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The state of sexual health services at U.S. Colleges and Universities

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Abstract

Objective—To describe the array of sexual health care services provided at US colleges and universities.

Participants—During 2014–2015, 885 colleges were surveyed about their provision of sexual health services.

Methods—55% of colleges responded. Data were weighted and stratified by minority-serving institutions (MSIs), 2-year and 4-year institutions.

Results—70.6% of colleges reported having a health center (HC), of which 73.0% offered STI diagnosis/treatment (4 years vs. 2 years; 77.9% vs. 53.1%) and contraceptive services (70.1% vs. 46.4%), all $p < .001$. HCs less frequently offered LARC (19.7%), express STI testing (24.4%) and self-collection (31.4%). Condoms were available on 66.8% of campuses. HPV vaccination was available at more 4-year colleges (73.7% vs. 48.5%, $p < .003$) and non-MSIs (74.4% vs. 58.5, $p = .019$). Regarding MSM-targeted services, 54.6% offered pharyngeal and 51.8% rectal STI testing.

Conclusions—2-year colleges may require additional support with providing sexual health care. Improvements could entail increasing express testing, extra-genital STI testing, and LARC.

Keywords

College health; health education; sexual health; STIs

Each year there are approximately 20 million new sexually transmitted infections (STIs) in the United States (US).¹ Adolescents and young adults aged 15–24 remain disproportionately affected by STIs, with an estimated 50% of new infections occurring within these populations.¹ In 2014, 15–24 year olds accounted for the majority of reported gonorrhea and chlamydia cases, 53% and 66%, respectively.² A recent study suggests that chlamydial infection among college students may be higher than the estimated prevalence of

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chlamydia in the general population (6.5% vs. 4.7%), and that chlamydia positivity may be higher on 4-year campuses and at minority serving institutes (10.0% vs. 5.4%) (MSIs: eg, Historically Black Colleges and Universities (HBCU), Tribal College or University (TCUs)).³

Of the over 30 million 18–24 year olds in the United States, approximately 43% are currently enrolled in an institution of higher education⁴ of which there are nearly 4,500 degree-granting institutions.⁵ These institutions comprise a mix of public and private institutions, technical schools, community colleges, traditional 4-year colleges, and large research universities.⁵ Young adulthood is the peak age group for many risk behaviors, including binge drinking, multiple sex partners, unprotected sex, and unintended pregnancy. College students report engaging in these behaviors, putting them at risk for STI acquisition and transmission.^{3,6}

The US Preventative Services Task Force (USPSTF) recommends sexually active women aged 24 and younger be screened annually for chlamydia and gonorrhea.⁷ Other key recommendations for sexual health⁸ among college populations include HIV testing, STI screening for men who have sex with men (MSM), and HPV vaccination.^{9,10,11} College health centers (HCs) can play a pivotal role in the delivery of recommended services as well as in normalizing sexual health as part of one's overall well-being.

The number of colleges and universities with a designated HC, or that in some way provide sexual health care services to their students, is not regularly assessed by any entity. The American College Health Association's (ACHA) annual survey collects self-reported data on the availability of screening for STIs in college HCs¹²; however, survey respondents are self-selected, with a bias towards participation from schools with strong data collection systems, thus the findings are not representative of college HCs across the United States. The last national study of STI service provision in US colleges and universities (including 2- and 4-year institutions, but not MSIs) was conducted in 2001 and found that 60% of schools had a HC,¹³ and of these, 66% provided STI services. In a national assessment of sexual health services on community college campuses, conducted in 2000, 42% of responding colleges reported having a HC, of which 15% and 25% offered HIV and STI testing on campus, respectively. Almost all schools made referrals to outside organizations, and 21% reported testing services were funded by a health department.¹⁴ These studies were conducted more than a decade ago and with college enrollment increasing 37% from 2000 to 2010,¹⁵ an update to assess if US colleges and universities have improved and maintained their capacity to offer important health services to students is warranted.

Furthermore, differences in available sexual and reproductive health care services by MSI designation have not been explored. Depending on geographic location, MSIs and 2-year colleges may serve a disproportionate number of students from low socio-economic backgrounds with students who are uninsured or underinsured or are Medicaid eligible.^{3,16} Although behavioral risk factors for HIV/STI transmission can be prevalent among college students in general,⁶ students enrolled at MSIs and 2-year schools may face additional challenges (eg, greater risk of disease transmission during new sexual encounters due to sexual partner networks, limited access to quality healthcare and prevention education).^{17,18}

Little is known about how MSIs and 2-year colleges provide sexual health care or handle referrals into the community when services are unavailable on campus. Hence, the need to explore the availability of sexual health care services on these overlooked campuses.

This study aims to describe the current state of sexual health care services provided at US colleges and universities by: (1) estimating the proportion of 2- and 4-year colleges and MSIs that have a student health or wellness center on campus, including the proportions of these schools that provide access to STI education, prevention, and treatment services, and (2) assessing the level of interest, among all the schools sampled, in partnering with community health centers (CHCs) and federally qualified health centers (FQHCs).

Methods

We conducted a nationally representative web-based survey of US colleges and universities adapted from previous work conducted by Koumans et al¹³ while adding some new items of interest. The survey measured requirements for health insurance coverage, health care fees, availability of health care services on campus or linkage to care elsewhere, and student HC offerings, including: preventative services, STI/HIV prevention, education, screening, testing and treatment, contraceptive and condom availability, patient-delivered partner therapy, HPV vaccination, confidentiality/privacy assurances, community referrals, and interest in technical assistance from community partners. In-depth findings related to patient-delivered partner therapy, insurance coverage, health care fees, and confidentiality assurances are beyond the scope of this work. The survey was piloted by three seasoned health care providers: one from a 4-year college, one from a 2-year college, and the third from an MSI.

Eligible respondents were identified in the Integrated Postsecondary Education Data System (IPEDS),¹⁹ using 2011 enrollment data. Active, 2- or 4-year, degree granting, accredited public or private schools that enrolled at least 500 undergraduates and/or graduate students in the US were included, yielding a sampling frame of 2,753 schools. The sampling frame was then stratified by MSIs and enrollment size of the school. Minority-serving institutes were classified based on federal definitions.²⁰ Enrollment size of the school was categorized as 500–1,000 students, 1,001–2,000 students, 2,001–4,000 students, 4,001–8,000 students, 8,001–16,000 students, and >16,001 students. To obtain statistically robust sample sizes for schools with and without student health centers, we oversampled schools with small numbers of students as well as large numbers of students. Schools that have small enrollment numbers are less likely to have student health centers and schools with large enrollment are more likely to have health centers. Schools within each strata of enrollment size and significant minority enrollment were sampled randomly with equal probability.

A stratified random sample of 885 schools was sent an introductory letter and questionnaire. The letter noted that the questionnaire should be completed by the individual most knowledgeable about health services on campus. After agreeing to participate, respondents were prompted to complete a self-administered electronic questionnaire via SurveyMonkey. During the data collection period (July 14, 2014–May 31, 2015), schools were periodically sent reminder emails or phone calls.

Analyses assessed differences between responding and non-responding schools and no significant response bias was noted. A comprehensive weight was calculated and applied to the dataset, which was based on school characteristics listed in IPEDS including institution type (2-year, 4-year), funding type (private, public), enrollment size, and region (South, West, Northeast, Midwest). All analyses were conducted using complex survey analysis procedures in SPSS version 21.0 (SPSS, Inc., Armonk, NY) and SAS 9.3 (SAS Inc., Cary, NC). Chi-square tests were conducted to compare weighted proportions, with statistical significance set at $p < .05$. The study protocol and survey were approved by an institutional review board of the Centers for Disease Control and Prevention.

Results

College characteristics

Of the 885 institutions contacted, 482 (54.5%) completed the survey. Of those, 11% had more than 16,000 students, 65% were 4-year institutions, and a quarter (25.8%) were MSIs. In addition, 58.5% were public, 35% were located in the South, and the majority (70.6%) reported having a health or wellness center on campus. More information on college characteristics is presented in Table 1.

Characteristics of student health centers

Institutions with student HCs differed in the way they operated and offered services to students based on institution type and MSI designation (Table 2). For example, compared to 2-year colleges, 4-year colleges offered more online booking of appointments (21.7% vs. 5.6%, $p < .001$) and the option of contacting a health care provider online (43.6% vs. 17.1%, $p < .001$). Nearly half of MSIs (47.0%) offered evening clinic hours compared to 30.8% of non-MSIs ($p < .01$), but more non-MSIs offered more weekend clinic hours (16.9% vs. 4.2%, $p < .001$) and availability of health care providers via online portal (42.0% vs. 28.0%, $p = .035$).

Differences were also revealed in the administration of the student HCs (all $p < .001$). Overall, HCs reported being primarily run by nurses (33.4%) and nurse practitioners (22.3%). This was also observed among 2-year and 4-year schools, and MSIs and non-MSIs. However, there were more instances where 4-year schools' HCs were more likely to be run by physicians (17.7%) and physician's assistants (3.6%) than 2-year schools (1.3% and 1.3%, respectively) and more MSIs reported instances of a health care administrator running the HCs (14.3%) compared to non-MSIs (9.5%), 2-year (4.7%), and 4-year institutions (12.2%).

Health insurance requirements & fees

Of the total sample, 37.2% required mandatory insurance coverage, however, it was more frequently a requirement among 4-year schools compared to 2-year (50.6% vs. 10.5%, $p < .001$) and for non-MSIs compared to MSIs (42.3% vs. 23.4%, $p < .001$). Nearly half (47.8%) of surveyed colleges reported having a student health fee; 58.5% of 4-year schools compared to 28.0% of 2-year ($p < .001$). Insurance coverage for STI screening was higher in 4-year schools versus 2-year (89.2% vs. 63.8%, $p < .01$) and in non-MSIs versus MSIs (88.9% vs.

79.8% $p = .03$). When asked to describe how the cost of STI screening is covered at their health center, most respondents (41.5%) reported that all tests/visits to the HC were charged directly to the patient or to their health insurance or they reported that some tests/visits are charged for, but others are free (36.4%); 10.2% reported tests/visits were free to students. Finally, 39.3% of the institutions reported that they were aware of students who sought STI services at an off-site location to avoid high deductibles or co-pays; an almost equal amount said they were not aware of any patients seeking services elsewhere (36.9%) (data not shown in tables).

STI education/promotion & condom availability

Among the total sample, written sources (eg, flyers, pamphlets, newsletters) were the most common STI health promotion methods used by colleges (75.0%), followed by one-on-one education in HCs (66.1%), and health fairs (63.3%). Other common methods were posters (53.4%), lectures (47.6%), awareness/testing campaigns (49.8%), and testing events (39.1%). Four-year colleges reported a higher frequency of health promotion activities compared to 2-year ($p < .001$). Health fairs (73.0% vs. 59.8%, $p < .01$), and testing events (52.4% vs. 34.2%, $p < .001$) were higher among MSIs compared to non-MSIs. Condoms were available to students at 66.8% of colleges surveyed; 44.6% reported that they were on display for free (51.9% of 4-years vs. 30.6% of 2-years, $p < .001$) and were more likely to be available in 4-year HCs than 2-year (61.8% vs. 28.6, $p < .001$). Approximately 32% of schools surveyed did not make condoms available on campus (data not shown in tables).

Sexual health and contraceptive service offerings

Most colleges (91.0%) with a HC offered at least one sexual health service. Overall, 73.0% of colleges were able to diagnose and treat STIs. Four-year institutions reported higher STI diagnosis and treatment services than 2-year (77.9% vs. 53.1%, $p < .001$), emergency contraceptives (EC) (53.6% vs. 40.5%, $p < .05$), and long-acting reversible contraceptives (LARC, 22.7% vs. 7.3%, $p < .01$) showed the largest proportional differences. Few differences emerged between MSIs and non-MSIs (see Table 2 for the full list of services).

STI services—Table 3 displays the scope of STI screening/testing services available to students at their institution's HC. Overall, (88.5%) offered screening/testing for STIs; HIV testing was available at almost all colleges (92.4%). Four-year schools had higher availability of STI screening/testing services compared to 2-year (91.9% vs. 71.0%, $p < .001$). Almost three-quarters of HCs (73.8%) routinely screened women under 25 years old for chlamydia and offered follow-up testing (82.9%). Less frequently offered services included express testing (24.4%) and self-collected vaginal swabs (SCVS) (31.4%). No statistical differences emerged between institutions for these services.

MSM services—Some HCs also reported having extragenital screening such as rectal (51.8%) and pharyngeal (54.6%) STI testing targeted at MSM. Availability of rectal testing services for gonorrhea and chlamydia was 52.5% for 4-year schools and 46.5% for 2-year, 50.2% for MSIs and 52.3% for non-MSIs. Pharyngeal testing was available at 54.4% of 4-year and 54.2% of 2-year schools, similar to the availability among MSIs and non-MSIs (54.7% and 54.6%, respectively). A quarter of schools reported not knowing if pharyngeal or

rectal testing for chlamydia and gonorrhea was offered to MSM students. No statistically significant differences between institutions emerged regarding the availability of these services (data not shown in tables).

HPV immunization—The HPV vaccine was available in 70.5% of HCs; of those, 75.5% covered the vaccine under their student health insurance plan, and almost all institutions offered the vaccine to both males and females (98.3%). The HPV vaccine series was available at significantly more 4-year schools than 2-year (73.7% vs. 48.5%, $p < .01$). Among colleges offering the vaccine, a higher proportion of 4-year schools offered reminders for the second and third dose than 2-year (64.0% vs. 23.0%, $p < .001$). More 4-year schools offered HPV vaccine to MSM (92.6% vs. 76.4%, $p < .05$) than 2-year. Compared to MSIs, HPV vaccination was offered by more non-MSIs (74.4% vs. 58.5%, $p = .019$) (data not shown in tables).

Referrals, community support, and partnerships

Almost all colleges had a referral mechanism in place (90.5%) and 80.3% were interested in improving their referrals (Table 4). Compared to 2-year colleges, 4-year colleges referred sexual health cases more often to private doctor's offices (55.0% vs. 30.7%, $p < .001$) and to family planning clinics (40.6% vs. 30.2, $p < .05$). However, 2-year most often referred to CHCs (42.7% vs. 29.4%, $p < .01$). Compared to non-MSIs, MSIs reported having a referral mechanism less often (93.2% vs. 83.4%, $p < .01$), but non-MSIs more frequently reported referring to private doctor's offices as compared to MSIs (50.4% vs. 36.5%, $p = .01$). Interestingly, all colleges referred approximately 30% of STI patients to urgent care clinics.

Most colleges received some support from their health department with regard to STI/HIV screening and testing, however, a third did not. Over three quarters of the sample were interested in partnering with FQHCs or CHCs; there was a higher proportion of interest in these partnerships among 2-year colleges and MSIs. Overall, almost 60% of schools reported that HCs were the primary source of STI services on their campus, followed by local organizations (21.3%) and public health departments (18.9%)

Comment

This study provides an overview of sexual and reproductive health services available among a nationally representative sample of US colleges and universities, including 2-year institutions and MSIs. We found that 70.6% of colleges reported having a student HC, of which almost three-quarters offered STI diagnosis and treatment. This is a 10% increase from the 2001 Koumans study¹³ which found that 60% of schools had a HC, of which 62% provided testing for the most common STIs. Likewise, the offering of contraceptive services (65.4% vs. 54.0%) may have increased among college HCs, with EC and LARC now available at 51% and 20% of health centers (though provision of both EC and LARC could be more routine).

Health education and promotion is high on college campuses (95.6%). Flyers, pamphlets, and posters continue to be common ways to raise awareness of sexual health along with one-on-one peer education methods. However, other peer education modalities besides one-on-

one education may be useful for increasing awareness and should be explored. Koumans suggested that the health education efforts on campuses were not robust enough to impact behavior change.¹³ We added a question about whether schools had an STI awareness or testing campaign, and almost half reported offering that type of health promotion activity, which has been associated with increases in STI and HIV testing.^{21,22} We also found that condoms were more readily available compared to 2001 (66.8% vs. 52.0%). Condoms remain a key STI prevention strategy and are highly effective in preventing STIs and HIV when used consistently and correctly.²³ However, a third of schools in this study did not make condoms available to students on campus.

Four-year and non-MSI HCs were better at offering flexible hours and technologically advanced health services to their students. Research suggests that STI patients value flexible clinic hours,²⁴ electronic appointment scheduling, and opportunities for electronic communication with the health center.²⁵ Structural or systems changes such as these could increase students' access to sexual and reproductive services on campus.

Few differences emerged regarding STI/HIV screening and service offerings between 2- and 4- year colleges with the exceptions that 4-year colleges more frequently reported being able to diagnose and treat STIs and routinely screened asymptomatic students for STIs compared to 2-year. Overall, most HCs routinely screened women under 25 years for chlamydia (73.8%) suggesting that college health professionals do a good job screening female students, but there is still room for improvement. Express testing and SCVS were only offered by a quarter and a third of HCs. University health settings are an ideal location for innovative testing methods such as SCVS, which are cost effective, more sensitive than urine, and easier to process/transport than traditional clinician-obtained specimens.²⁶ Additionally, chlamydia/gonorrhea positivity may be higher among asymptomatic self-testers compared to clinician-collected testers, as was found in an evaluation of self-testing/SCVS program in one university setting.²⁷ Few significant differences in services existed between MSIs and non-MSIs; however, MSIs less frequently offered HPV vaccination compared to non-MSIs. College HCs have the ability to play an important role in cervical cancer prevention by providing catch-up HPV vaccination. National data and research suggest that initiation and completion rates of HPV vaccine among black and Hispanic adolescents and college women are lower than their racial and ethnic counterparts.^{28,29} Given that cervical cancer is more common among Hispanic and black women,³⁰ MSI HCs especially, may want to explore ways to promote and/or offer affordable HPV vaccination on campus.

Young gay, bisexual, or other men who have sex with men (YGBMSM) are at increased risk for STIs and HIV, especially YGBMSM of color.³¹ The *STD Treatment Guidelines* recommend that clinicians routinely ask MSM about symptoms consistent with common STIs and offer evidence-based counseling on safer sex.¹¹ Rectal and pharyngeal STI tests are recommended for sexually active MSM who have had receptive anal and oral sex during the preceding year.¹¹ However, less than half of the schools we surveyed offered pharyngeal and rectal STI testing, and a quarter reported not knowing if extra-genital testing was available. College health providers may require more training and guidance around extra-genital screening and assessing a patient's sexual risk.

Finally, free STI testing was offered by only 10.3% of HCs, and a substantial portion of schools reported that students sought STI services elsewhere to avoid high-deductibles and co-pays. Some colleges have addressed this challenge by incorporating the cost of STI testing into student health fees, however less than 40% of the colleges surveyed had such a policy. HCs may also want to consider partnering with local CBOs or health departments to support STI/HIV testing on campus.³² Over a third of colleges reported that a local health department or outside organization were the primary offerors of STI services on their campus; however, the same percentage reported that they received no such support from their local health department. Most schools were interested in learning more about how to strengthen partnerships with FQHCs and CHCs to support STI/HIV testing on campus. Health departments, CHCs, and FQHCs could consider expanding outreach or linkage to care to colleges and universities in high morbidity areas. Partnerships focused on increasing student access to sexual health services could be especially beneficial to 2-year colleges and MSIs where some enrolled students might be Medicaid eligible.

Limitations

These data are cross-sectional and only provide a snap shot of the sexual and reproductive health care services being offered on US college campuses. Likewise, the quality of the data is dependent on the knowledge of health services of the person completing the survey which may vary by school, but nearly all respondents identified themselves as a director or medical professional connected to health services. Comparisons to the Koumans study should be interpreted with caution as we did not survey the same set of colleges and universities. Our study did not assess the full range of reproductive services available to students, nor did it assess the provision of abortion services and/or referrals, but future assessments may want to. We also did not collect data on STI morbidity at the colleges surveyed, which may have provided additional insight into the quality of services offered.

Conclusions

This study updates the literature on the state of sexual health services available among a nationally representative sample of US colleges and universities. Colleges with HCs are providing a variety of sexual health services, including STI/HIV education, and few significant differences in STI service offerings exist between 4- and 2-year colleges and MSIs compared to non-MSIs. Generally, colleges are providing STI/HIV education and screening (including asymptomatic students) at high frequencies. Improvements could entail increasing extragenital STI testing for MSM, increasing the provision of LARC and EC, removing barriers to testing by offering self-testing,^{26,27} offering e-communication with providers through patient portals, and expanding clinic hours.^{24,25} Simple strategies such as enhanced training of health care staff may help increase the provision of LARC and extragenital STI testing. Additionally, MSIs might consider boosting HPV vaccination efforts. These data suggest there is interest in receiving support from health departments and in partnerships with CHCs and FQHCs; 2-year colleges may especially benefit from entering into such partnerships. Further research is needed to explore barriers to offering STI services on 2-year campuses and gauge health care expectations of students, as well as the individual

barriers students may face to access sexual health services on campus such as cost and insurance coverage.

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Characteristics of the 482 colleges and universities surveyed, with weighted percentages and percentage with a health center.

Table 1

Characteristic	% of all US schools (N = 2,753)	n	% Unweighted	% Weighted	% With health center
All participating schools		482	100	100	70.6
Size of school					
500–1,000	11	62	13	11	7
1,001–2,000	18	68	14	19	12
2,001–4,000	24	82	17	24	16
4,001–8,000	21	67	14	18	12
8,001–16,000	15	108	22	17	14
16,001	11	95	20	11	10
Funding Type					
Public	58.5	290	60	58	37
Private	41.5	192	40	42	34
Institution Type					
2-year	35	142	29.5	34	14
4-year or more	65	340	70.5	66	57
Region					
Northeast	23	123	25	27	20
Midwest	26	114	24	23	16
South	35	145	30	31	20
West	16	99	21	19	14
MSI Type					
MSI *	25.8	123	25.4	26.7	18
Non-MSI	74	359	74	73	53

* MSI includes: HBCU, Tribal, AIAN, Asian, Black, Hispanic, 50% Combined, and MultiGroups.

Not all responses will sum to 100%.

Table 2

Characteristics and service offerings of student health centers (N = 1,864).

	N (%) ^a	4-year ^{b,c} n (%) [95%CI]	2-year ^{b,c} n (%) [95%CI]	Non-MSI ^{b,c} n (%) [95%CI]	MSI ^{b,c} n (%) [95%CI]
Student Health Or Wellness Center on Campus ***	1859 (70.6)	1500 (85.4) [81.6, 89.3]	359 (40.9) [32.6, 49.2]	1389 (72.1) [66.9, 77.4]	470 (66.4) [58.3, 74.6]
Weekend Clinic Hours † † †	240 (13.7)	219 (15.4) [11.5, 19.3]	21 (6.3) [0.2, 12.4]	221 (16.9) [12.5, 21.3]	19 (4.2) [0.9, 7.5]
Evening Clinic Hours † †	608 (34.8)	464 (32.9) [27.1, 38.7]	144 (42.9) [31.4, 54.4]	403 (30.8) [24.9, 36.7]	205 (47.0) [36.7, 57.3]
Book appointments online ***	320 (18.6)	301 (21.7) [17.4, 26.0]	19 (5.6) [1.1, 10.1]	259 (20.1) [15.5, 24.6]	61 (14.3) [9.3, 19.3]
Can contact a doctor/nurse via online portal or online method ***†	662 (38.6)	606 (43.6) [37.4, 49.8]	56 (17.1) [8.2, 25.9]	544 (42.0) [35.5, 48.4]	118 (28.0) [17.5, 38.5]
College has EMR system	842 (49.1)	701 (50.1) [44.2, 56.0]	141 (44.7) [32.2, 57.2]	618 (48.7) [42.5, 55.0]	214 (50.2) [39.2, 61.1]
Health Center primarily run by: **					
Nurse	592 (33.4)	440 (31.0) [25.4, 36.7]	152 (42.9) [31.0, 54.7]	434 (32.8) [26.7, 38.8]	158 (35.3) [25.7, 45.0]
Nurse Practitioner	395 (22.3)	288 (20.3) [15.2, 25.4]	107 (30.2) [19.3, 41.1]	291 (21.9) [16.5, 27.4]	104 (23.3) [14.2, 32.3]
Physician	256 (14.4)	251 (17.7) [13.4, 22.0]	5 (1.3) [0.0, 3.9]	216 (16.2) [11.8, 20.7]	40 (9.1) [4.5, 13.6]
Physician's Assistant	56 (3.1)	51 (3.6) [1.0, 6.1]	5 (1.3) [0.0, 3.9]	48 (3.6) [1.0, 6.1]	8 (1.7) [0.0, 5.1]
Health care administrator	191 (10.7)	174 (12.2) [8.6, 15.9]	17 (4.7) [0.0, 10.5]	127 (9.5) [6.1, 13.0]	64 (14.3) [6.8, 21.9]
Other	280 (15.8)	211 (14.8) [10.4, 19.3]	69 (19.4) [9.8, 29.0]	208 (15.7) [10.8, 20.5]	72 (16.0) [8.7, 23.4]
Services available at health center					
Health education ***	1675 (95.6)	1363 (97.4) [95.4, 99.4]	312 (88.4) [81.2, 95.7]	1251 (95.7) [93.1, 98.2]	424 (95.4) [91.1, 99.6]
STI diagnosis/treatment ***	1246 (73.0)	1066 (77.9) [72.6, 83.2]	180 (53.1) [40.8, 65.5]	946 (74.0) [68.1, 79.9]	300 (70.0) [59.4, 80.7]
Contraceptive services ***	1120 (65.4)	963 (70.1) [64.3, 76.0]	157 (46.4) [34.4, 58.4]	818 (64.1) [57.7, 70.5]	302 (69.3) [59.0, 79.6]
LARCs **	330 (19.7)	305 (22.7) [17.9, 27.4]	25 (7.3) [1.4, 13.2]	269 (21.2) [16.3, 26.1]	61 (14.8) [8.9, 20.8]
Emergency contraceptives *	869 (51.0)	731 (53.6) [47.5, 59.7]	138(40.5) [29.1, 51.9]	635 (49.6) [43.1, 56.1]	234 (55.3) [44.9, 65.7]
Patient-delivered partner therapy for any STI *	708 (43.7)	602 (46.6) [40.2, 53.0]	106 (32.1) [21.2, 43.0]	526 (43.3) [36.6, 50.1]	182 (44.7) [33.7, 55.6]
Triage/referral to other clinics ***	1617 (92.8)	1330 (95.7) [93.1, 98.4]	287 (81.4) [71.9, 90.9]	1224 (93.8) [90.6, 97.1]	393 (89.9) [83.5, 96.1]
Rx dispensing *** † †	1003 (59.4)	854 (63.3) [57.3, 69.2]	149 (43.8) [32.4, 55.1]	705 (55.5) [49.0, 62.0]	298 (70.9) [61.0, 80.9]

^aDenominators vary by response.

^bNot all responses will sum to 100%.

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^c Stratification weights have been applied to reported percentages.

^d For 4-year vs. 2-year colleges,

* denotes significance at a p -value < .05;

** denotes significance at a p -value < .01; and

*** denotes significance at a p -value < .001.

^e For Non-MSI vs. MSI colleges,

^f denotes significance at a p -value < .05;

^g denotes significance at a p -value < .01;

^h denotes significance at a p -value < .001.

Table 3

STI screening & testing services available at student health centers (N = 1,864).

	N	4-year ^{a,b,c} n (%) [95%CI]	2-year ^{a,b,c} n (%) [95%CI]	Non-MSI ^{b,c} n (%) [95%CI]	MSI ^{b,c} n (%) [95%CI]
Student health center screen any student for STI (including HIV) ***	1201 (88.5)	1041 (91.9) [88.1, 95.7]	160 (71.0) [57.0, 85.0]	912 (89.3) [84.4, 94.2]	289 (85.9) [78.2, 93.5]
Routine screening for asymptomatic students	1005 (86.5)	885 (87.1) [82.3, 92.0]	120 (81.8) [68.8, 94.7]	750 (85.9) [80.2, 91.5]	255 (88.3) [80.9, 95.6]
Express testing for STIs available	287 (24.4)	262 (25.8) [19.4, 32.2]	25 (15.6) [3.2, 28.1]	225 (25.3) [18.6, 32.0]	62 (21.7) [10.6, 32.9]
Self-collected Vaginal Swab available	248 (31.4)	230 (32.6) [24.9, 40.2]	18 (21.2) [0.6, 41.8]	206 (34.7) [25.7, 43.7]	42 (21.3) [11.7, 30.9]
Routinely screen women under 25 for chlamydia	826 (73.8)	737 (75.3) [68.8, 81.8]	89 (63.6) [47.3, 79.8]	624 (73.6) [66.7, 80.6]	202 (74.4) [61.9, 86.8]
Follow-up testing for chlamydia reinfection	630 (82.9)	562 (83.3) [76.8, 89.8]	68 (79.3) [57.8, 100.0]	464 (81.4) [73.6, 89.3]	166 (87.1) [78.9, 95.4]
Gonorrhea testing available	1121 (95.9)	976 (96.7) [94.1, 99.4]	145 (90.4) [79.7, 100.0]	848 (96.4) [93.2, 99.5]	273 (94.3) [88.7, 100.0]
Trichomoniasis testing	884 (83.3)	771 (84.2) [78.6, 89.7]	113 (77.6) [61.1, 94.1]	669 (85.7) [79.5, 91.9]	215 (76.4) [65.9, 86.9]
Serology testing for asymptomatic HSV	814 (77.1)	707 (77.1) [70.7, 83.5]	107 (76.8) [61.0, 92.6]	595 (75.4) [68.4, 82.4]	219 (82.0) [70.9, 93.1]
Syphilis testing routinely conducted					
Yes	503 (46.1)	437 (46.0) [38.8, 53.1]	66 (47.3) [30.0, 64.7]	372 (45.7) [37.6, 53.7]	131 (47.5) [36.3, 58.8]
No	288 (26.4)	243 (25.5) [18.7, 32.2]	45 (32.3) [16.8, 47.8]	226 (27.7) [20.2, 35.2]	62 (22.3) [11.7, 33.0]
Only if risk factor is identified	298 (27.4)	270 (28.4) [21.7, 35.1]	28 (20.2) [6.3, 34.1]	215 (26.5) [19.3, 33.6]	83 (30.0) [18.3, 41.7]
HIV testing available					
Yes	1084 (92.4)	934 (92.2) [88.0, 96.3]	150 (93.7) [85.1, 100.0]	806 (91.1) [86.3, 95.9]	278 (96.2) [91.9, 100.0]
Type of HIV test:					
Anonymous	19 (1.7)	11 (1.2) [0.0, 2.5]	8 (5.3) [0.0, 12.5]	11 (1.3) [0.0, 2.9]	8 (2.8) [0.0, 6.9]
Confidential	818 (76.9)	710 (77.2) [71.2, 83.2]	108 (74.8) [58.9, 90.8]	610 (77.6) [70.8, 84.3]	198 (74.8) [64.8, 84.8]
Both	227 (21.3)	198 (21.5) [15.6, 27.4]	29 (19.8) [4.7, 34.8]	168 (21.0) [14.3, 27.6]	59 (22.2) [12.8, 31.6]

^aDenominators vary by response.

^bNot all responses will sum to 100%.

^cStratification weights have been applied to reported percentages.

^dFor 4year vs. 2 year colleges,

* denotes significance at a *p*-value < .05;

** denotes significance at a *p*-value < .01; and

*** denotes significance at a p -value $< .001$.

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[†] denotes significance at a p -value $< .05$;

[‡] denotes significance at a p -value $< .01$;

[§] denotes significance at a p -value $< .001$.

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Table 4

Referrals, health department support, and partnering n = 2,548.

	N (%) ^{a,b,c}	4-year ^{b,c} n (%) [95%CI]	2-year ^{b,c} n (%) [95%CI]	Non-MSI ^{b,c} n (%) [95%CI]	MSI ^{b,c} n (%) [95%CI]
Referral mechanism *** †	2308(90.5)	1602 (94.0) [91.2, 96.9]	706 (83.5) [76.9, 90.1]	1727 (93.2) [90.2, 96.2]	581 (83.4) [76.2, 90.6]
Sexual Health Referral:					
Community Health Center ** †	927(34.0)	526 (29.4) [24.4, 34.4]	401 (42.7) [34.2, 51.1]	613 (30.7) [25.5, 35.8]	314 (42.9) [34.4, 51.3]
Public Health Clinic	1422(52.1)	880 (49.2) [43.6, 54.7]	542 (57.7) [49.4, 66.0]	1000 (50.1) [44.6, 55.6]	422 (57.6) [49.3, 65.9]
Family Planning Clinic *	1011(37.0)	727 (40.6) [35.2, 46.1]	284 (30.2) [23.1, 37.2]	761 (38.1) [32.8, 43.4]	250 (34.0) [27.0, 41.0]
Private doctor's office *** † †	1273(46.6)	984 (55.0) [49.5, 60.4]	289 (30.7) [23.0, 38.5]	1005 (50.4) [44.8, 55.9]	268 (36.5) [28.0, 45.1]
Urgent care clinic	799(29.3)	513 (28.6) [23.5, 33.8]	286 (30.4) 22.3, 38.6]	582 (29.1) [24.1, 34.2]	217 (29.6) [20.7, 38.5]
Interest in improving referrals †	2061(80.3)	1339 (78.8) [74.1, 83.4]	722 (83.2) [76.1, 90.3]	1462 (77.6) [73.0, 82.3]	599 (87.4) [80.3, 94.5]
Health Department provides greatest support in regard to:					
HIV screening and testing	170(14.8)	152 (15.3) [10.2, 20.4]	18 (11.7) [0.1, 20.4]	108 (12.4) [7.0, 17.7]	62 (22.4) [12.9, 32.0]
STI screening and testing	178(15.5)	141 (14.2) [9.0, 19.4]	37 (23.8) [10.1, 37.5]	144 (16.6) [10.4, 22.8]	34 (12.3) [6.6, 17.9]
Equal amount of support	450(39.3)	401 (40.5) [33.4, 47.5]	49 (31.9) [16.0, 47.9]	343 (39.4) [31.7, 47.2]	107 (38.9) [28.0, 49.8]
No support	345(30.1)	295 (29.8) [23.3, 36.3]	50 (31.9) [16.0, 47.9]	273 (31.4) [24.0, 38.9]	72 (26.2) [17.0, 35.4]
Interest in FQHC or CHC partnership †	1967(76.6)	1272 (74.8) [69.9, 79.8]	695(80.1) [72.7, 87.5]	1394 (73.9) [69.0, 78.9]	573(84.1) [76.4, 91.7]

^aDenominators vary by response.

^bNot all responses I sum to 100%.

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