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ABSTRACT

Objective: The purpose of this study was to examine the routine screening of female students in college health centers for six priority health-related behaviors and experiences (tobacco use, alcohol use, eating disorders [EDs], obesity, anxiety and depression, intimate partner violence/sexual violence [IPV/SV]), and to identify variations in practice.

Participants: A nationally representative sample of 1,221 healthcare providers (HCPs), including nurse practitioners, physicians, and physician assistants, from 471 U.S. college health centers.

Methods: HCPs completed surveys (on-line or paper) and reported on routine screening of female college students.

Results: HCPs reported consistently high rates (75% - 85%) of screening for tobacco use, alcohol use, and anxiety/depression. Rates of screening for IPV/SV, obesity and EDs were much lower. Nurse practitioners reported the highest IPV/SV screening rates.

Conclusions: College health centers present unique opportunities for screening, case-finding and intervening to reduce long-term sequelae. Providers are well-positioned to lead initiatives to improve screening practices.

KEYWORDS: college health, health screening, female college students

BACKGROUND

Transition to College Living

The transition to college is a significant life event for many emerging adults. In 2019, 30% of 18-24-year-olds were enrolled in a 4-year college or university,[1] and three million lived in on-campus housing.[2] For those students, college campuses are communities and environments with their own unique set of norms.[3] College living provides students with the opportunity to establish independence and to explore their identities, critical aspects of emerging adulthood.[4,5] Many students are, for the first time, living independently without parental supervision, managing their own time and making their own decisions regarding self-care and other lifestyle choices, including engagement in health-promoting and health-risk behaviors.[6]

College Health Challenges

Numerous recent descriptive studies have documented the health and health risk behaviors of college students,[7–17] including the biannual National College Health Survey.[18] College students have been found to engage in higher rates of risk behaviors compared to non-college peers due, in part, to the social contexts and norms in college environments and lack of supervision.[4-5,19] Notable risks among college students include tobacco, alcohol and other substance use, anxiety and depression, eating disorders (EDs), engagement in sexual risk behaviors and experiences with intimate partner violence and sexual violence (IPV/SV).

Female-identifying college students comprise 58% of U.S. undergraduate enrollments[1] and experience even greater rates of particular health issues/conditions (e.g., IPV/SV, EDs) compared to other students.[2,20] An estimated 41% of women experience sexual violence, physical

violence, and/or stalking by an intimate partner during their lifetime.[8,21,22] Female-identifying college students experience some of the highest rates of IPV/SV of any group.[8,23] In one study, 52% (n = 457) of female undergraduate students reported having experienced at least one episode of violence in their lifetime; 12% reported experiencing IPV/SV during the preceding semester.[24] In addition, female-identifying college students are twice as likely to experience EDs behaviors than male-identifying peers.[25,26] Cisgender female college students also report significantly greater anxiety scores on the GAD-7 than cis-male college students ($p < .01$).[27]

Screening in College Health

Primary prevention efforts seek to prevent health issues or problems from occurring by implementing health promotion and disease prevention strategies (e.g., tobacco prevention campaigns, healthy eating). In contrast, secondary prevention seeks to reduce harmful consequences or prevent sequelae by identifying health issues early and intervening. Secondary prevention involves screening (of asymptomatic individuals) and case-finding (with individuals identified to be at higher risk for a given health condition), to reduce the long-term consequences associated with the health issue.[28,29] A number of organizations issue practice and screening recommendations that are relevant to college student health, including the American Academy of Pediatrics (AAP), the American College of Obstetrics and Gynecology (ACOG), the American College Health Association (ACHA), the American College of Preventive Medicine,[29] and the U.S. Preventive Services Task Force (USPSTF). The USPSTF issues practice and screening recommendations for a wide variety of conditions and populations.[30–33]

Screening for behavioral health issues. The USPSTF recommends that primary care settings, which include college health clinics, screen for behavioral health issues that are common among young adults. These include alcohol misuse,[30] tobacco use,[31] depression,[32] and obesity.[33,34] Alcohol use has been widely documented as a serious problem on college campuses for decades.[13,15] Several initiatives were undertaken to stem the problem, including screening for alcohol use in college health centers. This practice has become fairly routine and has demonstrated effectiveness in reducing high-risk drinking behavior when paired with brief interventions.[35] Despite the overall decline in cigarette smoking on college campuses over the past two decades,[36] nicotine use remains a high priority for screening due to the increased use of aerosolized nicotine, or vaping, products.[18] The adverse impact of vaping on cardiovascular health is significant, supporting ongoing screening efforts.[37]

Mental health on college campuses has received increasing attention in recent years,[38] as studies have documented high rates of anxiety and depression among college students, particularly since the onset of the COVID-19 pandemic.[14] Anxiety is a significant mental health issue for college students,[39] and correlates with the development of chronic disease and lower performance across domains: academic achievement, persistence, satisfaction, self-efficacy.[27] The USPSTF (2016) recommends universal screening for depression "as long as adequate systems are in place" (p. 382).[32] Although there are few studies on depression screening in college health centers,[40] preliminary evidence indicates that depression screening is useful and achievable.[41,42] English and Campbell found that 64% of college health center respondents already screened for depression at their clinics.[10] Frick et al. found that a universal suicide screening program at two student health clinics led to significant increases in identification of at-risk students, subsequent

mental health referrals, and staff comfort related to suicide screening.[43] Students seeking help for mental health concerns may feel more comfortable seeing a medical provider rather than a mental health provider or behavioral health specialist.[44] Thus, student health centers provide an ideal setting to implement universal behavioral health screening.[40]

Research on screening for obesity and EDs in college health centers is also limited. Studies in general populations indicate that obesity screening and documentation rates increase as obesity severity and obesity-related comorbidities increase and that documentation is associated with increased behavioral treatment.[45] The USPSTF recommends screening for obesity in both children/adolescents and adults.[46] In addition, the AAP recommends that adolescents be screened for EDs and extreme weight-control behaviors at annual visits.[33,34]

Screening for intimate partner violence and sexual violence (IPV/SV). The USPSTF and other national organizations (e.g., ACOG) recommend screening women for IPV/SV to promote early identification and counseling.[29,30,47] The USPSTF recommends that HCPs screen all women of childbearing age for IPV,[11,30] regardless of whether signs or symptoms of abuse are evident. Screening may identify women who experience violence and lead to timely interventions and referrals to reduce violence and improve outcomes.[48,49]

Despite these recommendations and the fact that college women exhibit some of the highest rates for IPV/SV, screening rates in college health centers are among the lowest. [16,17,50] The few studies of IPV/SV screening in college health centers that exist found that only 10 - 15% of

female college students were being screened for IPV/SV.[17,24,51] This was deemed a "missed opportunity"[51] (p. 221) for early detection and referral in this at-risk population.[16,17,51]

Purpose

In general, there is limited research on screening in college health centers/settings.[40] The purpose of this study was to examine college HCPs' routine screening of female college students for IPV/SV and five other high priority conditions (alcohol use, tobacco use, anxiety/depression, EDs and obesity) and describe variations in practice.

METHODS

Design

The *National College Healthcare Provider Survey* was part of a national study of college HCPs funded by the Agency for Healthcare Research and Quality (AHRQ; R01027154). The survey was conducted in 2022 with nurse practitioners (NPs), physicians (MD/DOs) and physician assistants (PAs) from accredited four-year colleges/universities in the U.S. The study examined college HCPs' routine screening of female students for tobacco use, alcohol use, anxiety and depression, EDs, obesity, and IPV/SV, and was framed using an organizational expansion of the Theory of Planned Behavior (TPB),[52,53] and the Consolidated Framework for Implementation Research (CFIR).[54–58]

Site and Sample

There was no existing sampling frame of college HCPs; one was created using a multi-step process. First, the list of accredited colleges and universities from the U.S. Department of

Education database[1] was reviewed to identify accredited, 4-year general colleges/universities with 2,500 or more undergraduate students (N = 643). College websites were then reviewed. Those that had accessible college health center websites (N = 530) and identified HCPs by name (N = 471) were included in the college/university sampling frame. Finally, the names of NPs, MD/DOs and PAs identified on health center websites were included in the HCP sampling frame.

College-level inclusion criteria were: 4-year accredited general college/university; located in the U.S.; enrollment of 2,500 or more undergraduate students; on-campus college health center; and accessible college health center website that identified HCPs by name. Military academies and specialty colleges (e.g., art, music), exclusively online colleges and 2-year community colleges were excluded. Provider-level inclusion criteria were: NP, MD/DO or PA employed in college health center; 18 years of age or older; and able to read, write and understand English. A total of 3,119 college HCPs from 471 colleges/universities were included in the original sampling frame and invited to participate. Of these, 125 were no longer employed there or unreachable; the final sampling frame included 2,994 college HCPs from 471 colleges/universities.

Procedures

Participants were recruited via the U.S. mail using strategies from Dillman.[59] Steps included: a) college health center directors were notified of the upcoming study; b) HCPs were sent pre-survey announcements; c) 1 – 2 weeks later, HCPs were sent packets with a contact letter, informed consent form, paper survey and postage-paid return envelope; d) reminder postcards were sent 2 weeks later; e) duplicate survey packets were sent 4 weeks after reminder postcards;

and f) final reminder postcards were sent 2 weeks later. All of the HCPs in the sampling pool received paper surveys and instructions for participating. Participants had the option to return surveys via the mail or complete surveys online; all were offered $20 Amazon.com gift card incentives. Procedures for the protection of human subjects were reviewed and approved by the Institutional Review Board of Binghamton University.

Measures

Paper surveys were visually identical to online surveys and included the same instructions, prompts, questions and response options.

Demographics. HCP demographics that were assessed included: age, gender, race, Hispanic/Latinx ethnicity, HCP role (MD/DO, NP, PA), and whether the HCP provided direct care to students (yes, no). College/university characteristics included: college type (public/state, private religious, private secular), undergraduate enrollment (< 2,500, 2,500 – 4,999, 5,000 – 9999, ≥ 10,000), HBCU/MSI, region, state, and urbanicity (rural, suburban, urban).

Health screening Behaviors. College HCPs who indicated that they provided direct care to students were asked, "Of the female college students who you saw at the college health center during the spring 2022 semester, approximately what percentage (%) did you screen for or ask about …. tobacco use, alcohol use, EDs, obesity, anxiety or depression, and IPV/SV?" Eleven response options were provided, ranging from 0 to 100% in 10% increments (e.g., 0%, 10%, 20%, etc.).

Analysis

Online data were downloaded into SPSS (IBM version 28). Paper survey data were double-entered and verified prior to merging with the online data. All variables were examined for non-normal distributions, outliers and missing data. Bivariate correlations were analyzed using Pearson's (*r*) and Spearman's (*rho*). Because the screening rates were skewed, the Kruskal-Wallis (KW) test was used to compare the screening rates by college HCP role and by the screening type. For the significant KW tests, post-hoc analyses were performing using the Dunn test to determine which levels of the variable differed from the other levels. Significance (*p*) was preset to 0.05 (two-tailed) for all analyses. Listwise deletion was used in the event of missing data; cases were deleted if they had missing values or responded "don't know" for any of the variables in a given analysis.

RESULTS

Participation & Demographics

A total of 1,221 college HCPs from 49 states and the District of Columbia returned surveys (overall response rate = 40.78%). Two-thirds of surveys were completed online. Of the returned surveys, 62 had extensive amounts of missing data or were duplicates and were deleted. Cases in which the respondent identified as "other" type of HCP were also excluded. Data from 1,159 participants were analyzed (38.71% of original sampling frame). As is shown in Table 1, most respondents were Caucasian and identified as female; more than half were nurse practitioners. Nearly 3/4 were employed at state colleges/universities; 2/3 were from universities with more than 10,000 undergraduate students.

Preliminary Analyses

Participants who returned paper surveys were more likely to be older (X^2 = 58.48, p < .001) and physicians (X^2 = 13.09, p = .001). No differences were noted by region, college type or HCP gender. No statistically significant differences in screening rates for tobacco and alcohol use, mental health, obesity and IPV/SV were noted between online and paper survey participants. HCPs who completed paper surveys did report greater rates of screening for EDs (t = 2.73, p = .006) compared to online participants.

Main Analyses

As is shown in Table 2, college HCPs reported the highest mean rates of screening (75% - 84%) for tobacco use, alcohol use, and anxiety and depression. In contrast, college HCPs reported lower mean screening rates for obesity (59%), IPV/SV (46%), and EDs (38%). However, screening rate data were skewed and mean scores were likely affected by these distributions. Thus, median screening rates were examined. The median screening rates were 90 and 100% for alcohol and tobacco use, 90% for anxiety/depression, 70% for obesity, 40% for IPV/SV, and 30% for EDs. There was tremendous variation; individual HCPs reported rates that ranged from 0% to 100% for all six types of routine screenings.

Screening by HCP type. Screening rates were uniformly high for tobacco and alcohol use as were screening rates for mental health (anxiety and depression). Although NPs reported screening rates for tobacco and alcohol use that were slightly higher than those for physicians and PAs, these differences were not statistically significant. However, NPs did report significantly greater screening rates for IPV/SV (p = <.001) (Table 2; Dunn Test conducted for post-hoc analysis).

DISCUSSION

The current survey assessed provider practices related to the routine screening of college women for tobacco use, alcohol use, anxiety/depression, EDs, obesity and IPV/SV. Routine screening in college health centers is a unique opportunity to case-find, refer to services, promote access to care, and reduce sequelae among women at high risk for these conditions. The study found high screening rates for tobacco, alcohol and anxiety/depression, which was not surprising given that these health issues have received widespread attention during the past decade. Much lower rates of routine screening were found for IPV/SV, obesity and EDs. College HCPs reported routinely screening fewer than ½ of their female-identifying students for EDs and IPV/SV. Given that these are serious problems experienced by college women, the low rates of screening seem to represent serious gaps and missed opportunities for case-finding and connection to care.

Further, the mean screening rates reported herein were averages across all providers. Individual HCPs' screening rates varied widely; some providers reported screening none of their female students for each of the six conditions/behaviors assessed, while others reported screening all. These inter-provider variations in practice may indicate that screening practices have not been normalized and standardized across health centers and professions.

Implications for Practice

This study found room for improvement in screening for high-risk conditions in college health centers, particularly EDs and IPV/SV. Unlike guidelines for mental health, alcohol and tobacco use screening, recommendations regarding universal screening for EDs are somewhat mixed,[60] in part because there is limited evidence of potential benefits versus harm in screening individuals

with no signs or symptoms of EDs. Population-level surveys have found positive EDs screens among 13.5% of female college students;[61] when students self-select to be screened, rates of students who have clinical/subclinical EDs or are at risk for developing EDs increase to almost 60%.[25] These data highlight the elevated rates of EDs in female college students and speak to a need for increased screening as well as referral to services.[61] A number of brief screening tools exist.[25]

IPV/SV screening has also not become routine practice in many settings despite USPSTF (2018) guidelines. Screening for IPV/SV should incorporate trauma-informed approaches which facilitate uptake of resources and improve outcomes.[49,62,63] Although the IPV/SV screening rates reported in the current study were relatively low (mean = 46%), this is noticeably higher than screening rates of 10-15% reported in regional studies during the past 5 to 10 years.[17,51,64] Perhaps national recommendations to screen are slowly diffusing into practice. However, the current study found clear variations in IPV/SV screening practice across HCP roles, with NPs reporting higher rates of screening than physicians and PAs. Differences in role preparation may, at least in part, account for these differences. If so, then NPs may be well positioned to lead initiatives to promote the uptake of IPV/SV screening into college health center practice.

Whether to implement "routine" screening versus screening that is prompted by a specific reason for visit is another important consideration. There is currently debate whether it is best to routinely ask all women about IPV/SV or to use a case-finding approach based on known risk factors and clinical indications.[49] Wathen and Mantler advocate for case-finding, and emphasize the importance of using a trauma- and violence-informed approach in order to identify a history

of IPV/SV and offer support and services without causing further harm.[63] Others report that women who are actively screened and directly asked about past and recent experiences with violence are more likely to disclose to HCPs than those who are not asked.[9,65–68] This may be particularly true in college health as some young people in abusive relationships may not realize that what they are experiencing is unhealthy. Those who were abused as children may have difficulty recognizing IPV/SV as reportable.[7,65,69] Providers should utilize trauma-informed approaches to facilitate patients' disclosure of IPV/SV, uptake of resources, and improved outcomes.[63] In addition, a trauma-informed, conversational approach to asking about IPV/SV may be preferable to a structured questionnaire.[63]

Implications for Research

The primary focus of the current study was on screening female college students for IPV/SV and other priority behavioral health-related conditions. However, these conditions are also experienced by male, transgender and non-binary students.[65] Future studies should examine whether all students are being screened.

There are descriptive studies documenting the health and health risk behaviors of college students,[7,9–15,51] including the National College Health Survey.[18] While this research is vital to document trends in students' health behaviors, the findings do not necessarily inform practice or how to intervene. HCPs' experiences must be understood and factors at the provider-, health center- and macro-system levels that facilitate or impede screening practice must be identified. Future studies should undertake prospective, mixed methods approaches to understand provider

and administrator perspectives in order to facilitate the uptake and/or adaptation of screening recommendations in college health centers.

Limitations

The *National College Healthcare Provider Survey* had many strengths, including a large, nationally representative sample and inclusion of three types of HCPs. Nonetheless, the study findings should be viewed in light of several limitations. First, this cross-sectional survey provided a snapshot of practice at one point in time. Second, surveys relied upon providers' self-reports; it is possible that providers might have over- or under-reported their screening practices. Third, the sampling frame for individual college HCPs was developed using the information available on college health centers' websites; it is possible that the information available may not have been accurate and up-to-date. Finally, the study was limited to general colleges and universities; it is unknown how screening practices may differ at specialty colleges, military academies, and community colleges.

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