



Published in final edited form as:

*J Am Coll Health*. 2022 ; 70(2): 544–551. doi:10.1080/07448481.2020.1756830.

## Sexual-risk and STI-testing behaviors of a national sample of non-students, two-year, and four-year college students

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### Abstract

**Objective:** To determine whether sexual-risk and STI-testing behaviors differ by college student status.

**Participants:** Sexually experienced 17- to 25-year-olds from a 2013 nationally representative panel survey that evaluated the “Get Yourself Tested” campaign. Non-students (n = 628), 2-yr (n = 319), and 4-yr college students (n = 587) were surveyed.

**Methods:** Bivariate analyses and multiple logistic regression were used.

**Results:** Students were less likely than non-students to have had an early sexual debut and to have not used condoms in their most recent relationship. 4-yr students were less likely than non-students to have had multiple sexual partners. 2-yr students were less likely than non-students to have not used contraception in their most recent relationship.

**Conclusions:** 2-yr and 4-yr college students were less likely than non-students to engage in sexual-risk behaviors. Given potentially greater risk for STI acquisition among non-students, identification and implementation of strategies to increase sexual health education and services among this population is needed.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United State of America and received approval from the Institutional Review Board of the CDC.

## Keywords

college health; HIV; sexual behavior; sexually transmitted infections (STIs)

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## Introduction

Recent data indicate that of the approximately 20 million sexually transmitted infections (STIs) diagnosed per year in the United States (U.S.), nearly half occur in individuals ages 15 to 24 years.<sup>1</sup> The disproportionate burden of STIs among this population is due at least in part to inconsistent condom use despite frequent engagement in sexual behavior and to limited utilization of STI testing services. Data from a national probability survey show that although the majority of 18- to 24-year-olds (59.4% of males, 65.8% of females) have engaged in vaginal sex at some point in their lifetime, only 46.9% of male and 31% of female respondents used a condom during their most recent experience of vaginal sex with a casual partner (i.e., with a friend, recent or new acquaintance, or a transactional sex partner).<sup>2,3</sup> National sample data additionally reveal that few sexually experienced adolescents and young adults (16.6% of females and 6.1% of males) have been tested for STIs in the last 12 months.<sup>4</sup>

Within the larger population of 18- to 24-year-olds in the U.S., almost half (43%) are enrolled in college.<sup>5</sup> Findings from college student surveys corroborate those from national surveys, highlighting inconsistent use of barrier protection and low utilization of STI testing services among young adults. The majority (65.2%) of college students report engaging in sexual behavior within the last 12 months. Of those who are sexually active, less than half (46.1%) attest to using condoms or another form of protective barrier during vaginal sex, and even fewer to using protection during anal and oral sex (25.9% and 5%, respectively).<sup>6</sup> At recent survey, only 20.2% of US college women and 7.7% of college men indicated being tested for STIs in the last 12 months.<sup>4</sup>

Although college student reports of sexual behavior and STI testing broadly align with national data on the general population of young adults, prior work suggests that college attendance may be protective against STI acquisition. That is, there is evidence that college students are less likely than non-students are to engage in sexual behaviors that could increase one's odds of STI acquisition, such as casual and condomless sex.<sup>7,8</sup> The limited available data on students attending non-4-yr institutions suggests, however, that the protective effects of college attendance may differ with the nature of the institution attended. For example, 2-yr college students' sexual behaviors have been shown to more closely mirror those of non-students than those of 4-yr students.<sup>9-11</sup> Results from the 1995 College Risk Behavior Survey showed that 2-yr college students were more likely than 4-yr students were to have had multiple sexual partners and to not use condoms.<sup>9</sup> These data are complemented by findings from more recent state-level studies. Trieu, Bratton, and Marshak compared data from 13 community (2-yr) colleges in California to those from a national sample of 4-yr institutions. The authors found that compared to 4-yr students, 2-yr students had sex more frequently, were less likely to use condoms, and were more likely to have multiple partners and to have been diagnosed with an STI.<sup>10</sup> Research with Minnesotan

colleges similarly showed that rates of unprotected sex and STI diagnoses were higher among 2-yr students than they were among 4-yr students.<sup>11</sup>

Data on the STI-testing behaviors of non-students, 2-yr, and 4-yr college students are mixed. National-level work in the U.S. and Ireland indicates that non-students and 2-yr students are more likely than 4-yr students are to have been STI and/or human immunodeficiency virus (HIV) tested in the last 12 months.<sup>9,12</sup> Conversely, state-level work in California suggests that 2-yr students are less likely than students at 4-yr institutions are to have been tested.<sup>10</sup> Yet other state-level work reveals no differences in likelihood of STI testing by student status.<sup>11</sup>

Our current understanding of the relationship between college attendance and STI-related behaviors is limited not only by conflicting findings but also by an overall lack of research in this area. Of the three regularly administered surveys on STI-related behaviors that target college students, none collect nationally representative data, and all largely reflect the behavior of 4-yr college students.<sup>13</sup> The last study on sexual-risk and STI-testing behaviors in a national U.S. sample in which 2- and 4-yr college students were compared directly was completed in 1995.<sup>9</sup> There is a pressing need for current data on sexual behaviors in student populations given the ever-growing number of college students at 2-year institutions and the rising STI rates among young adults.<sup>14</sup>

Evaluating sexual and STI-testing behaviors of students at 2-yr and 4-yr institutions as well as directly comparing college students to non-college students could provide guidance for healthcare providers to best meet the needs of young adults across the spectrum of life experiences. In the present study, we use data that were collected as part of a national STI-testing campaign evaluation to determine whether sexual-risk and STI-testing behaviors differ by college student status in a nationally representative sample of individuals aged 17 to 25 years.<sup>15</sup>

## Method

### Data collection

Data are from the “Get Yourself Tested” (GYT) panel survey. The panel survey was designed to evaluate the reach and impact of the GYT campaign and assess the campaign’s influence on sexual risk-taking and health-seeking behaviors of young people.<sup>15</sup> The GYT campaign first launched in 2009 with a primary goal of increasing STI (including HIV) testing among young adults. The GYT panel survey was conducted online and distributed through address-based sampling methods to a nationally representative sample of the U.S. population. Data were collected by the Growth from Knowledge (GfK) Group on behalf of the Centers for Disease Control and Prevention (CDC) and the National Association of County and City Health Officials (NACCHO) from August 10 to September 19, 2013. The study protocol and survey were approved by an Institutional Review Board of the CDC (for additional information on collection methods, please see McFarlane et al.<sup>16</sup>).

Data collection targeted a sample of adolescents and young adults aged 15 to 25 years. Adolescents 15 to 17 years were reached through their empaneled parent who then provided

consent for their teenager to complete the survey. 18- to 25-year-olds were contacted directly for consent and participation. Of the 3,639 parents of 15- to 17-year-olds, 1,962 (53.9%) gave provision of consent for their teenager to complete the survey. Of these, 1,330 teenagers were eligible for survey completion, and 1,197 (90.0%) completed the survey. Of the 5,510 18- to 25-year-olds who were sampled, 2,820 (51.2%) completed the survey. Non-responders were sent email reminders throughout the survey period. Participants received a cash-equivalent of \$5 for their participation, which was increased to \$10 during the last week of data collection to maximize response.

## Participants

The current analysis was restricted to sexually experienced 17- to 25-year-olds who were not currently enrolled in high school and for whom data included post-high school student status and college type. “Sexually experienced” individuals were those who reported ever having had oral (given or received), vaginal, or anal sex. The final sample included 1,535 males and females. Data were stratified by student status. Students were defined as those currently enrolled in college or university, including community college, business, technical, trade, or vocational school after high school. Non-students were those not currently enrolled in college and for whom any of the following were the case: their last grade completed was 8<sup>th</sup> grade, they did not complete high school, they were a high school graduate, possessed a GED certificate, or completed some college but no degree. “College type” indicated 4-yr or 2-yr institution. 2-yr institutions included community colleges, business, technical, trade, and vocational training schools.

## Measures

We analyzed demographic characteristics and STI-related behaviors by student status and college type. The demographic characteristics included in analyses were age (included both as mean age in years and as a categorical variable with three groups: 17 to 19 years, 20 to 22 years, or 23 to 25 years), sex (female or male), race/ethnicity (combined to form four categories: Hispanic, non-Hispanic white, non-Hispanic black, or non-Hispanic other), sexual orientation (classified as either heterosexual or LGBTQ, which included lesbian, gay, bisexual, transgender, queer, not sure, and other), health insurance (private, public, or uninsured), financial dependence on parents (yes [including somewhat, mostly, or totally dependent] or no), and exposure to the GYT campaign (had ever heard of the campaign or not). The following questions measured sexual-risk behaviors: “early sexual debut” (respondent indicated that he/she engaged in oral, anal, or vaginal sexual intercourse for the first time at age 14 years or younger), “multiple sex partners” (respondent indicated that he/she had vaginal or anal sexual intercourse with four or more people in their lifetime), “never use a condom” (respondent and/or the respondent’s partner never use a condom as part of their sexual relationship), and “never use contraceptives” (respondent and/or the respondent’s partner never use birth control pills, shots, implants, the patch, the ring, IUD, diaphragm, or cervical cap as part of their sexual relationship). The following questions measured STI-testing behaviors: “ever been tested for an STD other than HIV” (examples provided were tests for chlamydia or gonorrhea), “received an STD test in past 12 months,” “ever been tested for HIV,” and “received an HIV test in the past 12 months.” All sexual-risk

and STI/HIV-testing responses were coded into a dichotomous yes/no variable for the purposes of analyses.

### Data analyses

Bivariate chi-square and t-test analyses were conducted to determine whether demographics, sexual-risk, and STI-testing behaviors differed by student status and college type. The unweighted sample sizes (n), weighted percentages (%), 95% confidence intervals (CIs), and p-values are reported. Multiple logistic regression analyses were conducted to determine whether student status was associated with likelihood of sexual-risk or STI-testing behaviors when controlling for demographic factors. Age, sex, and race/ethnicity were included in the full model *a priori*. Variables significant at the  $p < 0.10$  level in the bivariate analyses were also included in the models. Regressions were only conducted for outcomes significant at the bivariate level at  $p < 0.05$ . Adjusted odds ratios (AORs) and 95% CIs are reported. Analyses were conducted using SAS 9.4. Statistical significance is indicated when  $p < 0.05$ .

### Results

Of the sexually experienced individuals who were surveyed (n = 1,534), 64.6% (n = 906) were enrolled in post-secondary school: 42.0% (n = 587) were enrolled in a 4-yr college and 22.6% (n = 319) were enrolled in a 2-yr institution. The remaining 35.4% (n = 628) of surveyed individuals were non-students.

Bivariate analysis revealed that student status was associated with demographic variables, including age, race/ethnicity, health insurance status, and financial dependence on parents (Table 1). With regard to sexual-risk behaviors, student status was associated with early sexual debut (non-students: 21.7%, 2-yr: 10.3%, 4-yr: 9.6%,  $p = 0.0001$ ), multiple sexual partners (non-students: 55.5%, 2-yr: 47.6%, 4-yr: 41.5%,  $p = 0.0145$ ), and never using condoms (non-students: 36.9%, 2-yr: 18.4%, 4-yr: 21.9%,  $p < 0.0001$ ) or contraceptives (non-students: 36.1%, 2-yr: 27.8%, 4-yr: 22.5%,  $p = 0.0089$ ) in the context of their most recent sexual relationship. Student status was not related to STI-testing behavior (ever or in the past 12 months); however, STI testing for the study population in general was low: 44.2% of the population reported having ever been tested for an STI and 22.1% reported having been tested in the past 12 months. Ever having been tested for HIV was associated with student status (non-students: 47.3%, 2-yr: 47.3%, 4-yr: 35.7%,  $p = 0.0191$ ) but having been HIV tested in the past 12 months was not.

The multiple logistic regression models revealed that when controlling for age, race/ethnicity, sex, health insurance status, financial dependence on parents, and exposure to the GYT campaign in adjusted analyses, student status was significantly associated with a number of outcomes. As shown in Table 2, 4-yr and 2-yr college students were less likely than non-students were to report an early sexual debut (4-yr AOR = 0.54, 95% CI: 0.30, 0.98; 2-yr AOR = 0.49, 95% CI: 0.26, 0.91) and to never use a condom (4-yr AOR = 0.47, 95% CI: 0.29, 0.76; 2-yr AOR = 0.45, 95% CI: 0.56, 0.77). The 4-yr students were also less likely than non-students were to have reported multiple sexual partners (AOR = 0.62, 95% CI: 0.40, 0.96). The 2-yr students were less likely than non-students were to never use contraceptives (AOR = 0.56, 95% CI: 0.32, 0.99). The analysis also showed that when

controlling for additional factors, student status was no longer associated with having ever been tested for HIV. There were no significant differences between 4-yr and 2-yr college students in the adjusted models for any of the outcomes (data not shown).

## Comment

Our findings suggest that 17- to 25-year-olds not enrolled in postsecondary education (“non-students”) are more likely than those enrolled at 2- or 4-yr colleges are to have engaged in sexual-risk behaviors. Unlike previous work,<sup>9-11</sup> we did not find differences in sexual-risk behaviors between 2- and 4-yr students. We also did not find 2- and 4-yr students to differ in their STI/HIV-testing behaviors or either group to differ from non-students in these behaviors. Together, these data provide insight into the sexual-risk and STI-testing behaviors of young adults in the U.S. and shed light on the relationship between college attendance and risk for STI acquisition.

### Early sexual debut and multiple sexual partners

Non-students were approximately twice as likely as both groups of students were to have had an early sexual debut. Non-students were also more likely than 4-year students were to have had multiple sexual partners. These data replicate previous work on sexual-risk behaviors in non-student populations.<sup>9,12</sup> Co-occurrence of an increased likelihood of early sexual debut and multiple sexual partners among non-students is not surprising given previous literature indicating early sexual debut and report of multiple sexual partners are correlated.<sup>17</sup> Because one of these behaviors (early sexual debut), and potentially both, occur(s) prior to time of college attendance, the differences between students and non-students regarding these behaviors seemingly reflect a third variable that is confounded with college attendance and not controlled for in our analysis (e.g., socioeconomic status [SES], age at childbearing, social support, etc.).<sup>18</sup> That early sexual debut differs by student status is also supportive of work in which it was found that those with an early sexual debut are less likely to enroll in postsecondary education.<sup>18</sup> Together with research that shows that age of sexual debut can explain the difference in prevalence rates of other high-risk sexual behaviors,<sup>17</sup> these data highlight the importance of early intervention (e.g., distribution of comprehensive sexual health and risk reduction information among middle and/or high school students) in mitigating risk for STI acquisition.

### Condom and other contraceptive usage

Non-students were more likely than 2- and 4-yr students were to report not using condoms in their current sexual relationship. Non-students were also more likely than 2-yr students were to report not using other contraceptives. These findings partially align with previous work indicating that non-students are less likely than 4-yr students are to report condom use but are equally likely to report other contraceptive (e.g., birth control pill) use.<sup>7,11</sup> Given the critical role of barrier protection in the prevention of STI acquisition, the identified discrepancy in condom use rates between non-student and student populations is of concern and warrants further investigation.



It is possible that non-students are less likely than students are to use condoms because they do not as readily have access to sexual health resources as do individuals on college campuses. Most colleges (66.8% of 2- and 4-yr institutions) make condoms freely available and invest efforts in promoting sexual health and preventing STI acquisition among their student populations.<sup>19</sup> Of note, however, is that 4-yr institutions are more likely than 2-yr schools are to provide condoms and sexual health messaging.<sup>19</sup> One would thus expect 2- and 4-yr students to differ in reported condom use if the discrepancies identified here between non-students and students were fully attributable to differential access to sexual health resources. Although previous work has found condom use to be less common among 2-yr than 4-yr students,<sup>9,11</sup> we did not find usage rate differences between the two groups in the present study.

Similarity in condom use between 2- and 4-yr students does not, however, preclude the possibility that access to sexual health resources accounts in part for condom use differences between students and non-students. Although 2-yr students on average receive fewer sexual health resources on-campus than 4-yr students do, 2-yr students may supplement with utilization of off-campus resources. Previous work shows that 2-yr students are more likely than 4-yr students are to expect referrals to off-campus health resources and to anticipate a lower quality of healthcare on campus.<sup>20</sup> Given 2-yr student expectations regarding healthcare, it is possible that seeking off-campus sexual health resources is commonplace in a way it is not among non-students. Why differential healthcare-seeking behaviors of students and non-students would not be reflected in usage rates of other contraceptives as it is in rates of condom usage is, however, unclear.

### STI/HIV testing

STI and HIV testing behaviors did not differ by student status. Reports of having ever been tested for HIV differed between the groups at the bivariate level, such that an equal percentage of non-students and 2-yr students reported having ever been HIV tested (47.3%), and this percentage was higher than that of 4-yr college students (35.7%). This finding is somewhat consistent with previous work showing that 2-yr students are more likely than 4-yr students are to have been HIV tested.<sup>9</sup> The differences by student status were not, however, supported by the regression model. That the effect of student status became non-significant in the regression analysis indicates that the group differences were due to demographic variable(s) that differed by student status rather than due to college attendance itself.

Of note is that STI/HIV testing rates were low across all groups. Of the sexually active young adults surveyed, approximately 20% reported being tested in the last 12 months. It is also of concern that testing rates did not align with rates of engagement in high-risk sexual behaviors (i.e., that non-students [the group with greater incidence of high-risk sexual behavior] did not have higher testing rates than students). Low testing rates, particularly among those at high risk for STI acquisition, suggest that there are missed opportunities for sexual history taking and corresponding provider-recommended screening. This possibility is supported by previous work that shows that a significant portion of young adults and adolescents receive an STI test only because they ask their provider for one – not because

the test is suggested. Low testing rates among this age-group may also reflect confidentiality concerns and, relatedly, for the student populations, underutilization of college health centers<sup>4</sup>. It would be informative for intervention development for future research to better detail the service-seeking experiences and STI testing-related attitudes of students and non-students alike. It is clear from these data that new approaches are needed to bring this generation into testing and that alternative methods that confer a greater sense of privacy (e.g., at-home self-testing) warrant consideration.

### Limitations

There are several limiting factors to take into account when considering the present results. A potential limitation is the survey questions from which “never use a condom” and “never use contraceptives” were derived (Did/do you and/or your partner use any of the following to prevent pregnancy?). The phrasing of these questions assumes: a) that all respondents are in sexual relationships in which pregnancy can occur, b) that respondents want to prevent pregnancy, and c) that condoms are not used solely to protect against STI acquisition. An additional issue is that the relationship status of the respondent was not accounted for, and relationship status may impact condom and contraceptive use and STI and HIV testing responses. We must also consider that there are several sociodemographic and life circumstance variables associated with college attendance that impact sexual behaviors that were not controlled for in our analyses. For example, although we controlled for financial dependence on parents, we did not directly control for SES. Finally, the interpretation of STI-related behaviors is limited given that we do not report data on STI diagnoses. This is potentially concerning given previous work in which it was found that although 4-yr and 2-yr students are STI tested at the same rates, 4-yr students are less likely to be STI positive.<sup>19</sup>

### Conclusions

Young adulthood is a peak period of vulnerability for STI acquisition. This age is characterized by a distinct constellation of social and environmental factors that contribute to STI risk, and here we provide insight into one of those factors: college attendance. The last study to compare sexual-risk and STI-testing behaviors between 2- and 4-yr college students in a U.S. national sample was published over a decade ago.<sup>9</sup> Since that time, the need for data on sexual and STI-testing behaviors of students has only grown, with an ever-increasing number of college enrollees and rising STI rates among college-aged individuals.<sup>14</sup> It has become particularly relevant to better understand behaviors among those attending 2-yr institutions given that an estimated 49% of undergraduate students attend community colleges at some point in time.<sup>21</sup>

With respect to screening and sexual health behaviors, 2-yr students largely mirrored 4-yr students. Among both populations, however, screening behaviors were low. College is well suited to be an intervention point in promotion of good sexual health practices. Future work could focus on how to further leverage this unique environment to encourage safe-sex practices and regular STI/HIV testing. Our data on non-students also indicate a need for development of sexual health campaigns and service delivery models targeted toward young



adults who do not attend college. Local organizations, including health departments, could direct such efforts. Across all populations, providers who serve young adults could ideally be trained to routinely collect sexual history information from patients in order to tailor sexual health education and services.

## Funding

This project was supported in part by an appointment to the Research Participation Program at the Centers for Disease Control and Prevention administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the US Department of Energy and the Centers for Disease Control and Prevention.

## References

1. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: Prevalence and incidence estimates, 2008. *Sex Trans Dis.* 2013;40(3):187–193. doi:10.1097/OLQ.0b013e318286bb53.
2. Herbenick D, Bowling J, Fu T-C, (Jane), et al. Sexual diversity in the United States: Results from a nationally representative probability sample of adult women and men. *PLoS One.* 2017;12(7):e0181198. doi:10.1371/journal.pone.0181198. [PubMed: 28727762]
3. Reece M, Herbenick D, Schick V, Sanders SA, Dodge B, Fortenberry JD. Condom use rates in a national probability sample of males and females ages 14 to 94 in the United States. *J Sex Med.* 2010; 7(suppl 5):266–276. 1743-6109.2010.02017.X. doi: 10.1111/j. [PubMed: 21029384]
4. Cuffe KM, Newton-Levinson A, Gift TL, McFarlane M, Leichter JS. Sexually transmitted infection testing among adolescents and young adults in the United States. *J Adolescent Health.* 2016;58(5):512–519. doi:10.1016/j.jadohealth.2016.01.002.
5. National Center for Education Statistics. Percentage of 18- to 24-year-olds enrolled in degree-granting postsecondary institutions and percentage distribution of those enrolled by sex, race/ethnicity, and selected racial/ethnic subgroups: 2010 and 2016. *Digest of Education Statistics* [https://nces.ed.gov/programs/digest/d17/tables/dt17\\_302.62.asp?current=yes](https://nces.ed.gov/programs/digest/d17/tables/dt17_302.62.asp?current=yes). Updated January 2018. Accessed June 2019.
6. American College Health Association. American College Health Association-National College Health Assessment II: Reference Group Executive Summary Fall 2017. American College Health Association. [https://www.acha.org/documents/ncha/NCHA-II\\_FALL\\_2017\\_REFERENCE\\_GROUP\\_EXECUTIVE\\_SUMMARY.pdf](https://www.acha.org/documents/ncha/NCHA-II_FALL_2017_REFERENCE_GROUP_EXECUTIVE_SUMMARY.pdf) Updated. 2018. Accessed June 2019.
7. Bailey JA, Haggerty KP, White HR, Catalano RF. Associations between changing developmental contexts and risky sexual behavior in the two years following high school. *Arch Sex Behav.* 2011;40(5):951–960. doi:10.1007/s10508-010-9633-0. [PubMed: 20571863]
8. Bailey JA, Fleming CB, Henson JN, Catalano RF, Haggerty KP. Sexual risk behavior 6 months post-high school: Associations with college attendance, living with a parent, and prior risk behavior. *J Adolescent Health.* 2008;42(6):573–579. doi:10.1016/j.jadohealth.2007.11.138.
9. Centers for Disease Control and Prevention. Youth risk behavior surveillance: National college health risk behavior survey – United States, 1995. *Morbidity and Mortality Weekly Report.* <https://www.cdc.gov/mmwr/preview/mmwrhtml/00049859.htm>. Updated September 1998. Accessed June 2019.
10. Trieu SL, Bratton S, Hopp Marshak H. Sexual and reproductive health behaviors of California community college students. *J Am Coll Health.* 2011;59(8):744–750. doi:10.1080/07448481.2010.540764. [PubMed: 21950256]
11. Eisenberg ME, Lust KA, Garcia CM. Differences in sexual behaviors among unmarried sexually active students at 2- and 4-Year Colleges. *Res Nurs Health.* 2014;37(2):128–134. doi:10.1002/nur.21586. [PubMed: 24481785]
12. Burke L, Nic Gabhainn S, Young H. Student sex: more or less risky than other young adults?. *Sex Edu-Sex Soc Lea.* 2015;15(1):31–47. doi:10.1080/14681811.2014.947362.

13. Habel MA, Becasen JS, Kachur R, Eastman-Mueller H, Dittus PJ. Community colleges: Rethinking STD prevention for the nontraditional college campus. *Commun Coll J Res Pract*. 2017;41(11):747–756. doi:10.1080/10668926.2016.1220874.
14. Centers for Disease Control and Prevention, Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. STDs in Adolescents and Young Adults. Office of the Associate Director for Communication, Digital Media Branch, Division of Public Affairs. <https://www.cdc.gov/std/stats17/adolescents.htm>. Updated July 2018. Accessed June 2019.
15. Center for Disease Control and Prevention. GYT: Get Yourself Tested Campaign. Office of the Associate Director for Communication, Digital Media Branch, Division of Public Affairs <https://npin.cdc.gov/stdawareness/gyt.aspx>. Updated n.d. Accessed June 2019.
16. McFarlane M, Brookmeyer K, Friedman A, Habel M, Kachur R, Hogben M. GYT: Get Yourself Tested campaign awareness: Associations with Sexually Transmitted Disease/HIV testing and communication behaviors among youth. *Sex Transm Dis*. 2015;42(11):619–624. [PubMed: 26457487]
17. Sandfort TG, Orr M, Hirsch JS, Santelli J. Long-term health correlates of timing of sexual debut: Results from a national US study. *Am J Public Health*. 2008;98(1):155–161. doi:10.2105/AJPH.2006.097444. [PubMed: 18048793]
18. Spriggs AL, Halpern CT. Timing of sexual debut and initiation of postsecondary education by early adulthood. *Perspect Sexual Reproduct Health*. 2008;40(3):152–161. doi:10.1363/4015208.
19. Habel MA, Coor A, Beltran O, Becasen J, Pearson WS, Dittus P. The state of sexual health services at U.S. colleges and universities. *J Am College Health*. 2018;66(4):259–268. doi: . doi:10.1080/07448481.2018.1431896.
20. Lechner KE, Garcia CM, Frerich EA, Lust K, Eisenberg ME. College students' sexual health: Personal responsibility or the responsibility of the college?. *J Am Coll Health*. 2013;61(1):28–35. doi:10.1080/07448481.2012.750608. [PubMed: 23305542]
21. National Student Clearinghouse Research Center. Contribution of two-year public institutions to bachelor's completions at four-year institutions. 2017 National Student Clearinghouse. <https://nscresearchcenter.org/wp-content/uploads/SnapshotReport26.pdf>. Updated Spring 2017. Accessed June 2019

Demographics and sexual-risk and STI-testing behaviors of sexually experienced young people (17-25 years) by student status and type of college, 2013 (n = 1,534).

Table 1.

	Total n	Student Status & College Type								P value
		Student*				Non-student				
		4-year college		2-year college		4-year college		Non-student		
	N	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)		
Demographics										
Age, years (mean, 95% CI)	1,534	21.7 (21.5, 21.9)	587	21.3 (21.1, 21.6)	319	21.0 (20.6, 21.3)	628	22.0 (21.7, 22.3)	0.0016	
Age group	1,534								<0.0001	
17-19 years	196	21.8% (18.4, 25.3)	71	18.5% (13.5, 23.5)	62	32.9% (24.7, 41.1)	63	18.7% (13.2, 24.3)		
20-22 years	553	42.0% (38.1, 45.9)	249	51.1% (45.0, 57.1)	116	38.9% (30.7, 47.2)	188	33.2% (27.0, 39.3)		
23-25 years	785	36.2% (32.5, 39.8)	267	30.4% (25.2, 35.6)	141	28.2% (21.0, 35.4)	377	48.1% (41.5, 54.6)		
Sex	1,534								0.3036	
Female	1,121	55.6% (51.6, 59.6)	429	59.3% (53.1, 65.5)	232	52.9% (44.3, 61.4)	460	53.0% (46.3, 59.6)		
Male	413	44.4% (40.4, 48.4)	158	40.7% (34.5, 46.9)	87	47.1% (38.6, 55.7)	168	47.0% (40.4, 53.7)		
Race/ethnicity	1,534								0.0238	
Hispanic	314	24.1% (20.6, 27.5)	105	20.7% (15.6, 25.9)	92	31.5% (23.7, 39.4)	117	23.2% (18.4, 29.0)		
Non-Hispanic white	900	53.9% (50.0, 57.9)	357	58.8% (52.7, 64.9)	158	42.9% (34.6, 51.1)	385	55.3% (48.7, 61.9)		
Non-Hispanic black	194	14.5% (11.6, 17.4)	73	12.8% (8.5, 17.1)	43	14.1% (8.1, 20.1)	78	16.8% (11.5, 22.1)		
Non-Hispanic other	126	7.5% (5.3, 9.7)	52	7.7% (4.5, 10.9)	26	11.5% (5.1, 17.8)	48	4.8% (2.3, 7.2)		
Sexual orientation	1,531								0.7831	
Heterosexual	1,351	91.7% (89.7, 93.7)	523	92.5% (89.7, 95.3)	284	90.8% (85.5, 96.0)	544	91.2% (88.1, 94.4)		
LGBTQ**	180	8.3% (6.3, 10.3)	63	7.5% (4.7, 10.3)	34	9.2% (4.0, 14.5)	83	8.8% (5.6, 11.9)		
Health insurance	1,435								<0.0001	
Private	762	62.3% (58.4, 66.2)	399	77.8% (69.0, 86.6)	139	68.4% (54.4, 82.5)	224	45.5% (38.7, 52.3)		
Public	324	17.2% (12.4, 20.2)	70	10.2% (3.6, 16.8)	73	22.6% (9.8, 35.4)	181	24.3% (18.7, 30.0)		
None	349	20.5% (17.3, 23.7)	88	12.0% (5.3, 18.8)	79	9.0% (2.2, 15.8)	182	30.2% (24.0, 36.3)		
Financially dependent on parents (n = 1,501)	742	63.3% (59.5, 67.0)	354	73.1% (68.0, 78.2)	178	70.9% (63.5, 78.3)	210	46.1% (39.3, 52.9)	<0.0001	
Exposure to GYT campaign (n = 1,488)***	478	33.4% (28.7, 36.3)	177	30.5% (24.7, 36.3)	125	41.2% (32.7, 49.6)	176	29.2% (23.1, 35.3)	0.0505	
Sexual-risk and STI-testing behaviors										

	Student Status & College Type										P value
	Student*					Non-student					
	Total n	% (95% CI)	4-year college N	% (95% CI)	n	2-year college % (95% CI)	n	% (95% CI)	n	% (95% CI)	
Early sexual debut (n = 1,414) <sup>^</sup>	249	14.2% (11.4, 17.0)	60	9.6% (5.7, 13.5)	56	10.3% (6.4, 14.3)	133	21.7% (16.0, 27.5)	0.0001		
Multiple sex partners (n = 1,401) <sup>#</sup>	750	48.0% (43.8, 52.1)	250	41.5% (35.2, 47.8)	153	47.6% (38.7, 56.5)	347	55.5% (48.7, 62.4)	0.0145		
Never use condom (n = 1,316) <sup>‡</sup>	447	26.4% (22.8, 29.9)	150	21.9% (16.8, 27.0)	76	18.4% (12.0, 24.8)	221	36.9% (30.2, 43.7)	<0.0001		
Never use contraceptive (n = 1,306) <sup>‡‡</sup>	414	28.5% (24.6, 32.3)	135	22.5% (17.0, 27.9)	85	27.8% (19.4, 36.1)	194	36.1% (29.3, 43.0)	0.0089		
Ever tested for STI (n = 1,419) <sup>‡</sup>	787	44.2% (40.2, 48.2)	281	42.2% (36.1, 48.2)	162	44.4% (35.8, 53.1)	344	46.5% (39.7, 53.4)	0.6489		
STI test, past 12 months (n = 1,419)	389	22.1% (18.8, 25.3)	155	23.8% (18.7, 28.9)	79	21.7% (14.9, 28.5)	155	20.2% (14.9, 25.5)	0.6252		
Ever tested for HIV (n = 1,418)	751	42.4% (38.4, 46.3)	238	35.7% (29.9, 41.5)	172	47.3% (38.6, 56.0)	341	47.3% (40.4, 54.1)	0.0191		
HIV test, past 12 months (n = 1,418)	347	20.7% (17.5, 23.9)	118	19.5% (14.8, 24.2)	78	21.5% (14.6, 28.5)	151	21.6% (16.3, 26.9)	0.8210		

\* Students refer to respondents currently enrolled in college or community college, business, technical, trade, or vocational school after high school.

\*\* LGBTQ includes lesbian, gay, bisexual, transgender, queer, not sure, and other.

\*\*\* Exposure to the GYT campaign includes if they had ever heard of GYT or ever seen the GYT logo.

<sup>^</sup> Early sexual debut refers to having engaged in sexual intercourse for the first time at age 14 or younger.

<sup>#</sup> Multiple sex partners refers to four or more lifetime (vaginal or anal) sex partners.

<sup>‡</sup> Never use condom refers to the respondent and/or their partner using condoms "none of the time."

<sup>‡‡</sup> Contraceptives do not include condoms but include all of the following: birth control pills, depo shots, implants, the patch, the ring, IUD, diaphragm, and cervical cap. "Never use contraceptives" refers to the respondent and/or their partner using a contraceptive "none of the time."

<sup>‡</sup> Ever been tested for STIs other than HIV, such as chlamydia or gonorrhea.

Table 2.

Multiple logistic regression models of sexual-risk and STI-testing behaviors adjusted for demographics and student status/type of college among sexually experienced young people (17-25 years), 2013.

	Early sexual debut <sup>^</sup> n = 1,287 AOR, 95% CI	Multiple sex partners <sup>#</sup> n = 1,276 AOR, 95% CI	Never use condom <sup>†</sup> n = 1,255 AOR, 95% CI	Never use contraceptives <sup>‡</sup> n = 1,249 AOR, 95% CI	Ever been tested for HIV n = 1,282 AOR, 95% CI
Student status/college type					
4-year college student	0.54 (0.30, 0.98) *	0.62 (0.40, 0.96) *	0.47 (0.29, 0.76) **	0.69 (0.42, 1.14)	0.70 (0.44, 1.13)
2-year college student	0.49 (0.26, 0.91) *	0.94 (0.56, 1.56)	0.45 (0.56, 0.77) **	0.56 (0.32, 0.99) *	1.16 (0.66, 2.01)
Non-student	Referent	Referent	Referent	Referent	Referent
Age group					
17-19 years	1.01 (0.50, 2.05)	0.25 (0.14, 0.44) ***	0.32 (0.17, 0.63) **	1.72 (0.92, 3.21)	0.25 (0.14, 0.45) ***
20-22 years	1.44 (0.84, 2.47)	0.71 (0.48, 1.06)	0.62 (0.40, 0.96) *	0.92 (0.59, 1.45)	0.58 (0.38, 0.88) **
23-25 years	Referent	Referent	Referent	Referent	Referent
Gender					
Female	Referent	Referent	Referent	Referent	Referent
Male	1.17 (0.69, 1.97)	0.94 (0.64, 1.39)	0.48 (0.31, 0.74) **	0.62 (0.40, 0.97) *	0.45 (0.30, 0.68) **
Race/ethnicity					
Hispanic	0.74 (0.34, 1.58)	0.84 (0.52, 1.35)	0.80 (0.47, 1.36)	1.59 (0.94, 2.68)	1.22 (0.73, 2.03)
Non-Hispanic white	Referent	Referent	Referent	Referent	Referent
Non-Hispanic black	1.15 (0.54, 2.43)	1.02 (0.59, 1.76)	0.40 (0.21, 0.77) **	1.30 (0.72, 2.33)	3.58 (1.95, 6.59) ***
Non-Hispanic other	1.13 (0.44, 2.90)	0.46 (0.22, 0.97) *	0.56 (0.27, 1.14)	1.89 (0.79, 4.51)	1.36 (0.66, 2.82)
Health insurance					
Private	Referent	Referent	Referent	Referent	Referent
Public	2.73 (1.45, 5.14) **	1.85 (1.11, 3.08) *	2.11 (1.23, 3.63) **	1.65 (0.95, 2.88)	1.57 (0.90, 2.75)
None	2.36 (1.26, 4.41) **	1.05 (0.65, 1.69)	0.94 (0.51, 1.61)	1.98 (1.17, 3.35) *	0.56 (0.34, 0.92) *
Financially dependent on parents					
Yes	0.68 (0.41, 1.12)	0.97 (0.66, 1.43)	1.09 (0.70, 1.68)	0.73 (0.46, 1.15)	0.67 (0.44, 1.02)
No	Referent	Referent	Referent	Referent	Referent
Exposure to GYT campaign					
Yes	1.70 (0.98, 2.96)	1.37 (0.91, 2.07)	1.12 (0.73, 1.70)	0.87 (0.56, 1.34)	2.19 (1.42, 3.38) **

	Early sexual debut <sup>^</sup> n = 1,287 AOR, 95% CI	Multiple sex partners <sup>#</sup> n = 1,276 AOR, 95% CI	Never use condom <sup>†</sup> n = 1,255 AOR, 95% CI	Never use contraceptives <sup>‡</sup> n = 1,249 AOR, 95% CI	Ever been tested for HIV n = 1,282 AOR, 95% CI
No	Referent	Referent	Referent	Referent	Referent

\*  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$ .

<sup>^</sup> Early sexual debut refers to having engaged in sexual intercourse for the first time at age 14 or younger.

<sup>#</sup> Multiple sex partners refers to four or more lifetime (vaginal or anal) sex partners.

<sup>†</sup> Never use condom refers to the respondent and/or their partner using condoms “none of the time.”

<sup>‡</sup> Contraceptives do not include condoms but include all of the following: birth control pills, depo shots, implants, the patch, the ring, IUD, diaphragm, and cervical cap. “Never use contraceptives” refers to the respondent and/or their partner using a contraceptive “none of the time.”