depression in integrated behavioral health in primary care when compared to those treated for depression in primary care alone (Miller, 2014). That is, when compared to a control group, higher proportions of patients in integrated behavioral care showed significant reductions in scores on the Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke & Williams, 1999), a self-report measure of major depressive symptoms. In fact, 45% of patients in integrated care had a reduction in their nine-item PHQ score that fell below the clinically significant cut score of 10, compared with 26% in the control group. Additionally, the World Health Organization recommends the integration of mental health and physical health care in order to seal the existing gap between the number of patients who need mental health care and those who actually receive it (WHO, 2008). Furthermore, the American College Health Association (2010) suggests that the integration of mental health services into primary care practices improves access to mental health care through the removal of stigma-related barriers. Tucker and colleagues

(2008) further emphasize that the physician and the mental health clinician working as a team ensure more positive outcomes for students.

Models of integrated care are varied. A 2008 report by Funk and Ivbijaro cited seven principal reasons for integrating mental health into the primary care setting: (a) the burden of mental disorders is great; (b) mental and physical health problems are interwoven; (c) the need versus treatment gap for mental health is enormous; (d) primary care settings for mental health services enhance access to care for mental health concerns; (e) delivering mental health services in primary care settings reduces stigma and discrimination; (f) treating common mental health concerns in primary care settings is cost-effective; and (g) the majority of people with mental health concerns treated in integrated primary care have good outcomes. Additionally, Doherty (1995) has described five levels for mental health providers and primary care providers to work together—from the least to the highest degree of integration. According to this conceptualization, there are the following five broad levels of integration:

1. *Minimal collaboration.* Mental health providers and primary care providers work in separate facilities, have separate systems, and communicate sporadically.
2. *Basic collaboration at a distance.* Primary care and mental health providers have separate systems at separate sites, but engage in periodic communication about shared patients. Communication occurs typically by telephone or letter.
3. *Basic collaboration on-site.* Mental health and primary care professionals have separate systems but share the same facility. Proximity allows for more communication, but each provider remains in his or her own professional culture.
4. *Close collaboration in a partly integrated system.* Mental health professionals and primary care providers share the same facility and have some systems in common, such as

scheduling appointments or medical records. Physical proximity allows for regular face-to-face communication among behavioral health and physical health providers. There is a sense of being part of a larger team in which each professional appreciates his or her role in working together to treat a shared patient.

5. *Close collaboration in a fully integrated system.* The mental health provider and primary care provider are part of the same team. The patient experiences the mental health treatment as part of his or her regular primary care.

Given that integrated care improves outcomes for patients with depression and other mental health concerns, there is a growing movement toward integration in the medical and mental health community (Walker & Collins, 2009). This movement arguably received its start with psychiatrist George Engel's 1977 advocacy for a "biopsychosocial model" to conceptualize health over the traditional "biomedical model." He declared, "Nothing will change unless or until those who control resources have the wisdom to venture off the beaten path of exclusive reliance on biomedicine as the only approach to health care" (Engel, 1977, p. 135). More than 30 years later, Adler (2009) explained that although adoption of the biopsychosocial model (a conception of health consistent with integrated care principles) has increased among academicians and educators, practical adoption of the model has been less widespread. The reasons for this will not be discussed in the present paper, but the continued and growing importance of integrated models of health care delivery further stimulate our discussion of universal depression screening in primary care. Because integrated care attends to mental health concerns in the primary care setting, it makes sense that screening for depression would be a step in an integrated care model. In fact, many health care agencies and systems operating with an integrated care model include screening of depression as a routine practice in caring for individuals with chronic illnesses

(Walker & Collins, 2009). Veterans Affairs is a good example, as depression screening is mandated for all patients seen in primary care, and primary care-mental health integration practices are mandated system-wide (Pomerantz & Sayers, 2010).

### *Universal Screening for Depression*

Lakkis and colleagues (2014), among others, have argued that the current physical/mental health divide in the delivery of care represents a false dichotomy and is damaging to patients who need mental health care, but only visit doctors in primary care settings. The authors argued that brief depression screening instruments are critical in helping physicians and support staff identify patients at risk. Universal screening occurs at the population level to reach more patients (Byrd & Alschuler, 2009), with a goal of identifying quickly and easily those patients who are most likely to exhibit a particular problem. Thus, screening favors sensitivity over specificity, meaning that a positive screen indicates the need for further assessment and does not necessarily indicate the presence of a diagnosis (Byrd & Alschuler, 2009; Kessler, 2009). The Patient Health Questionnaire (PHQ-2) is a commonly-used screening tool to identify adults with depression. The PHQ-2, comprised of the first two questions of the PHQ-9 (Spitzer et al., 1999), assesses the past 2-week frequency of depressed mood and anhedonia. The brief measure can be completed in one to two minutes.

As Shepardson and Funderburk (2014) noted, a significant proportion of university students visiting their health center for non-mental health related concerns *have* mental health concerns that remain undetected in the absence of specific screening. These include students with depression, suicidal ideation, alcohol misuse, tobacco use, and sleep problems. Shepardson and Funderburk (2014) and Meyer and colleagues (2016) suggest that standardized screenings can initiate dialogue between the primary care providers and patients. Screening may thus facilitate

consideration of topics that may have been uncomfortable to breach otherwise. In one particularly instructive study, medical students and faculty implemented a universal depression screening diagnosis and management program at student-run free clinics (SRFCs) with a great deal of success. Medical students identified depression in primary care using the PHQ-2 and the PHQ-9. The authors found that the prevalence of depression diagnosed prior to the implementation of this program was 19.1%; after screening implementation the prevalence was 27.9% in a sample of 215 adult patients (Soltani et al., 2015). In an earlier study, Williams and colleagues (1999) conducted a randomized controlled trial testing efficacy of depression screening in primary care and found increased rates of depression identification. Furthermore, more than half of the physicians in the study stated that they found the brief measure of depression to be “helpful” in their clinical encounters with patients.

The aforementioned reasons, among others, have led the U.S. Preventive Services Task Force (USPSTF) to recommend that primary care clinics implement regular screening for depression in the general adult population, as long as adequate systems are in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up (USPSTF, 2009; 2016). In 2016, the Task Force recommended screening for *all* adults, including pregnant and postpartum women, regardless of patient characteristics or professional judgment. The Task Force’s 2016 report explains that convincing evidence has been found that screening improves the accurate identification of adult patients with depression in primary care settings. The report stated that combining screening with adequate clinical support systems improves clinical outcomes, such as a reduction or remission of depression symptoms in adults. The qualifying phrase, “adequate systems in place” refers to having appropriate policies and clinical staff to ensure that patients who screen positive are appropriately diagnosed and treated with evidence-based care, or referred to a

setting that can provide the necessary care. As far as negative consequences of screening for depression in primary care, the USPSTF found evidence that the potential for harm in universally screening for depression is negligible (USPSTF, 2016).

The Canadian equivalent of the USPSTF, the Canadian Task Force on Preventive Health Care (CAPTF), on the other hand, recently recommended that adults *not* be routinely screened for depression, even when they come from an at-risk population. Instead, the CAPTF recommends looking for clinical clues, such as insomnia, low mood, anhedonia, and suicidal thoughts in patients (Joffres et al., 2013). The principal reasons cited for not routinely screening for depression are concerns with the potential number of false-positive screens and the follow-up being too time-consuming to justify routine screening for depression in primary care practices. Mitchell and colleagues (2009) conducted a meta-analysis on universal depression screening, which suggested that misidentified cases of depression outnumber missed cases of depression in primary care. Thus, consistent with the USPSTF guidelines, they recommended further assessment after a positive depression screen. Simpson and Anderson (2013) recommended the same in primary care settings for adults with chronic illness, while Gilbody and colleagues (2005) suggested that universal depression screening without appropriate follow-up in place is *unjustified*.

In recent work some researchers have called for the USPSTF to entirely re-evaluate their recommendation for universal screening because the evidence behind it is lacking (Thombs et al., 2014). Though the CAPTF ultimately recommended against universally screening for depression in primary care settings, they reported that no harm was found among patients of those institutions that do use this practice. Furthermore, a different study noted that general population adults reported no adverse events attributable to screening in a subset of participants with newly identified depression (Rost et al., 2001). It is important to restate the fact that the USPSTF's



recommendation for universal screening for depression in primary care is punctuated by the qualifier that screening proceed “with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up” (p. 383).

Walker and Collins (2009) elaborated on some of the known barriers associated with universal depression screening, which they refer to as *Screening and Brief Intervention*. They note that reluctance may come from medical providers in the form of already feeling stretched for time in a given appointment. There is also resistance to screening when providers are unable to ensure that a referral to mental health services will be met in a timely manner. Also, if a collaborative relationship between mental health providers and primary care providers is lacking, then primary care providers are less likely to refer to them (Walker & Collins, 2009). In other words, poor collaboration—or low integration—between medical and mental health services presents a substantial barrier to screening for and referring individuals presenting with depression. Despite the CAPTF’s recommendations and in addition to the USPSTF’s recommendations and those of the U.S. Department of Veterans Affairs (Kirkcaldy & Tynes, 2007), the following groups recommend universal screening for depression in the adult primary care population: The American Academy of Family Physicians, the American College of Preventive Medicine, the American College of Obstetricians and Gynecologists, and the Community Preventive Services Task Force (USPSTF, 2016).

#### *Universal Depression Screening Use in Student Health Centers*

Some evidence suggests that universal screening for depression in the primary care setting in student health centers enhances preventive care and treatment outcomes for students (Alschuler et al., 2008; Shepardson & Funderburk, 2014; Soltani et al., 2015). There are many reasons that college students may not seek out mental health services for their concerns, including not being

aware of the fact that their symptoms constitute a mental health concern that can be treated and pervasive stigma associated with visiting a mental health clinician (Tucker, et al., 2008; ACHA, 2010). Incorporating mental health screening tools in the primary care setting, such as a tool for universal depression screening, may impact public stigma because it may break down the false mind/body divide seen in health care systems. Treating ‘mental health concerns’ like physical concerns—things that one might routinely talk to their doctor about—might increase the collective consciousness surrounding mental health issues. In a sense, routine discussion about mental health concerns could and *should* rise to the level of talking about symptoms of a cold, flu or any other symptoms of ‘physical concerns.’

As reported by Walker and Collins (2009), barriers to implementing universal screening for depression are numerous. Although implementing screening programs requires an investment of time, effort, and staff training, they have potential to improve clinical care for patients (Shepardson & Funderburk, 2014). The decision to implement universal screening is complicated and involves several decision points (Byrd & Alschuler, 2009). For example, care planners and providers must decide which problems to screen, who to screen, how to implement the screening measure, and how to follow-up with and manage patients who screen positive. The USPSTF has noted that further research is needed to assess barriers in establishing adequate systems of care and how these barriers can be addressed (USPSTF, 2016). In addition to further fleshing out universal depression screening implementation barriers, it is prudent to gather information about helpful practices that highlight strategies that have supported successful implementation of universal screening. Undoubtedly, there is no ‘one size fits all’ method to screening for depression, as evidenced by the differences mentioned between schools with greater rurality versus universities

in more urban settings, and will likely be the case among colleges with varying levels of resources.

### *Research Questions and Hypotheses*

There exists limited available research on depression screening in university health settings (Shepardson & Funderburk, 2014; Alschuler et al., 2008). Using a nationally representative sample of student health center directors and medical directors, we generated a prevalence estimate of universal depression screening use in student health centers. Additionally, we gathered information about systems-level and individual-level characteristics that could be associated with screening use. We expected that certain systems-level characteristics of student health centers—such as higher degree of integration between primary care and mental health services, greater number of providers, greater number of university resources—would concurrently predict use of universal depression screening in student health centers. We also expected that certain individual-level characteristics (i.e., attitudes and beliefs) would be associated with greater use, such as respondents' conceptualization of primary care provider job duties as including mental health management, assessment that mental health concerns impact the primary care population, and awareness of the evidence base and USPSTF recommendation for universal depression screening.

## Method

### *Procedures*

We deployed an online survey via electronic mail to 493 college health center and medical directors of public 4-year universities in the U.S. In order to contact these respondents, we consulted the U.S. Department of Education's National Center for Education Statistics to create a comprehensive list of public 4-year universities, which represented approximately 650 universities. We then consulted individual university websites to find necessary contact

information—email addresses and phone numbers of student health center and medical directors—of approximately 500 institutions. Those institutions without online information or without equivalent positions were excluded (approximately 150 universities). Instructions accompanying the survey asked that the survey be completed by the “most appropriate member of their team.” Respondents included directors of student health centers, medical clinics and counseling services (81.0%); individual providers, such as nurses, doctors or counselors (14.9%); and administrative or operations personnel (4.1%).

The survey included an explanation that participation was voluntary and would allow them to request the final survey results. No other incentive for participation was provided. Survey techniques to ensure a better response rate, as indicated by Dillman and colleagues (2015), included: creating parameters for the answers to questions (few blank spaces), keeping the timing of the survey to a minimum (15 minutes), delivering the survey in an accessible online format, incentivizing participation by offering to share final survey results upon completion, and following up with non-responders with three reminder emails and a phone call. We also provided an email address as a contact for those who preferred an PDF version of the survey to complete. We allowed three months for responses to be collected.

### *Materials*

The survey medium was Qualtrics, a secure online survey platform. It included questions regarding student health center demographics and depression-related and other health screening practices. The survey questions were reviewed by a team of faculty, graduate and undergraduate students and student health center directors in Montana to ensure that questions were clear and appropriate. The survey is provided in Appendix A.

## Results

One-hundred and thirty-one of 493 participants responded to the survey (26.6% response rate). This response rate reflected an estimated 20.2% of the population of public 4-year universities in the U.S. Table 1 presents respondents' demographic data and characteristics of the universities they represented. Respondents to the survey had different job titles as the survey directions instructed the "most appropriate member of [their] team" to complete it. Most respondents (81%) identified as a director of a student health center, medical clinic or counseling services. Approximately 15% of respondents identified as a provider (doctor, nurse or counselor), and 4% were administrative staff. As far as educational background of respondents, approximately 35% were medical doctors (M.D., D.O.), 32% were nurses or physician's assistants (BSN, ADN, MSN, MPAS, MHS), 12% were mental health professionals (LCPC, Psy.D., Ph.D.), 12% were business or policy professionals (MBA, MPH), 5% had combined professional degrees, and 4.3% had a bachelor's degree unrelated to nursing.

Representing 40 states, respondents had a mean student population of 13,029 ( $SD = 13,369$ ). The mean total number of healthcare staff was 24.4 ( $SD = 21.9$ ). The mean number of: medical health staff was 14.1 ( $SD = 12.3$ ), behavioral health staff was 4.2 ( $SD = 6.9$ ), and administrative health staff was 4.9 ( $SD = 7.6$ ). The degree of healthcare integration varied by institution. Those who endorsed having *no or minimal collaboration* represented 7% of the obtained sample. Those who endorsed using *basic collaboration at a distance* or *basic collaboration on-site* represented 51%, and those who indicated they have *close collaboration in a partly integrated system* or *close collaboration in a fully integrated system* represented 42% of the sample.

Approximately 64% ( $n = 61$ ) of respondents reported universally screening for depression in their primary care clinic (95% CI [54, 74]). In other words, given standard error of

measurement, we can be reasonably certain that between 26 and 46% of student health centers do not universally screen for depression in their primary care clinic. Fewer participants responded to the question regarding universal screening for depression ( $n = 95$ ) than the total number of respondents ( $N = 131$ ), so when comparing the groups of those universities that universally screen to those that do not, the effective sample size was 95. This represented 73% of the total number of respondents, 19.3% of those who received the survey, and an estimated 14.7% of the total public 4-year college population in the U.S.

The following hypotheses regarding concurrent predictors of screening status were supported: (a) larger student population, (b) greater number of healthcare staff and resources, and (c) respondents' knowledge of and agreement with the evidence base for universal depression screening were associated with greater use of universal depression screening. We found no significant difference between screening institutions and non-screening institutions in degree of healthcare integration or degree of agreement with the idea that primary care providers' job duties include management of mental health concerns.

Among universities that reported universal screening for depression ( $n = 61$ )—hereafter referred to as “screeners”—the mean student population was 17,563 ( $SD = 12,669$ ). Among universities reporting that they *did not* universally screen for depression ( $n = 34$ )—hereafter referred to as “non-screeners”—the mean student population was 5,354 ( $SD = 4,055$ ). These data are reported in Table 1. This difference in student population was significant [ $t(45) = -4.145$ ,  $p = .000$ ]. The number of total healthcare staff in student health centers also differed significantly between screeners ( $M = 30.2$ ,  $SD = 25.0$ ) and non-screeners ( $M = 16.8$ ,  $SD = 16.3$ ) [ $t(92) = -2.804$ ,  $p = .006$ ]. Additionally, the number of medical staff within student health centers differed

significantly between screeners ( $M = 17.0, SD = 13.2$ ) and non-screeners ( $M = 10.1, SD = 10.21$ ) [ $t(92) = -2.649, p = .010$ ].

Table 2 outlines reasons for not screening for the total sample, as well as between screeners (what they saw as a barrier in their adoption of universal screening for depression) and non-screeners (what they see as a current reason for not screening or as a barrier to doing so). The leading reasons for not screening were: (a) concerns about how to accommodate more mental health referrals, as there is already a waiting list for mental health services (82.9%) and lack of mental health professionals available for referral (73.2%); (b) reluctance from providers and staff due to process change with creating a new standard of care (70.7%); (c) it takes too much time to screen (69.5%); (d) lack of providers (56.8%) and support staff (52.4%) available to assist with or administer the screening; (e) concerns about liability (56.1%); and (6) lack of clinic space (54.3%). Non-screeners endorsed the following reasons at a statistically significant higher rate than screeners: “Lack of financial resources” (non-screeners: 60.9%; screeners: 32.8%) [ $\chi^2(1, n = 33) = 5.391, p = .020$ ]; “It takes too much time to screen” (non-screeners: 87.0%; screeners: 62.7%;) [ $\chi^2(1, n = 57) = 4.590, p = .027$ ]; “Lack of providers available to assist with or administer the screening” (non-screeners: 73.9%; screeners: 50.0%) [ $\chi^2(1, n = 46) = 3.838, p = .042$ ]; and “Lack of support staff” (non-screeners: 69.6%; screeners: 45.8%) [ $\chi^2(1, n = 43) = 3.759, p = .044$ ].

There was a statistically significant difference between screeners and non-screeners in estimation of time it takes to screen for depression. Whereas 75% of screeners indicated that it took “3 minutes or less” to administer, 52% of non-screeners indicated it took this amount of time. In other words, about one-quarter of screeners said that the screening took “more than 3 minutes,”

and almost half of non-screeners said that it took this amount of time [ $\chi^2 (1, n = 86) = 4.512, p = .032$ ].

Table 3 presents attitudes regarding depression screening use endorsed by respondents for the total sample and for screeners versus non-screeners. Nearly 18% of respondents *disagreed* with the statement “It is appropriate to treat mental health concerns like depression in the primary care setting.” In addition, 12.7% disagreed with the statement “Medications are effective treatments for depression,” and 6.9% disagreed with statements indicating that psychotherapy and counseling or behavioral interventions “are effective treatments for depression.” Screeners endorsed the following attitudes at a statistically significant higher rate than non-screeners: “The evidence base supports universal depression screening in primary care” (screeners: 88.3%; non-screeners: 67.6%) [ $\chi^2 (1, n = 76) = 5.998, p = .016$ ]; “I am aware of the U.S. Preventive Services Task Force recommendation for universal depression screening in primary care visits” (screeners: 90%; non-screeners: 73.5%) [ $\chi^2 (1, n = 79) = 4.390, p = .038$ ]; and “In order to most effectively serve patients, clinic practice guidelines or policies outlining standards of care are necessary” (screeners: 91.5%; non-screeners: 76.5%) [ $\chi^2 (1, n = 80) = 4.066, p = .046$ ].

Although estimates in the literature suggest that more than half of students visiting a student health center experience mental health concerns (Shepardson & Funderburk, 2014), only 10% ( $n = 10$ ) of the present sample estimated this to be the case. In other words, 90% ( $n=90$ ) of respondents estimated that *less than half* of students visiting their student health center experience mental health concerns. These estimations did not vary significantly between screeners and non-screeners [ $\chi^2 (1, = 91) = .131, p = .507$ ].

## Discussion



The best estimate to our knowledge of the prevalence of universal depression screening among student health centers of 4-year public universities in the U.S. is between 54% and 74%. In other words, we estimate that slightly more than one-half to two-thirds of student health centers have adopted universal screening as a standard of care. The implications for these university student populations include the possibilities of greater identification of depression among students (Alschuler et al., 2008; Eisenberg et al., 2007b) and enhanced student health outcomes (ACHA, 2010). Further, because research suggests that mental health concerns among college students are on the rise, institutions that screen have a system in place to identify at-risk students (ACHA, 2012; ACHA, 2008; Benton et al., 2003). Finally, given the strong link between depression and suicide and the research that indicates that the majority of people who commit suicide visit a health professional within a relatively short period before taking their own lives (Ahmedani, 2015; Luoma et al., 2002; Pirkis & Burgess, 1998), institutions that screen for depression have a safety net in place for identifying students who pose a risk for suicide. Though depression screening is a far from perfect means of measuring suicidal ideation and intent, it represents a step in the right direction (Oyama & Sakashita, 2017).

Resources in the form of university student body size, healthcare staffing, finances, and time, as well as awareness of the USPSTF recommendation and agreement with the evidence base supporting universal screening, are the largest concurrent predictors of universal depression screening status in student health centers. This is consistent with previous research in non-university settings, which indicates that time, effort, and staff training are barriers to screening (Walker & Collins, 2009). The USPSTF (2016) recommendation in support of universal screening for depression “as long as adequate systems are in place” is relevant because it appears likely that fewer resources make having “adequate systems in place” more difficult for non-screeners.

Degree of healthcare integration did not differ significantly between screeners and non-screeners, contrary to our hypothesis. Approximately 93% of student health centers are collaborating at a basic, close or fully integrated level. Thus, integrating ‘physical’ and ‘mental’ health appears to be the norm for student health centers. The finding that degree of integration did not co-vary with universal depression screening status suggests that the levels of integration vary widely from setting to setting. We collapsed the five-point scale (Walker & Collins, 2009) into three-points, but analysis at the five-point gradient also found no significant differences between screeners and non-screeners.

Findings from the present study may be useful in policy discussions about the use of universal depression screening. First, leading reasons for not screening (or barriers to doing so) clustered around resources. Lack of mental health professionals, lack of medical providers and staff, lack of time, and lack of clinic space were endorsed as primary reasons for not screening, for example. In our sample, 72% of respondents indicated that they face pressures to reduce spending at their university. In the present fiscal landscape in which many institutions are experiencing pressures to reduce spending and cut programs, requests to enhance healthcare resources may be challenging. At the same time, it is important to note that mental health concerns drive as many as 50% of withdrawals from college (Phillips et al., 1992). Decreasing mental health resources may, indeed, contribute to problems with student retention. Considered alternately, investments in campus-based healthcare have potential to increase student retention and boost university tuition revenue. In other words, investments in student health can support universities’ fiscal health.

There may be some additional ways to boost screening that do not necessarily require increased financial resources. For example, most respondents endorsed concerns about liability and reluctance from providers and staff due to process change as primary barriers to screening.

Addressing these barriers may be a matter of better understanding the liability involved with positive depression screens and helping providers feel comfortable with the screening process. This may also be a matter of explaining more thoroughly the procedure and reasons to staff and providers to diminish ambivalence about change. Also, estimations of time it takes to screen are longer among those not currently screening, as nearly half of non-screeners estimated it to take *more than* three minutes to screen (compared with about a quarter of screeners). Thus, increasing awareness about the average amount of time it takes to screen may be helpful to those considering adopting this practice (75.4% of screeners indicated that it takes three minutes *or less* to screen).

As far as attitudes among respondents, it makes sense that screeners are more familiar with the evidence base supporting universal screening and with the USPSTF recommendation. Although the present study was correlational, it may be that some student health centers do not screen because they *do not know* about the recommendation or the evidence base that supports it. Only 67.6% and 73.5% of non-screeners knew about the evidence and recommendation, respectively, and nearly half of non-screeners (42.9%) indicated that universal screening was a “new concept.” Thus, education around this public health issue is recommended from both national groups, such as the American College Health Association, as well as locally, from health services experts talking to administrators and providers at their student health centers.

Furthermore, the finding that 90% of respondents estimated that *less than half* of students seen in the student health center primary care clinic are experiencing mental health concerns is curious (approximately 40% of respondents estimated less than 20% of students are experiencing mental health concerns and 50% of respondents estimated that 20-50% of students are). Estimates of mental health needs in primary care are higher than that for the general population (Blount, 1998), and even higher in the college student population (Shepardson & Funderburk, 2014). This

finding may shed some light as a further barrier to depression screening, as most respondents did not see mental health concerns as being present in most students seen. The perceived base rate of students experiencing mental health concerns will likely affect what providers attend to, and if that estimation is incorrect, then it stands to reason that cases of depression may be missed.

Analogously, the finding that nearly 20% of respondents *did not* believe that it is appropriate to treat mental health concerns like depression in primary care also seems worthy of additional study. From the perspective of screening opponents, it may appear pointless to screen for a condition that one believes is inappropriate to treat in that setting (e.g., it may seem like treating a kidney infection in counseling services). Further study of attitudes regarding depression treatment in university-based primary care is needed.

This research is intended to provide clinic directors and policy-makers with information to better understand universal depression screening use. Given the diversity of universities across the country (e.g., differences in resources, student populations, attitudes, location), there is clearly no *one size fits all* method for universal depression screening use in student health center primary care clinics. It is not the intention of this paper to make the argument that *every* student health center needs to universally screen for depression. It is the intention, however, to better understand the reasons that student health centers are not screening, as it seems that limited resources and lack of knowledge about universal screening are the primary reasons for not doing so. Universal screening has the potential to enhance student health centers' capacity to identify students who are struggling with mental health issues who might not otherwise be identified (Alschuler et al., 2008; Eisenberg et al., 2007b). Further, mental health concerns continue to be on the rise for this population contributing to both college withdrawals (Phillips et al., 1992) and (much worse) suicide (CDC, 2013). Thus, it remains critical to understand the reasons for not using this tool in

an effort to either break down the barriers to its use, or to find alternative methods in meeting the high number of unidentified cases of depression among college students.

### Limitations

There are a few important limitations to note within this study. First, given that survey respondents were volunteers, the obtained sample may differ in some ways from the overall population. Respondents may have had more investment in questions about universal depression screening, and were therefore more motivated to respond than those who did not respond at all. Additionally, we asked questions pertaining to systems-level characteristics and individual attitudes. It is likely that the attitude of one respondent does not represent the attitudes of all providers at that clinic; however, the majority of respondents were clinic directors, so their attitudes are likely more influential on clinic-wide policies than the average provider. Also, even though the study captured a spread from low to high resource universities, it is possible that the lowest resource universities simply did not have the time or staff to complete the survey. Notwithstanding these issues related to representativeness, the obtained sample was reasonably large and reflected at least 15% of public 4-year universities in the U.S. We maintain that this sample is representative enough to support our preliminary conclusions. Second, because answering each question was voluntary, data were missing for a number of survey questions, including whether the student health center universally screened for depression or not (73% of respondents answered this question). Finally, given the diversity in respondent roles in their respective student health centers (directors, providers and administrative staff), we suspect that respondents had differential access to information and attitudes regarding universal screening. At the same time, it is important to note that most respondents described serving in clinic leadership

roles. The diversity of universities and student health centers in general, however, may make finding directly analogous roles across these settings impossible.

### Conclusions and Future Directions

Approximately 54-74% of student health centers of public 4-year universities in the U.S. employ universal depression screening. At a systems-level, resources appear to be one of the primary drivers of screening versus not screening. Several indicators of resources emerged as significant concurrent predictors of screening status, including financial resources, student population size, available time, and number of healthcare providers. At an individual-level, awareness of the USPSTF recommendation and evidence base regarding universal depression screening, as well as agreement with codified standards of care in the medical setting, are among the primary factors that differentiated screeners from non-screeners. Additionally, estimations of time it takes to screen for depression differed significantly, with non-screeners estimating it takes *longer* to screen than screeners.

In conclusion, we maintain that more research attention should be given to the outcomes and observations of student health centers that have adopted universal depression screening. It would be useful to elucidate problems that have arisen and benefits that have been realized. Also, determining what helpful practices were found among student health centers that had difficulty in adopting universal depression screening would be informative. For instance, understanding any practices that help to shore up resources, decrease staff and provider reluctance, decrease liability concerns, or ideas around use of screening within the confines of limited resources may be helpful. Finally, better understanding patient outcomes in the form of depression identification and treatment from those now screening would also help to advance the discussion about the utility of universal depression screening use among student health centers.

**Table 1. Sample Demographics**

Characteristics	Total Respondents <sup>†</sup> (N = 131)	Schools that Universally Screen for Depression (n = 61; 64.2%)	Schools that do Not Universally Screen for Depression (n = 34; 35.8%)	P-value
<b>INDIVIDUAL-LEVEL:</b>				
<b>JOB TITLES of RESPONDENTS: Percent (n)</b>				
<b>Director: Student Health Center, Medical Clinic, Counseling Services</b>	81.0% (98)	-	-	
<b>Provider: Doctor, Nurse, Counselor</b>	14.9% (18)	-	-	
<b>Administrative: Operations, Support Staff</b>	4.1% (5)	-	-	
<b>INDIVIDUAL-LEVEL:</b>				
<b>DEGREES of RESPONDENTS: Percent (n)</b>				
<b>Medical Doctor (M.D., D.O)</b>	34.5% (40)	-	-	
<b>Nurse or Physician's Assistant (BSN, ADN, MSN, MPAS, MHS)</b>	31.9% (37)	-	-	
<b>Mental Health Professional (LCPC, Psy.D., Ph.D.)</b>	12.1% (14)	-	-	
<b>Business or Policy Professional (MBA, MPH)</b>	12.1% (14)	-	-	
<b>Combined Professional Degrees</b>	5.2% (6)	-	-	
<b>Other Bachelor's Degree</b>	4.3% (5)	-	-	

<b>SYSTEM-LEVEL: UNIVERSITY CHARACTERISTICS</b> <i>Mean (SD)</i>				
<b>Number of Students</b>	13,242.0 (13,373.3)	17,563.4 (12,669.2)	5,354.1 (4,055.6)	.000 <sup>1</sup>
<b>Number of Total Healthcare Staff in Student Health Center</b>	24.4 (21.9)	30.2 (25.0)	16.8 (16.3)	.006 <sup>2</sup>
<b>Number of 'Medical' Health Staff in Student Health Center</b>	14.1 (12.3)	17.0 (13.2)	10.1 (10.2)	.010 <sup>3</sup>
<b>Number of 'Behavioral' Health Staff in Student Health</b>	4.2 (6.9)	6.2 (8.6)	3.3 (5.6)	.080
<b>Number of Administrative Health Staff in Student Health</b>	4.9 (7.6)	6.8 (10.2)	3.4 (3.5)	.065
<b>Number of Students per Total Health Staff</b>	835.0 (538.5)	910.9 (571.2)	756.7 (513.3)	.865
<b>Number of Students per 'Medical' Health Staff</b>	1,872.1 (1,889.0)	2,248.9 (2,349.1)	1,631.7 (1,414.7)	.113
<b>Number of Students per 'Behavioral' Health Staff</b>	6,504.4 (17,795.0)	8,961.8 (24,273.4)	2,308.3 (2,639.2)	.127
<b>SYSTEM-LEVEL: DEGREE of HEALTHCARE INTEGRATION:</b> <i>Percent (n)</i>				
<b>No or Minimal Collaboration</b>	7.3% (7)	5.0% (3)	9.4% (3)	.224
<b>Basic Collaboration</b>	51.0% (49)	48.3% (29)	56.3% (18)	
<b>Close or Full Collaboration</b>	41.7% (40)	46.7% (28)	34.4% (11)	



<b>REGION-LEVEL:</b>				
<i>Percent (n)</i>				
<b>Midwest</b>	20.6% (27)	61.9% (13)	38.1% (8)	.119
<b>Coastal West</b>	19.8% (26)	70.0% (14)	30.0% (6)	
<b>Southeast</b>	17.6% (23)	66.7% (12)	33.3% (6)	
<b>Northeast</b>	16.8% (22)	40.0% (6)	60.0% (9)	
<b>South</b>	10.7% (14)	71.4% (5)	28.6% (2)	
<b>West</b>	10.7% (14)	91.0% (10)	9.0% (1)	
<b>Unknown</b>	2.3% (3)	33.3% (1)	66.7% (2)	

†Overall  $N = 131$ ; Due to missing data, the 'N' for comparisons between 'screening' and 'non-screening' universities was 95.

\*Tests for statistical significance included independent sample  $t$ -tests for continuous data and  $X^2$  tests for categorical data.

<sup>1</sup>  $t = -4.145$   $df = 45$

<sup>2</sup>  $t = -2.804$   $df = 92$

<sup>3</sup>  $t = -2.649$   $df = 92$

**Table 2. Identified Reasons for Not Screening and Barriers to Universal Depression Screening**

Reasons/Barriers	Total Respondents	Screeners*	Non-screeners	P-Value
Lack of financial resources	40.7% (33)	32.8% (19)	60.9% (14)	.020 <sup>1</sup>
Takes too much time to screen	69.5% (57)	62.7% (37)	87.0% (20)	.027 <sup>2</sup>
Lack of providers available to assist with or administer the screening	56.8% (46)	50.0% (29)	73.9% (17)	.042 <sup>3</sup>
Lack of support staff	52.4% (43)	45.8% (27)	69.6% (16)	.044 <sup>4</sup>
Lack of clinic space	54.3% (44)	53.4% (31)	56.5% (13)	.500
Concerns about how to accommodate more mental health referrals, as there is already a waiting list for mental health services.	82.9% (68)	86.4% (51)	73.9% (17)	.152
New Concept	35.9% (28)	33.3% (19)	42.9% (9)	.302
Resistance from providers and staff due to process change with creating new standard of care	70.7% (58)	72.9% (43)	65.2% (15)	.334
Concern about ‘false positives’ with screening for depression	40.2% (33)	39.0% (23)	43.5% (10)	.449
Concerns about liability	56.1% (46)	55.9% (33)	56.5% (13)	.581
Lack of Mental Health professionals available for referral	73.2% (60)	72.9% (43)	73.9% (17)	.580
Discomfort from providers relating to asking questions about depression or mental health in general	37.8% (31)	37.3% (22)	39.1% (9)	.536
The technology associated with screening for depression is difficult for staff to adapt.	32.5% (26)	33.3% (19)	30.4% (7)	.511
Providers believe that screening for depression is not part of their job duties in the primary care setting.	28.0% (23)	28.8% (17)	26.1% (6)	.518
‘Other’ reasons or barriers identified	57.9% (11)	60% (9) <sup>a</sup>	50% (2) <sup>b</sup>	.574

\*Tests for statistical significance included  $X^2$  tests.

<sup>1</sup>  $X^2 = 5.391$   $df = 1$  ( $n = 33$ )

<sup>2</sup>  $X^2 = 4.590$   $df = 1$  ( $n = 57$ )

<sup>3</sup>  $X^2 = 3.838$   $df = 1$  ( $n = 46$ )

<sup>4</sup>  $X^2 = 3.759$   $df = 1$  ( $n = 43$ )

<sup>a</sup> Including: getting the counseling center to accommodate referrals based on PHQ-9 scores; student complaints; false positives; new procedure, so forgetting to ask; and too little time to add these questions to the visit.

<sup>b</sup> Including: new health care system, no EMR, may be annoying to students, few clinic hours, providers already screen for depression so no formal protocol needed, and EMR is clunky and not easy enough to use to aid in screening.

**Table 3. Respondent Attitudes/Beliefs and Universal Depression Screening Use: Percentage in Agreement**

<b>Attitudes/Beliefs</b>	<b>Total Respondents</b>	<b>Screeners*</b>	<b>Non-screeners</b>	<b>P-Value</b>
The evidence base supports universal depression screening in primary care. “Universal depression screening” refers to routine screening for depression at each visit, regardless of referral question.	82.2% (83)	88.3% (53)	67.6% (23)	.016 <sup>1</sup>
I am aware of the U.S. Preventive Services Task Force recommendation for universal depression screening in primary care visits.	85.1% (86)	90% (54)	73.5% (25)	.038 <sup>2</sup>
In order to most effectively serve patients, clinic practice guidelines or policies outlining standards of care are necessary.	86.0% (86)	91.5% (54)	76.5% (26)	.046 <sup>3</sup>
It is appropriate to treat mental health concerns like depression in the primary care setting.	82.4% (84)	85.2% (52)	76.5% (26)	.213
Depression and related mental health concerns impact the health of the students that we see in primary care.	97.1% (99)	98.4% (60)	94.1% (32)	.290
Medications are effective treatments for depression.	87.3% (89)	85.2% (52)	88.2% (30)	.471
Psychotherapy and counseling are effective treatments for depression.	93.1% (94)	93.3% (56)	91.2% (31)	.497
Behavioral interventions (e.g., stress management, sleep hygiene, nutrition, and exercise) are effective treatments for depression.	93.1% (94)	93.3% (56)	95.8% (23)	.497
There are pressures at our college/university to reduce spending.	72.0% (72)	71.7% (43)	70.6% (24)	.546
Some of the physical complaints that providers treat in the primary care setting may be caused by mental health issues.	97.1% (99)	96.7% (59)	97.1% (33)	.710

\*Tests for statistical significance included  $X^2$  tests.

<sup>1</sup>  $X^2 = 5.998$   $df = 1$  ( $n = 76$ )

<sup>2</sup>  $X^2 = 4.390$   $df = 1$  ( $n = 79$ )

<sup>3</sup>  $X^2 = 4.066$   $df = 1$  ( $n = 80$ )

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Appendix A

**STUDENT HEALTH CENTER SURVEY**

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You are invited to participate in a research project about universal depression screening use in college-based Student Health Centers. This brief survey should take about 15-20 minutes to complete. Participation is voluntary, and responses will be kept confidential to the degree permitted by the technology being used. If you are the Student Health Center Director or Medical Director, please feel free to complete this survey, yourself, or to pass this along to the appropriate member of your team who has the most knowledge of clinic-wide practices. Please note that we are tracking survey responses by email address, but this email address will be removed from survey responses as soon as data collection is complete, and not used for any other purpose. You have the option to not respond to any questions that you choose. Submission of the survey will be interpreted as your informed consent to participate and that you affirm that you are at least 18 years of age.

If you have any questions about the research, please contact the Principal Investigator, Ivie English, via email at [clarissa.english@umontana.edu](mailto:clarissa.english@umontana.edu) or (406) 243-4521 or the faculty advisor, Dr. Duncan Campbell, at [duncan.campbell@umontana.edu](mailto:duncan.campbell@umontana.edu). If you have any questions regarding your rights as a research subject, contact the UM Institutional Review Board (IRB) at (406) 243-6672.

An executable document version of this survey is available [here](#). If you choose to complete the document version, please email it back to [clarissa.english@umontana.edu](mailto:clarissa.english@umontana.edu) or let us know if you would like to receive a pre-stamped return envelope to send back a hard copy.

Please print or save a copy of this page for your records.

**SECTION A: General Questions**

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1. What is your job title? \_\_\_\_\_.
2. What is your degree and/or educational background? \_\_\_\_\_.
3. Does your school have a health facility on campus where students can seek health services, such as a Student Health Center?

	Yes
	No
	Other – Please explain:

4. Does your school contract out health services for the student population to see providers in the community?

	Yes
	No
	Other – Please explain:

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1. Please indicate the region of the United States in which your college is located.

	Coastal West
	Rocky Mountain West
	Southwest
	Midwest
	Southeast
	Northeast
	Other – Please explain:

2. Please indicate the type of health care providers and approximate number of staff currently employed in your Student Health Center by inserting a number in the appropriate boxes below. Or, please indicate the number of each provider delivering services via contract with the school. FTE refers to “Full Time Equivalent” employee. For example, if you employ two psychiatrists at half-time, and 1 psychologist at full-time, you would enter a “2” in the 0.5 FTE column for “Psychiatrist” and “1” in the 1.0 FTE column for “Psychologist.”

	0.25 FTE	0.5 FTE	1.0 FTE
Physician (non-Psychiatrist)			
Psychiatrist			
Psychologist			
Social Worker / Counselor (LCSW, LCPC, etc.)			
Psychiatric Nurse Practitioner			
Nurse Practitioner / Physician Assistant			
Nurse			
Pharmacist			
Health Educator			
Health Administrator			
Case Manager			
Administrative/ Support Staff			

Other – Please explain:			
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3. What types of health care services does your school provide to students on campus? Please check all that apply.

<input type="checkbox"/>	Primary Health Care
<input type="checkbox"/>	Mental Health Care in General Medical Clinic
<input type="checkbox"/>	Mental Health Care in an On-Campus Student Counseling or Psychology Clinic
<input type="checkbox"/>	Wellness Services (nutrition, exercise, smoking cessation, etc.)
<input type="checkbox"/>	Dental Care
<input type="checkbox"/>	Other - Please explain:

4. Approximately how many students attend your school?\_\_\_\_\_.

5. Approximately how many students seek services at your Student Health Center annually? If you have access to the approximate number, please enter it here\_\_\_\_\_. Otherwise, please check the option that best represents your Student Health Center:

<input type="checkbox"/>	Fewer than 1,000
<input type="checkbox"/>	1,000 – 1,999
<input type="checkbox"/>	2,000 – 4,999
<input type="checkbox"/>	5,000 – 9,999
<input type="checkbox"/>	10,000 – 14,999
<input type="checkbox"/>	15,000 – 19,999
<input type="checkbox"/>	20,000 and above

6. Approximately what is the unique number of students seen by mental health providers or in the mental health/counseling clinic during the last academic year? If you have access to the approximate number, please enter it here\_\_\_\_\_. Otherwise, please check the option that best represents your Student Health Center:

<input type="checkbox"/>	Fewer than 1,000
<input type="checkbox"/>	1,000 – 1,999
<input type="checkbox"/>	2,000 – 4,999
<input type="checkbox"/>	5,000 – 9,999
<input type="checkbox"/>	10,000 – 14,999
<input type="checkbox"/>	15,000 – 19,999
<input type="checkbox"/>	20,000 and above

7. Approximately what is the unique number of students seen by primary care physicians or in the primary care setting during the last academic year? If you have access to the approximate number, please enter it here\_\_\_\_\_.

Otherwise, please check the option that best represents your Student Health Center:

	Fewer than 1,000
	1,000 – 1,999
	2,000 – 4,999
	5,000 – 9,999
	10,000 – 14,999
	15,000 – 19,999
	20,000 and above

8. Please provide an estimate of the proportion of the patients you serve in your primary care clinic that experiences mental health concerns.

0-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%

9. Are mental health services at your student health center provided on campus or off campus?

	On Campus
	Off Campus
	Not Applicable

10. Are psychotherapy sessions for students time-limited?

	Yes. How many sessions may a student receive?_____.
	Yes, but additional services/sessions are available for a fee. How many sessions may a student receive before a fee is required?_____.
	No

11. Please indicate the degree to which **you** agree with the following statements by marking one of the below boxes associated with each statement:

	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
Depression and related mental health concerns impact the health of the students that we see in primary care.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly



It is appropriate to treat mental health concerns like depression in the primary care setting.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
Medications are effective treatments for depression.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
Psychotherapy and counseling are effective treatments for depression.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
Some of the physical complaints that providers treat in the primary care setting may be caused by mental health issues.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
Behavioral interventions (e.g., stress management, sleep hygiene, nutrition, and exercise) are effective treatments for depression.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
The evidence base supports universal depression screening in primary care. "Universal depression screening" refers to routine screening for depression at each visit, regardless of referral question.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
I am aware of the U.S. Preventive Services Task Force recommendation for universal depression screening in primary care visits.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
In order to most effectively serve patients, clinic practice guidelines or policies outlining standards of care are necessary.	Disagree Strongly	Disagree	Neither Disagree nor Agree	Agree	Agree Strongly
There are pressures at our college/university to reduce	Disagree Strongly	Disagree	Neither Disagree nor	Agree	Agree Strongly

spending.			Agree		
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12. Some student health centers provide care that adheres to “integrated care” principles. Although a number of specific approaches to integrated care exist, these models tend to emphasize the interrelatedness of patients’ *mental* and *physical* health concerns and emphasize collaboration and shared clinical decision making among medical and mental health providers. Please check the statement below that most accurately describes the **current communication/collaboration** between the primary care and mental health services offered at your Student Health Center.

	<i>Minimal collaboration.</i> Mental health specialty care providers and primary care providers work in separate facilities, have separate clinical management and scheduling systems, and communicate sporadically, if at all.
	<i>Basic collaboration at a distance.</i> Primary care and mental health specialty care providers have separate systems at separate sites, but engage in periodic communication about shared patients. Communication occurs typically by telephone, secure electronic mail/messaging, or letter.
	<i>Basic collaboration on-site.</i> Mental health specialty care and primary care providers have separate clinical management systems but share the same facility. Proximity allows for more communication, but communication remains somewhat limited.
	<i>Close collaboration in a partly integrated system.</i> Mental health specialty care and primary care providers share the same facility and have some systems in common, such as scheduling appointments or medical records. Physical proximity allows for regular face-to-face communication among mental health and physical health providers. There is a sense of being part of a larger team in which providers appreciate the role of both mental health and primary health care professionals in treating the shared patient.
	<i>Close collaboration in a fully integrated system.</i> The mental health specialty care providers and primary care providers are part of the same team. The patient experiences treatment for mental health and behavioral health concerns as an integral part of his or her regular primary care.
	<i>Other/Comments.</i> Please feel free to provide additional comment on the current collaboration/communication between mental health providers and primary care providers.

13. Please check the statement below that describes the degree of communication/collaboration **that you would like your Student Health Center to have in the future.**

	<i>Minimal collaboration.</i> Mental health specialty care providers and primary care providers work in separate facilities, have separate clinical management and scheduling systems, and communicate sporadically, if at all.
	<i>Basic collaboration at a distance.</i> Primary care and mental health specialty care providers have separate systems at separate sites, but engage in periodic communication about shared patients. Communication occurs typically by telephone, secure electronic mail/messaging, or letter.
	<i>Basic collaboration on-site.</i> Mental health specialty care and primary care providers have separate clinical management systems but share the same facility. Proximity allows for more communication, but communication remains somewhat limited.
	<i>Close collaboration in a partly integrated system.</i> Mental health specialty care and primary care providers share the same facility and have some systems in common, such as scheduling appointments or medical records. Physical proximity allows for regular face-to-face communication among mental health and physical health providers. There is a sense of being part of a larger team in which providers appreciate the role of both mental health and primary health care professionals in treating the shared patient.
	<i>Close collaboration in a fully integrated system.</i> The mental health specialty care providers and primary care providers are part of the same team. The patient experiences treatment for mental health and behavioral health concerns as an integral part of his or her regular primary care.
	<i>Other/Comments.</i> Please feel free to provide additional comment on how you would like to see collaboration/communication between mental health providers and primary care providers in your Student Health Center.

14. Please indicate the tools used to screen for depression in your clinic.

	Patient Health Questionnaire – 2 (PHQ-2)
	Patient Health Questionnaire – 9 (PHQ-9)
	Beck Depression Inventory-2
	Provider’s clinical judgment

	Other - Please explain:
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15.

If applicable, how helpful do you find the screening tool that you use in identifying potential depression?	Not at all Helpful	Somewhat Helpful	Not sure	Helpful	Extremely Helpful
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16. Please indicate how a depression screening is administered in your clinic.

	Electronically, via computer or tablet
	Paper and pencil
	Orally, via interview
	Other – Please explain:

17. Please indicate by whom the depression screening measure is administered in your clinic.

	Front Desk/Receptionist
	Stand-alone computer station or portable tablet (e.g., iPad)
	Nurse
	Physician
	Other – Please explain:

18. Approximately how long does it take to screen for depression in your clinic?

	Less than one minute
	1-3 minutes
	4-6 minutes
	7-9 minutes
	More than 9 minutes

19. What is your Student Health Center's typical practice if a student screens positive for depression? Please check all that apply.

	There is no typical practice in this situation. It is up to the provider's clinical judgment.
	The student is assessed and treated for depression in the primary care clinic.
	The student is referred to a mental health clinic by recommending that the student make an appointment with them.
	The student is referred to a mental health clinic. The physician or another member of the clinical staff makes a phone call to the mental health clinic to facilitate scheduling an appointment.
	The student is referred to a mental health clinic, and the physician walks the student to the mental health clinic so the student may make an appointment there.
	The student is given information about treatment options provided in the primary care clinic and in the mental health clinic.
	The student is given information about behavioral interventions, such as sleep hygiene, nutrition and exercise.
	Other – Please explain:

20. For which of the following conditions is there a protocol and/or standardized procedure to universally screen? That is, regardless of referral question, patients are screened for the following during their visit:

Universally screen	Condition
	Anxiety
	*Depression
	Substance Abuse: alcohol, tobacco or other drugs
	Suicidal Ideation
	Domestic or relationship violence
	STDs and/or STIs
	Immunizations
	Sleep problems
	Stress
	Other - Please explain:

*\*Those who check “Depression” will continue to complete Section B on pg. 11 (next page) and skip Section C. Those that do not check “Depression” will skip Section B on pg. 11 (next page) and continue to complete Section C on pg. 14.*

**SECTION B: Student Health Centers Identified to Universally Screen for Depression**

1. Please read each statement and mark the box that most accurately represents your Student Health Center. In your Student Health Center’s adoption of using a measure to universally screen for depression in the primary care setting, to what degree would you consider each of the following a challenge or reason for not screening?

We had never considered implementing a universal screening measure for depression before, so it was a brand new concept.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of financial resources				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of providers available to assist with or administer the screening				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of support staff available to help with intake and process				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of mental health specialists available for referral in the case of positive screening and/or diagnosis				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of clinic space				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Screening for depression before each appointment takes more time than was available.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
The technology associated with screening for depression was difficult for staff to adapt.				

1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
The change involved with implementing a new procedure (screening) was faced with resistance from providers and staff. Changing clinic processes takes time to adapt (e.g., determining how and when to administer an additional screening measure in the intake process).				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Providers were uncomfortable regarding questions about depression or mental health in general.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Providers believe that screening for depression is not part of their job duties in the primary care setting.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Concerns about “false positives.” A universal screening measure for depression may identify individuals not actually suffering from depression as depressed, and that risk is not worth the screening.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Concern about how to accommodate more mental health referrals, as there is already a waiting list for mental health services so additional referrals are problematic.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Concerns about liability. Identifying depression without the ability to provide a comprehensive treatment plan may put providers at legal risk.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Other barriers encountered in this process or reasons for not screening – Please explain.				



1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier

2. For how long has your Student Health Center recommended screening all patients for depression?

	Less than one year
	One year
	Two years
	Three years or more

3. What *helpful practices* have you learned during the process of implementing a universal depression screening in your Student Health Center? That is, what practices or procedures worked well in implementation? What advice may be beneficial to share with other Student Health Centers considering implementing universal depression screening? Additionally, what did you try during the process that *did not* work well?\*

\*Skip Section C (next page). Go directly to Section D on pg. 18

**SECTION C: Student Health Centers Identified to *not* Universally Screen for Depression**

1. If your Student Health Center previously universally screened for depression and no longer does so, please indicate the reasons that you stopped the practice. Or if your Student Health Center has never universally screened for depression, please write “No.”

--

2. Given that your Student Health Center does not currently universally screen for depression, what patient circumstances typically trigger a depression screening? Please check all that apply.

<input type="checkbox"/>	Disclosure of stress
<input type="checkbox"/>	Appetite disruption
<input type="checkbox"/>	Sleep problems
<input type="checkbox"/>	Unkempt appearance
<input type="checkbox"/>	Gastrointestinal problems
<input type="checkbox"/>	Headaches
<input type="checkbox"/>	Pain complaints
<input type="checkbox"/>	Disclosure of decreased energy
<input type="checkbox"/>	Other – Please Explain:

3. To what degree would you consider each of the following a barrier or reason for not implementing a protocol to universally screen for depression in the primary care setting?

We have never considered implementing a universal screening measure for depression before, so it is a brand new concept for the clinic.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of financial resources				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of providers available to assist with or administer the screening				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of support staff available to help with intake and process				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of mental health specialists available for referral in the case of positive screening and/or diagnosis				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Lack of clinic space				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Screening for depression before each appointment takes more time than available.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
The technology associated with screening for depression is difficult for staff to adapt.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
The change involved with implementing a new system or protocol is faced with				

resistance from providers and staff (e.g., determining how and when to administer an additional screening measure in the intake process).				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Discomfort from providers relating to asking questions about depression or mental health in general				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Providers believe that screening for depression is not part of their job duties in the primary care setting.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Concerns about “false positives.” A universal screening measure for depression may identify individuals not actually suffering from depression as depressed, and that risk is not worth the screening.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Concerns about how to accommodate more mental health referrals, as there is already a waiting list for mental health services.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Concerns about liability. Identifying depression without the ability to provide a comprehensive treatment plan may put providers at legal risk.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier
Other barriers encountered in this process or reasons for not screening – Please explain.				
1 Substantial Barrier	2 Moderate Barrier	3 Somewhat of a Barrier	4 Slight Barrier	5 Not Considered a Barrier

4. What do you see as the biggest challenges or reasons that your Student Health Center has not adopted a universal depression screening measure?

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5. To what degree do you agree or disagree with the following statements:

I <i>do not</i> believe that our Student Health Center should consider adopting a plan to implement universal depression screening in the near future.				
1 Strongly Agree	2 Agree	3 Unsure	4 Disagree	5 Strongly Disagree
Our Student Health Center will consider implementing a measure to universally screen for depression in the primary care setting in the near future.				
1 Strongly Agree	2 Agree	3 Unsure	4 Disagree	5 Strongly Disagree
Our Student Health Center has a plan to implement universal screening for depression in the near future.				
1 Strongly Agree	2 Agree	3 Unsure	4 Disagree	5 Strongly Disagree

**SECTION D: Final Question for all Participants**

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1. Please list any final comments or thoughts on universal depression screening in your Student Health Center primary care clinic, integrated care, or anything else that you would like to share. For instance, are there any alternatives to universal screening for depression (not the PHQ) that you have used or considered using at your clinic?

*Thank you for your participation in this survey! Your time and help are invaluable.*