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Screening and Counseling for Tobacco Use in Student Health Clinics: Reports of Health Care Providers

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Abstract

Purpose—Assess tobacco screening and counseling in student health clinics, including facilitators, barriers, and associations with campus and state-level variables.

Design—Mixed-methods study with an online survey and qualitative interviews.

Setting—Student health clinics on college campuses.

Subjects—71 clinic directors or designees from 10 southeastern states (quantitative survey) and 8 directors or designees from 4 southeastern states (qualitative interviews).

Measures—Quantitative measures included demographics, screening and counseling practices, clinic-level supports for such practices, perceptions of tobacco on campus, institution size, public/private status, state tobacco farming revenue and state tobacco control funding. Qualitative measures included barriers and facilitators of tobacco screening and counseling practices.

Analysis—Logistic and linear regression models assessed correlates of screening and counseling. Qualitative data were analyzed using multi-stage interpretive thematic analysis.

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Results—55% of online survey respondents reported their clinics screen for tobacco at every visit, while 80% reported their clinics offer counseling and pharmacotherapy. Barriers included lack of: time with patients, relevance to chief complaint, student self-identification as a tobacco user, access to pharmacotherapy, and interest in quitting among smokers. In multivariable models, more efforts to reduce tobacco use, student enrollment, and state-level cash receipts for tobacco were positively associated with clinic-level supports.

Conclusion—This study highlights missed opportunities for screening. While reports of counseling were higher, providers identified many barriers.

Keywords

tobacco cessation screening; tobacco cessation counseling; student health; college tobacco

Indexing Keywords

Manuscript format: research; Research purpose: descriptive; Study design: mixed-method; Outcome measure: behavioral; Setting: clinical/health care; Health focus: smoking control; Strategy: policy change; Target population age: college students and adults; Target population circumstances (specify all that apply): education

Introduction

Tobacco use remains the largest cause of preventable disease in the US [1]. Most smokers begin in their youth or young adulthood. Among adult daily smokers, 88% began by 18 years of age and 99% by 26 years of age.[1] Additionally, there has been an increase in smoking initiation during the college years. Early reports suggested about 11% of college students initiated during college; [2–4] however, more recent studies suggest that between 18–22% of non-smoking college students began smoking after matriculation.[5,6] For many, young adulthood, including college, is a critical transitional period involving increases in smoking[7] or late-onset initiation.[8] In fact, among the nearly 18 million college students in the US in 2011, approximately 26% smoked cigarettes, 24% smoked small cigars, and 28% smoked hookahs in the past year.[9]

Many students who smoke want to quit. In a study of 1,696 students from a 4-year college and 1,004 students aged 18–25 from a 2-year college, over half (59%) reported making a quit attempt in the past year [1]. In another nationally representative study of 2,857 college students showed that of the 82% of college smokers who made a quit attempt, 75% remained smokers.[3] These data highlight the difficultly that students have in quitting smoking, which may be explained by the tendency of young adults to attempt to quit without assistance.[10] The importance of getting tobacco users to quit early is underscored by research indicating that smokers who quit by age 30 can avoid much of the long-term harm related to cigarette use.[11]

The United Stated Public Health Service (PHS) clinical practice guidelines, *Treating Tobacco Use and Dependence* (PHS Guidelines), provide clinicians and healthcare systems with evidence-based practices for tobacco control and treatment. The guidelines recommend

the following: (1) identify and document tobacco-use status of all patients seen in healthcare settings at every clinic visit; (2) encourage all patients willing to make an attempt to quit to utilize the counseling and medication treatments shown to be effective in the guidelines; (3) provide all patients using tobacco with evidence-based brief clinical interventions, at minimum; and (4) use motivational treatments outlined in the PHS Guidelines with tobacco users unwilling to make a quit attempt.[12] The PHS Guidelines are based on solid research indicating that screening and brief intervention for smoking cessation are effective. Evidence suggests that even interventions as brief as three minutes can significantly increase quit rates.[12,13]

Student health clinics (SHCs) offer a variety of services for college and university students living on and off campus. Campus clinics see a large number of students, and provide students with the majority of their healthcare needs.[14] These healthcare services include prevention and health promotion efforts, which place college health centers in a unique position to effectively target tobacco use.[15] SHCs can also reach a large number of tobacco users and promote cessation through a variety of methods, including distribution of self-help materials and brief interventions by physicians and other providers.[16] However, student health centers are different from other primary care practices that treat adults in that many of the students they treat often do not self-identify as smokers, despite their smoking behaviors.[17] This makes intervention increasingly difficult. Additionally, these young adults often deny the need to quit smoking, again making intervention challenging.

Research shows that there has not been widespread adoption and implementation of the PHS Guidelines by SHCs.[18] Only 20% of SHC physicians reported asking all or nearly all patients about tobacco use, and 25% reported asking fewer than half.[15] In a previous study among students in NC, 62% reported being asked about tobacco use at their most recent SHC visit, while only 50% of screened tobacco users reported being advised to quit or reduce use.[19] These results emphasize missed opportunities for increasing cessation and highlight the need to encourage providers to screen *every* patient at *every* visit.

Little is known about the individual or institutional characteristics that are predictors of screening and brief intervention (SBI) for tobacco use. One study suggests that schools whose health administrators perceived smoking to be a problem were the most likely to offer smoking cessation programs.[20] If SHCs place a high priority on smoking cessation and make efforts to reduce smoking through organized efforts, screening and brief intervention may be increased. In addition to individual-level factors, college-level factors may also play a role in predicting screening and brief intervention for smoking cessation. Wechsler and colleagues (2001) found that private, non-religious colleges were more likely than public schools to provide cessation services. Additionally, they found that small schools (≤5,000 students) were less likely to provide cessation services than large schools (> 10,000 students).[20] Finally, state factors may play a role as well. Research has consistently shown that higher state expenditures on tobacco control programs are associated with lower levels of positive attitudes towards tobacco and self-reported smoking among adults[21]; adolescents[22] and college students[23] and lower levels of aggregate per capita cigarette sales.[24] However, tobacco is still an important revenue-generator in the 16 states in the U.S. where it is still grown.[25] The largest tobacco-producing states, Kentucky and North

Carolina, account for 71% of the tobacco grown in the U.S.[25] To our knowledge, no studies have investigated the relationship between state expenditures on tobacco control, state-tobacco production and screening and brief intervention for tobacco use. Understanding the factors that influence the provision of cessation services will greatly inform interventions developed to augment evidence-based cessation practices.

In this study, we characterize tobacco SBI by health care providers at SHCs and identify individual-, college-, and state-level factors associated with tobacco cessation services. Secondly, we identify specific barriers and facilitators to screening and brief intervention in student health clinics on college campuses. Information about the barriers to providing tobacco screening and brief intervention services are not well understood. By investigating the barriers and the facilitators we will be better positions to develop appropriate interventions to increase implementation of the PHS Guidelines.

Methods

A mixed methods study was used to measure screening and brief intervention practices by student health care providers through a web-based survey and to assess facilitators and barriers of screening and brief intervention through subsequent qualitative interviews.

Quantitative Study

A questionnaire was developed to evaluate current tobacco control policies and practices on college campuses (*College Administrators' Views on Tobacco*). The questionnaire included a separate module focused on screening and brief intervention for tobacco use to be completed by a representative of student health.

Participants—Schools in 10 southeastern US states were selected for inclusion in the study. We chose to focus on the southeast because of the historically high smoking rates in these states.[26] Eligible schools offered a four-year liberal arts curriculum and had a minimum enrollment of 2,500 students based on 2007 enrollment data (generated from National Center of Health Statistics, collegenavigator.gov). Based on these criteria, 152 schools were identified as being eligible for the survey (24 in NC, 15 in SC, 16 in VA, 13 in TN, 13 in AL, 26 in FL, 22 in GA, 7n in KY, 8 in MS, and 8 in WV). We identified student health clinic directors through searches of each institution's website. We sent an email to the student health clinic director at each school to invite her or him to participate in the study by email. Either the director, or a designee within the department and chosen by the director, could complete the survey. Seventy-six student health representatives completed the survey, for a response rate of 50%. Of the 76 who completed the survey, 93% (n=71) completed the questions regarding screening for tobacco use and brief intervention for tobacco cessation. These 71 respondents formed the basis of the current report. We compared responders and non-responders on state, public vs. private institution and enrollment size and found no differences.

Procedure—In spring 2008, participants were contacted through an initial hard copy letter first describing the study and indicating they would receive an e-mail invitation to complete the survey within a few weeks. Participants then received an e-mail inviting them to

participate in the study, along with a link to the survey embedded in the e-mail. Following methods recommended by Dillman,[27] up to five e-mail reminders were sent to all non-responders within two and a half weeks after the initial survey invitation. Additionally, up to three attempts were made to contact non-respondents by telephone after the five reminder e-mails were sent. The Institutional Review Board at Wake Forest School of Medicine approved the study protocol.

Measures

Demographic Variables: Demographics measures included respondent age, gender, education (coded as master's degree or higher versus less than a master's degree) and position in health center (coded as director or staff).

Smoking Status: Participants were asked whether they had ever smoked at least 100 cigarettes in their lifetime and if they now smoked every day, some days, or not at all. Current smokers were defined as those who responded yes to having smoked 100 cigarettes in their lifetime and now smoke some of every day. Former smokers were those we reported smoking 100 cigarettes in their lifetime but do not currently smoke at all and never smokers were those who had never smoked 100 cigarettes.

Perceptions of Tobacco on Campus: We measured participants' estimates of student smoking rates with one item: *What percentage of students at this school do you think smoke cigarettes?* Response options included 0, 1–10, 11–20…91–100. This was coded as an ordinal variable using the midpoint of each range (e.g., 0, 5, 15). We assessed organized efforts on campus to address tobacco and exposure to secondhand smoke with the following item: *In the past year, have there been any organized efforts on your campus to reduce tobacco use and exposure to secondhand smoke?* (Coded as yes/no). We also assessed perceptions of the priority of the problem with two items: *How high of a priority do you think reducing tobacco use on your campus should be? How high of a priority do you think reducing exposure to secondhand smoke on your campus should be?* Response options included *very high priority, moderately high priority, moderately low priority, and very low priority.* These two items were combined and coded as both very high priority vs. other. We also assessed whether campuses had a complete ban on tobacco (coded as yes vs. don't know or no).

College-Level Variables: In order to assess environmental variables which may influence screening and brief intervention, we included two college-level factors. These factors include whether the school was a private or public institution and enrollment size (measured as a continuous variable).

State-Level Variables: In addition to state in which the college was located, we included variables measuring state-level tobacco farming revenue and state tobacco control funding. Importance of tobacco revenue in the state was measured by cash receipts from tobacco farming using data from the United States Department of Agriculture, Economic Research Service 2008 Farm Income (see http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx#27415). This variable was treated as an ordinal variable and divided

into tertiles with three categories: low, medium and high. In addition, state tobacco prevention funding was measured as the percent of the CDC recommended 2007 target (measured as a continuous variable).[28]

Screening and Brief Intervention Practices: Student health respondents' current practices regarding SBI for tobacco use was assessed using seven items. For each of these items, response options included yes, no and don't know. For the analyses, don't know and no were combined and compared to yes responses. The seven items were grouped into three distinct outcomes including one grouping for screening, one for brief intervention, and one for clinic-level supports. The screening outcome included the following item: (1) Does your student health center ask all patients about their use of tobacco products at every visit? Two items were combined using an "or" statement for the brief intervention outcome: (1) Offer tobacco cessation counseling for students who wish to quit smoking?; (2) Offer pharmacotherapy (i.e. Wellbutrin, Zyban, Nicotine Patch, Nicotine Gum, etc.) to students who wish to quit? Finally, four items were used to create a scale for clinic-level supports. They included: (1) Have computerized clinic reminders to encourage providers to advise patients to quit?; (2) Offer health care provider training in effective smoking cessation interventions?; (3) Offer the cessation services free of charge or covered by student health insurance?; and (4) Offer pharmacotherapy (i.e. Wellbutrin, Zyban, Nicotine Patch, Nicotine Gum, etc.) to students free of charge or covered by student health insurance? Reponses to these items were summed to create a scale with scores ranging from 0–4. Cronbach's alpha for these scale was 0.86.

Data Analysis: Descriptive analyses were conducted for the variables described above. Logistic regression analyses were employed to identify correlates associated with screening for tobacco use and brief intervention with students at student health centers. Linear regression analysis was used to examine the association between clinic supports and covariates. Demographic variables were not included in the bivariate analysis for the clinic-supports outcome variable. Multivariable models included predictors from the bivariate analyses that were significant at $p<.05$. All analyses were performed using SAS version 9.2.

Qualitative Study

Participants: Four states were selected based on their proximity to the research team at Wake Forest School of Medicine: North Carolina, South Carolina, Virginia, and Tennessee. Based on data from the Survey of College Administrators' Views on Tobacco described in the previous section, we selected a public and a private school within each state that had either a high or low level of tobacco control policy on their campus. The SHC director from each school participated in the interview. If the director was unavailable, they could designate a person within the clinic familiar with clinic practices such as a health educator or smoking cessation coordinator.

Procedure: In-depth interviews with student health directors or their designee were conducted in person in the spring of 2009. Research team members conducted eight individual in-depth interviews. Interviewers used a semi-structured interviewer guide, which covered the interview's sequence and content. Two study team members were present during

each interview. All interviews were audio-recorded and averaged 60 minutes in length. All audio-recorded interviews were transcribed verbatim. Personal identifiers were removed from the transcripts. The Institutional Review Board at Wake Forest School of Medicine approved the study protocol.

Measures: The interview guide included probes on facilitators and barriers of screening for tobacco use and provision of cessation services (advise, referral, medication, nicotine replacement).

Data Analysis: Transcripts were analyzed using a multiple-stage interpretive thematic analysis. First, two members of the research team read the same two transcripts twice and developed preliminary codes separately. The analysis focused on the organization of the transcript data into broad conceptual categories, including barriers, and facilitators. Based on this preliminary categorization of data, more refined coding was developed. The researchers then compared coding for the rest of the transcripts and new codes were added as needed, while underused codes were discarded. When different codes were used, the researchers met to discuss the relevant section and come to a consensus. The transcripts were coded in N*Vivo.

Results

Quantitative Study

Of the 71 participants who completed the survey, 71% were female. The majority of participants were directors of student health (80%), while 20% were staff in the department of student health. The majority had a master's degree or doctoral degree (84%), 11% were four year college graduates, and the rest had an associate's degree or some college (3%). Most respondents (70%) reported having organized efforts to reduce tobacco use and exposure to secondhand smoke on their campus (see Table 1).

A little over half (55%) of the SHC directors and staff reported screening all patients about their use of tobacco products at every visit. Most providers reported offering tobacco cessation counseling to students who wish to quit (80%), and three quarters reported offering pharmacotherapy to students who wish to quit smoking (77%). Very few reported having computerized reminders to encourage providers to advise patients to quit (13%). However, more than half (54%) reported that the clinic offers health care provider training in effective smoking cessation interventions. While many reported that cessation counseling was provided free of charge or covered by student health insurance (70%), only a third (34%) reported offering pharmacotherapy that was free of charge or covered by student health insurance to students (see Table 2).

No significant predictors emerged in bivariate models for screening; therefore, multivariate modeling was not conducted for this outcome. However, in bivariate analysis for the brief intervention, enrollment size was positively associated with brief interventions (OR=3.6, CI=1.0, 12.3). In bivariate analyses for clinic-level supports, three variables were significant and included in multivariable analyses: organized efforts, undergraduate student population and cash receipts from tobacco. Schools that reported no organized efforts to reduce tobacco

use and exposure to secondhand smoke on campus had significantly lower scores on the clinic-level supports scale ($t=-3.7$, $p<.001$). Undergraduate population was positively associated with clinic-level support score, such that the larger the undergraduate student population, the more clinic-level supports reported ($t=2.3$, $p<.05$). Finally, state-level cash receipts from tobacco was positively associated with increased clinic-level supports ($t=2.8$ $p<.01$) (see Table 3). In the multivariable model for clinic supports, these three predictors remained significant (see Table 4).

Qualitative Study

The student health director or a designee was interviewed at each school. Fifty percent of the interviewees were female.

Facilitators—Participants described a variety of tools they use to implement screening and brief intervention for tobacco use, including treating smoking as a vital sign and using chart prompts and stickers to identify tobacco users. Rather than asking for a self-identification as a smoker, which students may be reluctant to indicate, participants described the benefits of using open-ended screening questions when asking about tobacco usage. Participants reported that access to free nicotine replacement therapy (NRT) was a facilitator of SBI; if they had NRT available to provide to patients, they felt better equipped to begin a dialogue about cessation. “We had free NRTs for any student who wanted to quit, and let me tell you that was a major, major motivator for them to quit because that is expensive.”

Barriers—Participants acknowledged several barriers to SBI for tobacco. Two related themes that emerged were lack of time and the lack of relevance of tobacco use to the chief complaint. One interviewee stated, “It’s just I’m so busy. They come in and they’ve got a broken finger or whatever the case is and I’ve got 20 more students out in the waiting area. I’m not going to ask them if they smoke or not.” The issue of relevance is closely related to a lack of time for screening and intervention. Providers do not seem to have enough time to delve into issues they believe are unrelated to the chief complaint. One interviewee reported adapting his intervention tactics to the level of time constraints on any given day: “Then I ask them, dependent upon how chaotic the day is, I will tell them something as simple as, well it’s my job to tell you, you should quit.”

Interviewees also reported difficulty in getting students to admit to being a smoker as a barrier to smoking cessation. “They will almost always qualify, well I’m not really a smoker. Because they only smoke a few cigarettes a day or they only smoke when they drink on the weekends. They don’t think that counts.” In addition, providers suggested that students routinely underreport the number of cigarettes consumed. “We didn’t think we were getting accurate information—they were reeking of smoke.”

Another barrier that was reported is lack of access to pharmacotherapy. Individual counseling in the exam room is free at most schools, but other cessation tools, such as pharmacotherapy, cost money. “We’re seeing more and more kids without insurance, and I would say the majority of those we see that want to quit smoking don’t have insurance.” Even students with insurance must have some money because with “the student insurance plan prescription medications are covered with a copay.” Physical access to

pharmacotherapy was also a concern. Only one interviewee reported having a pharmacy in the student health clinic. Others would require students to go off campus to fill prescriptions. “I could write them the prescription but they would have to go off campus to get it filled.”

An additional barrier was providers’ perceptions that students lack interest in quitting. “Sometimes they’ll just say, ‘well I’m not interested right now’.” Providers reported having difficulty with these patients, because they felt like they are wasting their time trying to convince these patients to quit smoking. “If you don’t want to do that then I won’t waste my time trying to convince you that you need to because studies have shown that you need to be motivated to quit in order to hear the message.” Other providers expressed frustration with the lack of utilization of smoking cessation materials available in student health. “Winners Do Quit…we have some of those and I’ll show my students, and they’re like ‘whatever’.” “It sits up there because nobody takes it.”

Discussion

This study suggests that the amount of screening and brief intervention in student health centers is higher than previously reported. In a study of a convenience sample of 125 doctors from 16 universities in Canada, Lawrance and Lawler found that only 20% of SHC physicians reported asking all or nearly all patients about tobacco use, and 25% reported asking fewer than half.[15] In the current study, over half of the student health directors or designees reported their clinics screening patients about tobacco use at every visit. Providers’ reports of screening are similar to patients’ reports. In our study of college students from 8 schools in North Carolina, we found that 62% of students reported being asked about tobacco use at their most recent SHC visit [19], similar to our finding in this study that 55% of SHC providers reported their clinics screen for tobacco use at every visit. However, the data from the current study highlight missed opportunities for screening, given that the PHS Guidelines recommend screening *every* patient at *every* visit. Interventions aimed at increasing screening for tobacco use at SHCs are needed.

Most respondents (80%) reported that their health center offered brief intervention, including counseling and pharmacotherapy, to patients wanting to quit. However, in a separate study, we found that among students who were asked about their tobacco use at their last SHC visit *and* reported using tobacco, only 50% reported being advised to reduce or quit.[19] These data highlight a discrepancy between provider and patient reports. Week to modest agreement between patients and providers has been reported for communication on smoking cessation counseling; which may be the result of cessation counseling not being the primary reason for the appointment.[29,30] Recall of cessation counseling may be overridden by the chief complaint prompting the appointment.

Our study revealed no significant predictors of screening or brief intervention in multivariable models. This study was limited in the covariates included and did not include awareness of PHS Guidelines, previous training on tobacco cessation strategies, or beliefs about the importance of addressing tobacco cessation, which other studies have shown are related to screening and brief intervention.[31,32]

In multivariable models, schools that reported organized efforts to reduce tobacco use and exposure to secondhand smoke on campus had more clinic-level supports in place to facilitate SBI. Organized efforts include task forces, student-led groups, health voluntary organizations (such as ALA), and advocacy organizations (such as GASP). The presence of these organizations on campus may result in more clinic-level supports, because of increased awareness of tobacco on campus. SHCs often play a role in many of these organized efforts, including health voluntary organizations. The student health center's involvement in organized efforts suggests that they are particularly interested in tobacco cessation and value it highly, which may explain the increased clinic-level supports at schools with organized efforts. Additionally, campuses with larger undergraduate student enrollments had more clinic-level supports in place. This could be due to an increased number of resources in larger schools. Finally, fewer cash receipts from tobacco agriculture at the state-level predicted more clinic-level supports. This suggests that the importance of tobacco, as measured by cash receipts from tobacco, is paradoxically associated with SBI facilitators in SHCs. This is an unexpected finding and suggests more research needs to be done to better understand this relationship.

The qualitative data provide information on barriers to SBI and how some SHCs are overcoming obstacles. Common barriers included lack of time during the clinical encounter and relevance of smoking to the chief complaint, getting students to admit to using tobacco, lack of access to pharmacotherapy, and students' lack of interest in quitting. The issue of time and relevance to chief complaint may be alleviated by including tobacco use a vital sign. Screening can be completed during triage and tobacco users can be flagged, either through chart prompts or EMRs. Flagging tobacco users prior to their provider visit can facilitate cessation counseling by providers.[12] Cessation counseling can be brief. Physician advice as brief as 3-minutes significantly increases abstinence rates.[12,13] Relevance to chief complaint emerged as another barrier to providing brief intervention for tobacco use. However, tobacco use impacts virtually every system in the body;[33] therefore, chief complaint can often be tied to tobacco use, even if tangentially.

Small changes to the item used for screening for tobacco use can help to alleviate the lack of self-identification that often results from asking: "Are you a smoker?" For example, several studies have recommended that screening for college students should use the question, "In the last 3 months, have you smoked cigarettes at all, even a puff?"[19,17,34] By using a screening question based on a specific behavior rather than a label, college smokers, who do not self-identify as such, may be more likely to admit smoking.

Although lack of access to pharmacotherapy was reported as a barrier, some state quitlines offer callers free nicotine replacement therapy. Additionally, organized efforts to reduce tobacco use on campus could address the issue of access to pharmacotherapy by working with SHCs to identify ways to provide students who want to quit with the necessary pharmacotherapy.

Healthcare providers also reported students' lack of interest in quitting as a barrier to SBI. However, survey data suggests that many students want to quit.[3,35] SHC are uniquely poised to help student smokers who are eager to quit but reluctant to seek help. Healthcare

providers can initiate the conversation, and suggest possible supports that students can use in their quit attempt, such as web-counseling, text-to-quit programs or pharmacotherapy. Efforts to counsel students to quit smoking must consider that half of college students deny being a smoker;[17] research into strategies to promote successful cessation among college students are warranted.

Limitations

This study has important limitations. First, only one respondent from each clinic completed the web-based survey. While items were asked about the clinic as a whole, it was likely challenging for respondents to report on the behavior of other clinicians. Future studies should survey multiple healthcare providers from the same clinic to assess variations between SBI behaviors, including differences by discipline. Additionally, having multiple respondents would increase the sample size, which is quite small in the current study. The study didn't assess familiarity with the PHS Guidelines, previous training on tobacco cessation strategies, self-efficacy for SBI or attitudes towards SBI activities in the student health setting. Learning more about how healthcare providers perceive the importance of SBI for tobacco use on college campuses, as well as how well prepared they are to engage in SBI, would facilitate future training to increase SHC providers' engaging in evidence-based tobacco cessation strategies. While we achieved a 50% response rate from the census of all four-year liberal arts universities in 10 states, these results may not be generalizable to other geographic areas of the United States. This study is also limited by self-reports of screening and brief intervention practices.

Conclusions

This study highlights missed opportunities for screening, given that just over half of respondents reported that all patients in their clinic were asked about tobacco use at every visit. Increasing training for healthcare providers to implement screening systems, as recommended by the PHS Guidelines, is important. Additionally, increasing SBI in SHC has the potential to impact a large number of tobacco users to reduce morbidity and mortality. Virtually all four-year colleges in the US, which combined enroll almost 80% of the 18 million students attending higher education, have a student health service on campus.[36] During their college years, students use on-campus services for most of their health care needs.[18] Therefore, SHCs are an ideal place to address tobacco use by college students.

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SO WHAT? Implications for Health Promotion Practitioners and Researchers

What is already known on this topic?

Tobacco use remains high among college students, but student health clinics are well positioned to provide cessation services for tobacco use. However, uptake of recommended interventions has been slow. Little is known about the factors associated with providing cessation services and barriers and facilitators to providing these services are not well understood.

What does this article add?

Among a large sample of colleges, screening for tobacco use is limited and although reports of counseling are higher, several barriers were identified. The qualitative interviews provide a better understanding of the facilitators and barriers, which can aid in the development of strategies to overcome barriers.

What are the implications for health promotion practice or research?

This study highlights missed opportunities for tobacco use screening and counseling and suggests several barriers which could be targets for intervention.

Table 1

Characteristics of the Sample (N=71)

	N (%) or Mean (SD)
Demographics	
Female Gender	49 (71%)
Age	51 (8.9)
Education	
Less than master's degree	11 (16%)
Master's degree or higher	59 (83%)
Role in Clinic	
Director	57 (80%)
Staff	14 (20%)
Smoking Status	
Current	1 (1%)
Former	20 (28%)
Never	49 (71%)
Perceptions of Smoking and Level of Problem	
Estimated student smoking rate	22.8 (11.3)
Priority of reducing tobacco use & SHS exposure	
Very high priority	42 (60%)
Moderately high, moderately low, or very low	28 (39%)
Organized efforts on campus	50 (70%)
College-Level Variables	
Type of Institution	
Public	56 (79%)
Private	15 (21%)
Enrollment Size	10,555 (8,143)
State-Level Variables	
State	
Alabama	6 (8%)
Florida	12 (17%)
Georgia	10 (14%)
Kentucky	4 (6%)
Mississippi	4 (6%)
North Carolina	13 (18%)

	N (%) or Mean (SD)
South Carolina	7 (10%)
Tennessee	5 (7%)
Virginia	8 (11%)
West Virginia	2 (3%)
Cash receipts from tobacco	
Low	24 (34%)
Medium	30 (42%)
High	17 (24%)
Percent of CDC recommendation for tobacco control spending	14.43 (11%)

Table 2

Frequency of Screening and Brief Intervention Strategies Reported by SHC Directors (N=71)

Does your student health center:	Yes	No	Don't Know
Screening for Tobacco Use			
Ask all patients about their use of tobacco products at every visit?	55%	41%	4%
Brief Intervention for Tobacco Users			
Offer tobacco cessation counseling for students who wish to quit smoking?	80%	16%	4%
Offer pharmacotherapy (i.e. Wellbutrin, Zyban, Nicotine Patch, Nicotine Gum, etc.) to students who wish to quit?	79%	16%	7%
Clinic Supports for Screening and Brief Interventions			
Have computerized clinic reminders to encourage providers to advise patients to quit?	13%	79%	9%
Offer health care provider training in effective smoking cessation interventions?	54%	41%	6%
Offer the cessation services free of charge or covered by student health insurance?	70%	27%	3%
Offer pharmacotherapy (i.e. Wellbutrin, Zyban, Nicotine Patch, Nicotine Gum, etc.) to students free of charge or covered by student health insurance?	34%	59%	7%

Table 3

Bivariate regression models for screening, brief intervention and clinic supports outcomes.

Predictors	Screening for Tobacco Use OR (95% CI)	Brief Interventions for Tobacco Users OR (95% CI)	Clinic Supports for Screening and Brief Interventions t-value (p-value)
Demographics			
Gender Male Female (reference group)	1.16 (0.4–3.4)	3.7 (0.4–31.8)	NA
Age	1.0 (0.95–1.1)	1.0 (0.97–1.1)	NA
Education Master's degree or higher Less than master's degree (reference group)	3.9 (0.95–16.4)	3.3 (0.7–16.0)	NA
Role in Clinic Director Staff (reference group)	1.1 (0.3–3.6)	1.2 (0.2–6.3)	NA
Smoking Status Current & Former Never (reference group)	0.4 (0.2–1.4)	0.8 (0.2–5.3)	NA
Perceptions of Smoking and Level of Problem			
Estimated student smoking rate	1.0 (0.95–1.0)	1.0 (0.93–1.0)	−1.05 (0.30)
Priority of reducing tobacco use & SHS exposure Very high priority Moderately high, moderately low, or very low (reference group)	1.1 (0.4–2.8)	1.2 (0.3–4.7)	−0.7 (0.48)
Organized efforts on campus Yes No (reference group)	0.9 (0.3–2.5)	3.6 (0.9–15.1)	−3.7 (0.0005) *
College-Level Variables			
Type of Institution Private Public (reference group)	1.3 (0.4–4.1)	0.9 (0.2–5.0)	1.2 (0.22)
Enrollment Size **	1.2 (0.6–2.3)	3.6 (1.0–12.3) *	2.3 (0.02) *
State-Level Variables			
Cash receipts from tobacco			

Predictors	Screening for Tobacco Use OR (95% CI)	Brief Interventions for Tobacco Users OR (95% CI)	Clinic Supports for Screening and Brief Interventions t-value (p-value)
Low (AL, FL, MS, WV)	0.9 (0.3–3.2)	***	2.8 (0.006) *
Medium (GA, SC, TN, VA)	0.8 (0.2–2.5)		
High (KY, NC) (reference group)			
Percent of CDC recommendation for tobacco control spending	1.0 (0.97–1.1)	1.0 (0.94–1.1)	−1.15 (0.25)

*
statistically significant at p-value < 0.05

**
log transformed

***
variable not tested due to cells with zero counts.

Table 4

Multivariable regression model of clinic supports scale (N=71)

Predictors	Coefficient	Standard Error	t Value	*P*-value
Organized efforts on campus to reduce tobacco use or exposure to secondhand smoke	−0.83	0.29	−2.84	<0.01
State-level cash receipts from tobacco	0.46	0.17	2.68	<0.01
Undergraduate students enrollment *	0.49	0.18	2.78	<0.01

* log transformed