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Communicating about sex when it matters: a content analytic investigation of sexual health information on college student health center websites[†]

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ABSTRACT

Young adults struggle to achieve sexual health. Student health centers (SHCs) are uniquely positioned to provide young adults with credible and complete sexual health information. Using the comprehensive model of information seeking for theoretical guidance, we conducted a content analysis to examine the credibility and completeness of sexual health information available to young adults through SHC websites at 400 randomly selected U.S. colleges/universities. Unfortunately, most SHC websites do not provide complete sexual health information, which may decrease the credibility of SHCs as a source of sexual health information for young adults. Topics related to sexual health predominantly focused on prevention and risk topics (i.e. sexually transmitted diseases, contraception, and pregnancy). We offer practical suggestions for SHC webpages to align their sexual health information content with the American College Health Association standards of practice and point to a scholarly focus on content characteristics and information availability to complement information seeking studies.

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Sexual health; content analysis; student health centers; information availability; comprehensive model of information seeking

Evidence indicates that young adults struggle to achieve sexual health. Among young adults aged 20–24 years, cases of chlamydia increased 1.9%, cases of gonorrhea increased 10.9%, and cases of syphilis increased 8.1% from 2015 to 2016 (Centers for Disease Control and Prevention [CDC], 2017). Human Papillomavirus (HPV) remains extremely common with approximately 14 million Americans becoming infected each year despite the availability of vaccines to prevent the most high-risk types of HPV (CDC, 2018). Beyond the risks associated with sex, young adults desire more comprehensive sex education and less emphasis on the negative or risky aspects of sex (Gardner, 2015). Young adults are struggling to achieve and maintain sexual health and asking for more comprehensive information about sexual relationships during a developmentally important period of their lives when they begin making important decisions about health and

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relationships (Tanner, Arnett, & Leis, 2009). Complete and credible sexual health information must be made available to young adults.

Colleges and universities are relevant institutions for sexual health information that may promote young adults' sexual health by providing credible and complete information, programs, and resources that address sexual health through various forums, including student health center (SHC) websites (Eisenberg, Garcia, Frerich, Lechner, & Lust, 2012a). Most U.S. universities have a SHC (Bravender, 2014), but the sexual health services and resources offered by SHCs vary widely and these variations can impact campus health outcomes (Koumans et al., 2005). For example, when more extensive sexual health services (e.g. clinic resources, clinic convenience, clinic services, and condom availability) are provided, occurrences of unprotected sex and unplanned pregnancies decrease (Eisenberg et al., 2013). Recognizing the poor sexual health experienced by many young adults, their need for complete sexual health information, and the unique positioning of SHCs, the purpose of this study is to investigate the credibility and completeness of sexual health information available to young adults through SHC websites.

The characteristics of credibility and completeness are drawn from the comprehensive model of information seeking (CMIS), which guides this investigation. The CMIS recognizes individuals as goal-directed active information seekers whose perceptions of the credibility of health information sources and completeness of information offered influence their health information seeking behavior. Recognizing that young adults are actively seeking sexual health information with the goal of achieving sexual health, we analyze the sexual health content (or lack thereof) present on SHC webpages in terms of credibility and completeness. This focus on information availability and information characteristics offers a unique perspective from which to study the CMIS compared to the majority of CMIS research that focuses on information-seeking behavior.

In order to rationalize our focus on SHC websites, we first explain why SHC websites may be appealing sources of sexual health information for young adults and explore characteristics of information content as conceptualized in the CMIS that may lead students to deem websites as more or less credible and complete. We then investigate what sexual health information these institutions communicate to college students online via a quantitative content analysis of SHC websites from colleges and universities across the United States. Finally, we compare our findings to the American College Health Association (ACHA) standards of practice to provide actionable recommendations for SHCs to improve the information they provide to college students about sexual health on their institutional websites.

SHC websites as ideal sources of credible and complete sexual health information

Young adults who face uncertainty about their sexual health are likely to seek information. While there are many channels young adults may turn to for information about sexual health (e.g. friends, family, health care provider), online information may hold a special appeal because of the anonymity and convenience it affords. Indeed, first-year undergraduates most commonly reported searching for sexual health information online rather than from a physician, relative, or friend (Buhi, Daley, Fuhrmann, & Smith, 2009). The Internet as an information source lends itself to goal-directed active health

information seeking (Dutta-Bergman, 2004a). Recognizing the goal-driven and active nature of information seeking online, we position our study of sexual health information quality within the CMIS. CMIS is a theoretical framework that assumes people are active information seekers who purposefully select sources to fulfill specific needs (DeLorme, Huh, & Reid, 2011). The CMIS posits a hierarchical relationship whereby individual characteristics (demographics, direct experience with the health situation, salience, and self-efficacy to manage the situation) determine perceptions of the potential health information source (evaluation of source characteristics and perceptions of utility of the source), which in turn influences health information-seeking behaviors (DeLorme et al., 2011).

Perceptions of the potential health information source are shaped by evaluations of source quality. Two 'critical indicators' of source quality are perceived source credibility and information completeness (Dutta-Bergman, 2004b, p. 253). Indeed, health care consumers rate completeness and authority (reputation) as the second and third most important criteria respectively for evaluating information quality (Stvilia, Mon, & Yi, 2009). In this study, we evaluate websites on dimensions of completeness and credibility because both indicators are assessed on the basis of website content rather than design-related criteria, which were not evaluated in this study (Zhang, Sun, & Xie, 2015).

Credibility judgments refer to 'the degree to which the information source is trustworthy and has the necessary expertise to offer information on the topic area' (Dutta, Pfister, & Kosmoski, 2010, p. 596). Credibility has two components: trustworthiness, whether a source is truthful or biased; and authoritativeness, whether people or institutions with authority contribute to the content (Zhang et al., 2015). In a systematic review of 165 articles evaluating the quality of online health information, indicators of credibility included presentation of content (i.e. balanced content, spelling errors), site popularity, third-party accreditation, authorship, disclosure (e.g. contact information, target audience, aims of the website, owner or sponsor of the site), and attribution (e.g. source of the content and references, links to other related sites, additional sources of support) (Zhang et al., 2015). Consumers of online health information mentioned the authority of the source and outbound links as criteria they used to assess the credibility of healthcare information on the Internet (Eysenbach & Köhler, 2002). Specifically, participants trusted institutional sources of information rather than private sites and noted that the links found on trustworthy sites are assumed to be trustworthy sites as well (Eysenbach & Köhler, 2002). In an observational study of college students seeking sexual health information from the Internet, websites with a dot org or dot gov were considered more credible than dot com websites, though few sexual health websites in 2010 were governmental (5.1%), dot org (27.7%), or dot edu (13.6%) (Buhi et al., 2010).

College students generally perceive SHCs to be credible. A survey conducted by the ACHA (2009) demonstrated that 90% of college students ($n = 80{,}121$) perceived health center medical staff to be the most believable source of health information, followed by health educators, faculty, and parents. Undergraduate students in a qualitative study similarly described SHC staff as 'knowledgeable, non-judgmental, and confidential regarding issues of sexuality' (Eisenberg et al., 2012a, p. 312). There is some evidence that college students seek health-relevant information from SHC websites more than other sources. More graduate students learned of on-campus counseling services from the university health center website than from any other single source, including orientation, flyers,

friends, or physicians at the university health center (Hyun, Quinn, Madon, & Lustig, 2006). These findings provide evidence that SHC staff are generally perceived as credible by college students and that college students seek and find health information on SHC websites. However, content characteristics such as bias in content, references, links to other sites, and additional sources of support also influence perceptions of credibility and can be appropriately examined through content analysis.

Completeness of health information is 'the extent to which the discussion of a health topic is comprehensive, balanced, and adequate in its portrayal' (Dutta-Bergman, 2004b, p. 256). Sources that provide more complete information are judged to be more credible than sources with less complete information. In addition to the completeness of information, health information seekers also identify information depth as a dimension of health information quality (Tao, LeRouge, Smith, & De Leo, 2017). Indicators of the completeness of health information include links to other information and content-specific characteristics including a list of symptoms with an accurate symptom check, descriptions of medical conditions, treatment options, and terms defined and/or explained (Tao et al., 2017).

The quality indicators of completeness and credibility influence information seekers' attitude and behavioral intention toward the website (Dutta et al., 2010). Information seekers' quality assessment is positively associated with attitude toward the health information website, with completeness explaining 36% of the variance (Dutta et al., 2010). Information seekers' quality assessment also influenced behavioral intentions to use a health information website (e.g. talk to family and friends about the website, return to the website), with completeness explaining 29% of the variance (Dutta et al., 2010). While there is much literature on the indicators of quality, there are few effective tools to evaluate the quality of health information sites (Zhang et al., 2015). In order to assess the completeness and credibility of the sexual health information presented on SHC websites, we compared our content analytic findings to the ACHA standards of practice. The role of SHCs and the ACHA are described below.

Student health centers and the American College Health Association

As noted earlier, SHCs are important channels to enhance campus health. By 2005, 73% of U.S. college students were estimated to attend a college with a health center (Bravender, 2014; Koumans et al., 2005). A more recent study of 214 higher education institutions nationwide found that 85% of the sample had an on-campus health center and a health service webpage (Fontenot, Fantasia, Sutherland, & John, 2016). SHCs can impact the health of students through health education, screening students at risk for various diseases, and promoting healthy behaviors in addition to vaccinating students, dispensing pharmaceutical products, and offering other clinical services (Hicks & Dinkel, 2016). Health promotion can also come in the form of peer education programs, condom distribution and education, support groups, social norms campaigns, and online health information (Eisenberg, Lechner, Frerich, Lust, & Garcia, 2012b). The resources offered by SHCs are directly linked to student health outcomes. For example, the higher the level of sexual health resources on campus (i.e. general clinic resources, clinic convenience, clinic services, and condom availability), the lower the

likelihood that students had had sex without birth control, sex without a condom, and unplanned pregnancy (Eisenberg et al., 2013).

Several studies have researched health-relevant information on college websites broadly (i.e. not focusing solely on SHC sites) or more narrowly investigated specific health-relevant topics (i.e. sexual assault, women's health). With a nationally representative sample of American colleges ($n = 426$), Jue and Metlay (2011) investigated health resources communicated on main university sites, SHC websites, and counseling service websites. Nearly half of the colleges offered online health information and links to external health resources. Of those institutions that provided online health information, mental health and general health were most frequently covered, whereas only 55% of the colleges communicated about sexual health. A smaller review of coverage of sexual assault policies on 28 New Jersey college websites found only 7% of schools noted sexual assault policies on their SHC website (Schwartz, McMahon, & Broadnax, 2015). Another study analyzed the communication of women's health on California State Universities' SHC websites, finding that most SHC websites did not include complete information about essential women's health services, as defined by a 2008 ACHA guideline (Judson, Goldsack, & Sonnad, 2010). Taken together, little is known about what sexual health information is communicated on SHC websites.

The ACHA is an acknowledged leadership organization for SHCs and is dedicated to 'serve as the principal leadership organization for advancing the health of college students and campus communities' (ACHA, n.d.). The ACHA calls on its members to 'create affirming relationships, reduce anxiety and avoidance, and encourage health-seeking behavior' and recommends that individuals are 'always duly informed and permitted to make decisions regarding their education, treatment and care' (ACHA, 2010, p. 1). Further, SHCs are encouraged to provide services in a 'compassionate, equitable, and unbiased manner to all individuals' and 'affirm human differences and combat bigotry, intolerance, and oppression' (p. 2). In order to evaluate the completeness of sexual health information communicated on SHC websites and provide actionable recommendations to improve the communication of sexual health on SHC websites, we compare our findings to the ACHA standards of practice.

The present study

To document how sexual health is communicated on SHC websites and evaluate the extent to which sexual health information was communicated credibly and completely, we examined two levels of analysis on each SHC website. First, we examined whether the website had an explicitly labeled sexual health 'area,' which could be navigated from a menu or a tab on the landing page of the SHC. If there was no sexual health area, we coded whether sexual health was *mentioned* on the website. Our first research question assessed the frequency of sexual health coverage across all institutions. Because large, and privately funded, colleges and universities are more likely to have SHCs than other institutions (Koumans et al., 2005), we also investigated the frequency of sexual health information by type of institution. Second, we examined the sexual health resources available on SHC websites. Research questions 1–3 address the extent to which a SHC website may be perceived credible in terms of whether authorities (i.e. SHCs) provide adequate content and information about resources outside of the site.

RQ1: How often is sexual health covered on SHC websites in (a) its own designated area, or (b) in mentions on the SHC website?

RQ2: How does the frequency of sexual health information on SHC websites differ by institutions' (a) religious status, (b) public status, or (c) degree designation (baccalaureate, masters, doctoral)?

RQ3: What sexual health resources are offered in the SHC websites' (a) sexual health areas and (b) sexual health mentions?

We also investigated the completeness of sexual health information offered on SHC websites by examining the sexual health topics covered and the depth of coverage for each topic.

RQ4: What sexual topics are covered in the SHC websites' (a) sexual health areas and (b) sexual health mentions?

RQ5: How in depth are the sexual topics covered in the SHC websites' sexual health areas?

Method

Sample

Based on an a priori power analysis (effect size = .15, alpha = .05, Power = .80, df = 1), a sample of 349 websites was needed to adequately address our research questions. We ultimately sampled 400 websites. In March 2017, we consulted the National Center for Education Statistics College Navigator website (https://nces.ed.gov/collegenavigator/) to construct the sample. This method of sampling has been applied to previous research (McKinley, Luo, Wright, & Kraus, 2015). Inclusion criteria required that a college/university be a co-educational four-year college offering at least a bachelor's degree with options for on-campus residential housing.[1] Applying these criteria resulted in an initial sampling frame of 1373 colleges/universities.

We stratified the sample into three levels: private (versus public) status, religious (versus non-religious) status, and degree-granting status (baccalaureate, masters, or doctoral). These variables were chosen as the most meaningful variables for stratification because the type of sexually transmitted disease (STD)/HIV education offered significantly differs based on private/public status (Koumans et al., 2005), religiosity is inversely related to sexual activity among adolescents and religious status may therefore influence the provision of sexual health information (Williams & Sternthal, 2007), and degree-granting status helps to identify groups of comparable institutions from which individual colleges/universities can be drawn to enhance the variability of institutions in the sample. We then selected colleges/universities from each stratum proportionately based on their representation in the sampling frame. In this study, private colleges represented 61% (n = 838) of the colleges/universities in the sampling frame, and public colleges/universities represented 39% (n = 535). Thus, we selected 244 private colleges/universities and 156 public colleges/universities. We then further stratified the sample by religious status (for private colleges only): 34% (n = 287) of private colleges were non-religious, and 66% (n = 552) were religious. Finally, we stratified by degree-granting status: 22% (n = 62) of private, non-religious colleges granted doctoral degrees, 36% (n = 104) of private, non-religious colleges granted masters degrees, and 42% (n = 121) of private, non-religious colleges granted baccalaureate degrees. The procedure was repeated for public

colleges/universities, but because there are no public, religious colleges, that step of the stratification was not necessary. See Table 1 for the resultant sample size by each sub-sample category.

When a college/university was selected from the sampling frame, we first checked whether it had a SHC website. In total, 9.0% ($n = 36$) of colleges/universities initially selected did not have a SHC website. These colleges were replaced by substituting another randomly selected college from the same stratum that did have a SHC website.

Coding system

Because no coding instrument was available, the last two authors inductively created the codebook based on the examination of a variety of representative SHC websites. The codebook is available from the authors by request. Websites used to create the codebook were not excluded from the sampling frame, but if they were selected into the sample, they were coded using the finalized codebook. The codebook was revised and amended during the coder-training period. After coding training, each coder was given a list of links to the SHC websites of sampled colleges and universities. Coders viewed each website and assessed it via a Qualtrics survey that prompted a response for each variable in the codebook.

Units of analysis

The sampling unit for the present study was the college's SHC website. Coders were instructed to first determine if the website had a sexual health 'area.' An 'area' was defined as an explicitly labeled tab or menu from the SHC website landing page that referenced sexual health. If a sexual health area was present, coders only assessed information in the sexual health area. When no sexual health area was present, coders examined whether sexual health was mentioned anywhere on the website by combing through all pages on the SHC website.

Sexual health topics

Once it was determined that sexual health was covered on the website, coders identified which specific sexual health topics were addressed as an indicator of the completeness of information. These were not mutually exclusive categories because it was common for a SHC website to cover multiple sexual health topics. The topic categories included: (1) abstinence (discussion of not having sex as a component of sexual health); (2) contraception (offering information regarding a variety of contraception including condoms,

Table 1. Proportional stratified sampling plan.

	Doctoral (13%)	Masters (41%)	Baccalaureate (46%)	Total
Private colleges/Universities (61%)				
Non-religious (34%)	18	30	35	83
Religious (66%)	14	71	76	161
Total	32	101	111	244
Public colleges/Universities (39%)				
	Doctoral (34%)	Master's (46%)	Baccalaureate (20%)	Total
Non-religious (100%)	53	72	31	156

Note: The numbers in the cells represent the number of colleges/universities in each sub-category.

oral contraceptives, morning after pills); (3) HPV/HPV vaccines (information on the virus and/or information about how to get vaccinated);[2] (4) STDs (including information about risk factors or symptoms); (5) pregnancy (including pregnancy tests, prenatal care, pregnancy/abortion counseling); (6) sexual functioning (including sexual pleasure, avoiding/treating sexual dysfunction); (7) sexual relationships (including sexual communication, decision-making, sexual consent); and (8) sexual violence (including sexual assault resources and information).

Depth of sexual health topics

The depth of information was assessed for each sexual health topic as an indicator of completeness. Depth was comprised of: (1) how much information was offered and (2) whether the information was supported by additional resources for the site visitor to learn more about the topic (i.e. external links, sources, definitions). Based on this definition, depth of sexual health topics was rated on a three-point scale: 1 = *None/Little* = topic is only briefly mentioned such as in a list or only external links; 2 = *Some/Moderate* = topic is more than a list but less than three sentences with a link; 3 = *A Lot* = a minimum of three complete, non-redundant sentences about the topic plus at least one external source referenced.

Sexual health resources

Finally, coders assessed the types of resources provided by the SHC as an indicator of credibility. For example, the website might offer information about STDs, which would be coded as a sexual health topic, but the website could also mention that the SHC offers screening and treatment of STDs. The latter would be coded as a resource.

The coders assessed whether the SHC offered any of the following: (1) links to external resources to find additional information on a sexual health topic; (2) on-campus testing/screening options for STDs, pregnancies; (3) treatment options for how to address sexual health issues (e.g. erectile dysfunction, STDs); (4) self-assessment tools (e.g. quizzes or online tools to assess one's own risk or diagnosis); (5) education/outreach (e.g. options for SHC staff to provide in-person education, peer mentoring); (6) counseling (e.g. options for one-on-one or small-group counseling to address individual needs or concerns); and (7) free or discounted access to contraception.

Coding and reliability

Three graduate students (two females, one male) at a large Southwestern university and one graduate student (female) from a large Mid-Atlantic university coded the sample. The coders are the first four co-authors of this study. The coders met in person and by Skype to receive training on the codebook for seven weeks, representing approximately 14 hours of training. During this period, coders practiced on websites that were not in the final sample. During these sessions, the codebook was updated and revised considering coders' feedback. Once intercoder reliability during pilot coding reached acceptable levels for each variable (Krippendorff $\alpha > .667$), coders coded the sample independently.

The sample was coded over three months, with three sequential checks of intercoder reliability interspersed during the coding period to check for coder progress and to

monitor coder drift (Krippendorff, 2012). Forty websites (10%) in the final sample were coded by at least three coders (11 websites were coded by all four coders).

The average reliability coefficient was .77 (range: .69–.85). The individual coefficients were satisfactory: identification of coding units (sexual health area, sexual health mention) ($\alpha = .85$), sexual health topics ($\alpha = .80$), depth of sexual health topics ($\alpha = .75$), and sexual health resources ($\alpha = .69$). All the alphas were above the minimal .667 threshold to make 'tentative' conclusions (Krippendorff, 2012).

Data analysis

Given the categorical nature of the variables, we used nonparametric statistics to answer our RQs. In particular, one-way chi-square analyses were used in cases in which we examined the distribution of categories within only one variable. Because some of the categorical variables did not contain mutually exclusive categories (e.g. websites could have multiple sexual health resources or topics represented), we used one-way chi squares to examine whether the frequency of a category occurred more or less than 50%. This allowed us to make inferences about how consistently one topic or resource was featured on SHC websites.

Two-way chi-square analyses were used to examine relationships between categorical variables. *Post-hoc* pairwise comparisons were conducted using *z*-tests with Bonferroni corrections. Additionally, given the unequal representation of private colleges, religious colleges, and doctoral institutions, we used within-group proportions to make comparisons between school categories. For example, if we simply compared the raw frequencies, we would find that private colleges outnumber public colleges on almost all metrics, simply because there were more in the sample. To correct for this, we compared how many SHCs had sexual health mentions out of all of the public schools versus how many had sexual health mentions out of the private schools. The same pattern applies to doctoral institutions being outnumbered by masters and baccalaureate colleges, and religious being outnumbered by non-religious colleges.

Results

Frequency of sexual health information

We first examined how *often* sexual health is addressed on SHC websites (RQ1). Only a small minority (9.0%, $n = 36$) of SHC websites had an explicit area devoted to sexual health, significantly fewer than websites without an explicit sexual health area (91.0%, $n = 364$), χ^2 (1, $n = 400$) = 268.96, $p < .001$. However, most of the websites without an explicit sexual health area ($n = 364$) at least mentioned sexual health, 80.2% ($n = 292$), which was significantly more common than no mention of sexual health, 19.8% ($n = 72$), χ^2 (1, $n = 364$) = 132.98, $p < .001$. Thus, taken from the entire sample of 400, 82.0% ($n = 328$) of SHC websites covered sexual health at some level.

Sexual health information based on institution type

For RQ2, we examined whether there were differences in prevalence of sexual health areas and mentions based on the institutions' (a) religious status, (b) public status, or (c) degree-

granting status (baccalaureate, masters, doctoral). We found that the SHC websites of non-religious schools were significantly more likely (12.8%, $n = 31$) to have sexual health areas than religious schools (3.2%, $n = 5$), χ^2 (1, $n = 400$) = 10.86, $p < .001$, Cramer's $V = .17$. Additionally, non-religious schools' SHC websites were more likely to have sexual health mentions (88.2%, $n = 187$) than religious schools' SHC websites (69.3%, $n = 106$), χ^2 (1, $n = 365$) = 20.05, $p < .001$, Cramer's $V = .24$.

The SHC websites of public schools were significantly more likely to have sexual health areas (16.5%, $n = 26$) than private schools (4.1%, $n = 10$), χ^2 (1, $n = 400$) = 17.73, $p < .001$, Cramer's $V = .21$. Additionally, public schools' SHC websites were *proportionately* more likely (89.5%, $n = 119$) to have sexual health mentions than private schools' SHC websites (75.0%, $n = 174$), χ^2 (1, $n = 364$) = 11.18, $p = .001$, Cramer's $V = .18$.

The SHC websites of doctoral-granting schools were significantly more likely to have sexual health areas (19.8%, $n = 17$) than masters schools (8.7%, $n = 15$), and baccalaureate schools (2.8%, $n = 4$), χ^2 (2, $n = 400$) = 18.74, $p < .001$, Cramer's $V = .22$. The pairwise comparison suggests that the difference between doctoral and masters, as well as the difference between doctoral and baccalaureate, were both statistically significant, but there was not a statistically significant difference between masters and baccalaureate. Similarly, doctoral schools' SHC websites were *proportionately* more likely to have sexual health mentions (97.1%, $n = 67$) than masters SHC websites (78.5%, $n = 124$) and baccalaureate SHC websites (73.7%, $n = 101$), χ^2 (2, $n = 364$) = 16.34, $p < .001$, Cramer's $V = .21$. The differences in sexual health mentions between doctoral and masters, and doctoral and baccalaureate, were statistically significant; the difference between masters and baccalaureate was not.

Sexual health resources

For RQ3, we examined the resources that were available in the sexual health areas and in sexual health mentions as an indicator of credibility. In the 36 explicitly labeled sexual health areas, the most common resources offered were testing resources (86.1%, $n = 31$), followed by treatment options (83.3%, $n = 30$), and external links (80.6%, $n = 29$). Counseling, access to contraception, and education, were all covered in just over one-half (52.8%, $n = 19$) of the sexual health areas, while self-assessment resources were the least represented (11.1%, $n = 4$). The following resources were featured significantly more often than 50% of the time: testing, treatment, and links to external resources. The following resource was featured less than 50% of the time: self-assessment. See Table 2.

In the 293 sexual health mentions, resources offered to students were less represented overall, but the order of representation was largely the same as it was for sexual health areas, with the most common again being testing resources (78.5%, $n = 230$), followed by external links (58.4%, $n = 171$), treatment options (55.3%, $n = 162$), counseling (50.9%, $n = 149$), education (34.1%, $n = 100$), access to contraception (20.5%, $n = 60$), and self-assessment options (4.4%, $n = 13$). The following resources were mentioned more often than 50% of the time: testing and links to external resources. The following were mentioned significantly less than 50% of the time: education, access to free contraception, and self-assessment. The frequency with which counseling and treatment were addressed did not differ from 50%. See Table 2.

Table 2. Proportion of SHC websites offering sexual health resources.

Resources	% (*n*)	One-way χ^2
Sexual health areas		
Testing	86.1% ($n = 31$)	χ^2 (1, $n = 36$) = 18.78, $p < .001$
Treatment	83.3% ($n = 30$)	χ^2 (1, $n = 36$) = 16.00, $p < .001$
External links	80.6% ($n = 29$)	χ^2 (1, $n = 36$) = 13.44, $p = .001$
Counseling	52.8% ($n = 19$)	χ^2 (1, $n = 36$) = 0.11, $p = .739$
Access to contraception	52.8% ($n = 19$)	χ^2 (1, $n = 36$) = 0.11, $p = .739$
Education	52.8% ($n = 19$)	χ^2 (1, $n = 36$) = 0.11, $p = .739$
Self-assessment	11.1% ($n = 4$)	χ^2 (1, $n = 36$) = 21.78, $p < .001$
Sexual health mentions		
Testing	78.5% ($n = 230$)	χ^2 (1, $n = 293$) = 95.18, $p < .001$
External links	58.4% ($n = 171$)	χ^2 (1, $n = 293$) = 8.20, $p = .004$
Treatment	55.3% ($n = 162$)	χ^2 (1, $n = 293$) = 3.28, $p = .070$
Counseling	50.9% ($n = 149$)	χ^2 (1, $n = 293$) = 0.09, $p = .770$
Education	34.1% ($n = 100$)	χ^2 (1, $n = 293$) = 29.52, $p < .001$
Access to contraception	20.5% ($n = 60$)	χ^2 (1, $n = 293$) = 102.15, $p < .001$
Self-assessment	4.4% ($n = 13$)	χ^2 (1, $n = 293$) = 243.31, $p < .001$

Note: The one-way χ^2statistic tests whether the proportion significantly differs from 50%.

Sexual health topics

For RQ4, we investigated which topics were covered in sexual health areas and which topics were merely mentioned on SHC websites as an indicator of completeness. In the 36 SHC websites with explicitly labeled sexual health areas, the most commonly included topic was STDs (97.2%, $n = 35$), followed by contraception (86.1%, $n = 31$), pregnancy (75.0%, $n = 27$), HPV (69.4%, $n = 25$), sexual violence (50.0%, $n = 18$), sexual relationships (36.1%, $n = 13$), abstinence (36.1%, $n = 13$), and sexual functioning (19.4%, $n = 7$). The following topics were featured significantly more than 50% of the time: STDs, contraception, pregnancy, and HPV. The only topic that was addressed significantly less than 50% of the time was sexual functioning. See Table 3.

Of the 293 SHC websites that only mentioned sexual health, the most commonly represented topics were similar to those covered in websites with sexual health areas. STDs (78.5%, $n = 230$) were again the most commonly featured topic, followed by contraception

Table 3. Proportion of SHC websites featuring each sexual health topic.

Topic	% (*n*)	One-way χ^2
Sexual health areas		
STD	97.2% ($n = 35$)	χ^2 (1, $n = 36$) = 32.11, $p < .001$
Contraception	86.1% ($n = 31$)	χ^2 (1, $n = 36$) = 18.78, $p < .001$
Pregnancy	75.0% ($n = 27$)	χ^2 (1, $n = 36$) = 9.00, $p = .003$
HPV	69.4% ($n = 25$)	χ^2 (1, $n = 36$) = 5.44, $p = .020$
Sexual violence	50.0% ($n = 18$)	χ^2 (1, $n = 36$) = 0.00, $p = 1.0$
Sexual relationships	36.1% ($n = 13$)	χ^2 (1, $n = 36$) = 2.78, $p = .096$
Abstinence	36.1% ($n = 13$)	χ^2 (1, $n = 36$) = 2.78, $p = .096$
Sexual functioning	19.4% ($n = 7$)	χ^2 (1, $n = 36$) = 13.44, $p < .001$
Sexual health mentions		
STD	78.5% ($n = 230$)	χ^2 (1, $n = 293$) = 95.18, $p < .001$
Contraception	61.1% ($n = 179$)	χ^2 (1, $n = 293$) = 14.42, $p < .001$
Pregnancy	55.6% ($n = 163$)	χ^2 (1, $n = 293$) = 3.72, $p = .054$
Sexual violence	50.9% ($n = 149$)	χ^2 (1, $n = 293$) = 0.09, $p = .770$
HPV	34.5% ($n = 101$)	χ^2 (1, $n = 293$) = 28.26, $p < .001$
Sexual relationships	18.4% ($n = 54$)	χ^2 (1, $n = 293$) = 116.81, $p < .001$
Abstinence	5.8% ($n = 17$)	χ^2 (1, $n = 293$) = 228.95, $p < .001$
Sexual functioning	1.7% ($n = 5$)	χ^2 (1, $n = 293$) = 273.34, $p < .001$

Note: The one-way χ^2 statistic tests whether the proportion significantly differs from 50%.

(61.1%, $n = 179$), pregnancy (55.6%, $n = 163$), sexual violence (50.9%, $n = 149$), HPV (34.5%, $n = 101$), sexual relationships (18.4%, $n = 54$), abstinence (5.8%, $n = 17$), and sexual functioning (1.7%, $n = 5$). The following topics were mentioned significantly more than 50% of the time: STDs and contraception, and the following were addressed significantly less than 50% of the time: HPV, sexual relationships, abstinence, and sexual functioning.

Depth of information

For RQ5, we rated the depth of information provided in the sexual health areas as an indicator of completeness.[3] Across the 36 websites with sexual health areas, the median depth was 2.0 on a 1–3 scale. We further examined the depth of information for each topic by examining the distributions in each of the three categories for the eight topics. For six of the eight topics, the distribution among the three categories of depth was equal. For STDs, however, the topic was covered more in-depth than not, χ^2 (1, $n = 28$) = 9.14, $p = .002$. In particular, 78.5% ($n = 22$) of the sexual health areas covered STDs in 'a lot' of depth. For pregnancies, the topic was covered in less depth rather than more, χ^2 (1, $n = 16$) = 9.00, $p < .001$. In particular, 87.5% ($n = 14$) of sexual health areas covered pregnancy in 'none/little' depth.

Discussion

SHCs play a critical role in healthcare and health promotion at U.S. colleges and universities. For many young adults, SHCs serve as a primary source for health-related information and treatment (Hicks & Dinkel, 2016); thus, it is critical that SHC websites provide credible and complete health information (Buhi et al., 2009; Escoffery et al., 2005). In light of the ACHA standards of practice (2010), the results of our content analysis indicate that sexual health promotion is neither equally accessible across campuses nor equitable in the information and resources provided, which indicates a lack of completeness and the potential to decrease SHC credibility among students. These characteristics of SHC webpages could result in disparities in information and sexual health.

The first disparity is the lack of meaningful sexual health information across the sample. A minority of SHC websites (9.0%) had a tab or menu specifically devoted to sexual health, while the majority of remaining websites only mentioned sexual health (80.2%). Thus, our findings suggest the need to incorporate more dedicated sexual health areas on SHC websites. When young adults are left to search for sexual health topics online, they will likely give up if the necessary information is too difficult to locate, or they may turn to less reliable sources (Buhi et al., 2009; Selkie, Benson, & Moreno, 2011). Indeed, college students have expressed frustration while trying to find answers to sexual health questions online (Buhi et al., 2009). The lack of dedicated sexual health areas may be especially harmful for young adults who rely more on online sexual health information, like African American students who use the Internet for birth control information at higher rates than White students (Fogel, Fajiram, & Morgan, 2010). Gay, lesbian, and bisexual young adults also turn to the Internet for information about their sexual concerns that may not be addressed in school-based education (Santelli et al., 2006) or via interpersonal communication with parents (Savin-Williams, 2001). In fact, searching for sexual health information was a common activity among lesbian, gay, bisexual, and transgender young

adults (Magee, Bigelow, DeHaan, & Mustanski, 2012). The lack of sexual health information indicates incomplete information, which may also damage the credibility of SHC websites as sources of sexual health information.

Further, there were significant inconsistencies in sexual health information across institution type (i.e. religious status; public status; and degree-granting status). In general, public, PhD-granting institutions were the most likely to address sexual health on their SHC websites. Thus, the type of higher education institution a college student attends plays a determining role in the sexual health information available through the SHC website. We recognize that religiosity, spirituality, and attitudes toward sex differentially influence sexual practices and expectations among college students (Luquiz, Brelsford, & Rojas-Guyler, 2012) and therefore play a unique role in sexual health promotion on college campuses. However, sexual, reproductive, and even relational health are important for all young adults.

In terms of sexual health resources, our results suggest that sexual health areas offered more resources than could be found in sexual health mentions. SHC websites that only mentioned sexual health were less likely to include education and access to free contraception as resources. Testing and treatment resources appeared more often than not in both sexual health mentions and sexual health areas. Self-assessment was the least frequent sexual health resource in either mentions or content areas. The lack of dedicated sexual health areas, inconsistencies in the presence of sexual health information across institution type, and inconsistencies in sexual health resources all suggest that most SHC websites do not provide adequate sexual health information, which may ultimately decrease the credibility of SHCs as institutions for the provision of sexual health information. Thus, closer attention to the credibility of sexual health information offered in terms of adequacy is sorely needed for the majority of the SHC websites in our sample.

Our results also revealed significant inconsistencies in the range and depth of sexual health topics covered in sexual health areas compared to mentions. The majority of SHCs websites only mentioned sexual health, and these websites had a broader range of topics most likely to be excluded. An implication of this finding is that SHC websites offer many college students access to only a narrow set of sexual health topics. Moreover, the very nature of sexual health *mentions* reveals a lack of depth across the majority of the sample. Yet, even within sexual health areas, the average depth of information provided was only just below 'some/moderate.' Further, information depth is an indicator of source completeness. Indeed, the limited range of sexual health topics and lack of depth of sexual health information suggest that the sexual health information available to young adults via SHC websites is often incomplete. Incomplete information also influences perceptions of the credibility of an online information source.

While SHCs are institutional sources likely to be perceived as authoritative by young adults, our results show that the perceived credibility of SHCs may be at risk not only due to incomplete sexual health content and varying mention of resources but also because of the lack of balanced sexual health information. Sexual health was consistently represented as a risky behavior (focusing on STDs, contraception, and pregnancy) and rarely represented relational aspects of sexual health (sexual communication, decision-making, sexual consent) or sexual functioning (including sexual pleasure). In addition, STDs were covered in significantly more depth than the other sexual health topics. Thus, the results of the present study generally support the view that sex is framed as a

risky behavior on U.S. college campuses (ACHA, 2016; Hust et al., 2017; Li, Kim, & O'Boyle, 2017). Yet exposure to positive messages about sex and sexuality (e.g. endorsing sex as a pleasurable, healthy aspect of development) may encourage healthy sexual behaviors among college students and decrease inequalities in sexual health (Johnson, 2017; Koepsel, 2016). College health educators themselves call for more sex-positive and inclusive approaches to sex education (Anderson, Eastman-Mueller, Henderson, & Even, 2016). Having uncovered the often-incomplete sexual health information available on SHC websites and potential threat to credibility posed by imbalanced information, we now offer several recommendations for SHC webpages to improve their sexual health information content in alignment with the ACHA standards.

Practical implications

The ACHA (2010) recommends that individuals are 'always duly informed and permitted to make decisions regarding their education, treatment and care' (p. 1). This standard was inadequately met for sexual health on SHC websites. First, the overall amount of sexual health information is insufficient. Only 9.0% of websites had explicit sexual health sections, leaving young adults to comb through web pages in the majority of websites that merely mentioned sexual health. What is worse, in 18.0% ($n = 72$) of the sample, no sexual health information was provided at all, suggesting that SHC websites in these colleges were fairly useless with respect to sexual health information. Second, inconsistencies in sexual information provision make it harder for students in religious schools, private schools, and baccalaureate and masters-granting schools to be informed about sexual health. In other words, compared with other schools, young adults in the aforementioned school types are less likely to be duly informed regarding sexual health information by SHC websites, which hinders their autonomous ability to make healthy sexual decisions. Against the backdrop of a recent study in which college students rated comprehensiveness as the most important characteristic of 'ideal' sex education (Gardner, 2015), we recommend that each SHC website provides comprehensive sexual information to live up to the ACHA ethical principle of ensuring autonomy and truly become an online 'health care home' (Eisenberg et al., 2012a, p. 307) for young adults.

In addition, the ACHA calls its members to 'create affirming relationships, reduce anxiety and avoidance, and encourage health-seeking behavior' (ACHA, 2010, p. 1). This standard was infrequently met in the sexual health information communicated via SHC websites. Sexual health information on SHC websites often focused on the risks associated with sexual health, including STDs and unintended pregnancy. Emphasizing the negative or risky aspects of sex while ignoring sexual pleasure may foster a perception among college students that 'no enjoyment awaits [them] as they develop and claim their sexual selves' (Fields, 2008, p. 145). Indeed, the sexual topics mentioned on SHC websites are more likely to invoke anxiety and avoidance than to reduce it. To adhere to the ACHA call to reduce anxiety and avoidance, SHC websites can balance the sex-as-danger discourse with a more inclusive sex-positive approach. A sex-positive approach in this study would have been indicated by information about sexual pleasure, sexual relationships, sexual communication, decision-making, and consent. Sex-positive messages 'suggest that sex is a healthy and pleasurable practice and avoid making moral statements;' they focus on the ability to make personal sexual choices, the diversity of sexuality, and

reducing stigma about sexual choices (Brickman & Willoughby, 2017, p. 622). Sex-positive messages are rated significantly higher than sex-negative messages in terms of believability and persuasiveness (Brickman & Willoughby, 2017). Additionally, research suggests that such messages can be useful in empowering sexual minorities and reducing sexual offenses (Williams, Prior, & Wegner, 2013).

Implications for theory

Unlike most research examining the CMIS in terms of information seekers, this study focused exclusively on source characteristics in terms of completeness and credibility. Thus, this study examined the complementary side of information seeking – information availability. Unfortunately, this research uncovered a lack of sexual health information available from SHC websites that most often provided incomplete information, which jeopardizes the credibility of SHC websites as sources of sexual health information. The central assumption of the CMIS is that people are active goal-directed seekers of information (Johnson & Meischke, 1993; Robson & Robinson, 2013), but information seeking will be to no avail if the information sought is not available. Based on the findings of the present study, then, we ask, what happens when the information sought cannot be found? Asking this question draws attention to several areas of expansion or reconceptualization in the CMIS and implies that greater focus on content characteristics is warranted.

The CMIS posits that incomplete information provided by a source, as a characteristic of the information carrier, directly and indirectly influences information-seeking behavior through perceived utility of the source (Johnson & Meischke, 1993). In previous research, information carrier characteristics have been operationalized in various ways, for example, as understandability of information and perceived quality of the information (Hartoonian, Ormseth, Hanson, Bantum, & Owen, 2014), and ease of finding information, understandability, and quality of information (Van Stee & Yang, 2018). Studies have also collapsed information carrier characteristics with perceived utility to form perceived usefulness of specific sources (DeLorme et al., 2011) or information carrier factors characterized by information source and source trust (Ruppel, 2016). These operationalizations may need to be expanded and unified across studies. As DeLorme et al. (2011) note, most applications of the CMIS have investigated information seeking related to one disease. In the present study, we examined the characteristics of sources that may be used by those seeking information related to sexual health, which encompasses a number of health concerns. When the information sought is broader, meaning not necessarily related to one disease or health issue, perceived ability to access information may be a very useful and necessary operationalization of perceived utility.

Additionally, our study proposes another theoretical question about information availability: When information is unavailable from a source expected to provide such information, as was the case with sexual health information from SHC websites, does salience decrease? Salience, defined as 'the personal significance of health information to an individual that is related to the degree of perceived health threat an individual feels' (Johnson & Meischke, 1993, p. 347), may be influenced by information availability: if individuals are unable to find health information sought, the health concern that motivated initial information seeking may decrease in salience. Self-efficacy and response

efficacy might also be influenced by information unavailability. When information is unavailable from a source that information seekers would expect the information to be available from, self-efficacy and response efficacy likely decrease as a result. For example, this study demonstrated that in SHC websites that only mention sexual health, treatment options were present in only 55.3% of the sample. When information about treatment options is unavailable, response efficacy, defined as the 'effectiveness of health behaviors for treatment or prevention' likely decreases significantly (Ruppel, 2016, p. 209). The lack of information availability may be especially damaging to efficacy beliefs when location-specific information, such as resources offered by the university to promote students' sexual health, is missing. The present study suggests that information unavailability, especially from a source that information seekers would expect to contain the information (i.e. sexual health on SHC websites), might change seekers' perceived utility of the source, salience of the health issue, and self-efficacy beliefs. Future research should investigate content characteristics and potential influences of information unavailability.

Limitations and future directions

Our findings point to several areas in which communication must be improved for the sake of young adults' sexual, reproductive, and relational health. Still, there are some limitations to consider. First, identifying coding units proved challenging for websites without an explicitly labeled sexual health area. In such cases, the coders had to comb through the web pages of the websites, a procedure that likely increased the chance that coders missed some mentions of sexual health. However, we argue that if the coders could not find a mention of sexual health, neither will young adults who are looking for sexual health information and resources.

The CMIS posits that individual characteristics in addition to the credibility and completeness of content can influence perceptions of the health information source, which influences health information-seeking behaviors (DeLorme et al., 2011). Given our method, we were only able to assess features of the content on SHC websites that indicate credibility and completeness; the next step would be to understand how young adults' individual characteristics influence their perceptions of SHCs as sexual health information sources and the completeness and credibility of information provided. Additional research should focus on whether the disparities in sexual health information on SHC websites result in disparities in the provision of sexual health resources. An examination of the number and types of students who receive sexual health resources from the SHC, as connected to the comprehensiveness of the information provided on the SHC websites, would be a way to address this question.

This research documents incomplete sexual health information on SHC websites despite the ability to post far greater amounts of content online than is often feasible in print. While this study suggests that most SHC websites should include more sexual health information in order to meet the quality indicator of completeness, it is unclear whether perceptions of completeness, credibility, and source utility are positively related at all levels of completeness. For example, there may be a tipping point where the information provided is so complete that it becomes overwhelming to information seekers who then perceive lower source utility. There may also be instances where perceptions of credibility or perceptions of completeness are more influential in perceptions of source utility.

For example, if a source is perceived as credible but the information provided is clearly incomplete, information seekers who rely more heavily on perceptions of credibility to determine source utility may assume that information was purposefully excluded as irrelevant or unhelpful by the information source. These issues demand further clarification in order to make the best recommendations to SHCs about the provision of sexual health information online.

Conclusion

Young adults in the United States have the right to expect equivalent, accessible, and at a minimum, adequate, if not comprehensive, sexual health information regardless of their institution type. Our findings suggest a wide variance in the types of sexual health information available to young adults through SHC websites that may damage young adults' perceptions of SHC websites as credible and complete. We found significant differences in the range and depth of topics covered and in the availability of sexual health resources across institution types. The representation of sexual health on SHC websites overwhelmingly focused on topics dedicated to risk avoidance while topics about sexual relationships and sexual pleasure were almost entirely absent from the sample.

Notes

1. We excluded commuter campuses because we reasoned that the students at these institutions would be less reliant on SHCs for their healthcare.
2. HPV was coded separately from other STDs because it can be prevented through vaccination, and the vaccine is available to college-aged men and women.
3. We do not report the depth of sexual health mentions because given their nature, we would not expect much depth. Thus, there was very little variance in depth in sexual health mentions.

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References

American College Health Association. (2009). American college Health Association–National College Health Assessment spring 2008 reference group data report (abridged): The American College Health Association. *Journal of American College Health*, *57*, 477–488. doi:10.3200/JACH.57.5.477-488

American College Health Association. (2010). *General statement of ethical principles and guidelines*. Retrieved from http://www.acha.org/documents/resources/guidelines/ACHA_General_Statement_Ethical_Principles_May2010.pdf

American College Health Association. (2016). *Addressing sexual and relationship violence on college and university campuses*. Retrieved from http://www.acha.org/documents/resources/guidelines/Addressing_Sexual_Violence.pdf

American College Health Association. (n.d.). *About*. Retrieved from https://acha.org/About

Anderson, E. A., Eastman-Mueller, H. P., Henderson, S., & Even, S. (2016). Man Up Monday: An integrated public health approach to increase sexually transmitted infection awareness and testing among male students at a Midwest university. *Journal of American College Health*, *64*, 147–151. doi:10.1080/07448481.2015.1062768

Bravender, T. (2014). College student health in the 21st century. *Pediatrics*, *134*, 1026–1027. doi:10.1542/peds.2014-2645

Brickman, J., & Willoughby, J. F. (2017). 'You shouldn't be making people feel bad about having sex': Exploring young adults' perceptions of a sex-positive sexual health text message intervention. *Sex Education*, *17*, 621–634. doi:10.1080/14681811.2017.1332582

Buhi, E. R., Daley, E. M., Fuhrmann, H. J., & Smith, S. A. (2009). An observational study of how young people search for online sexual health information. *Journal of American College Health*, *58*, 101–111. doi:10.1080/07448480903221236

Buhi, E. R., Daley, E. M., Oberne, A., Smith, S. A., Schneider, T., & Fuhrmann, H. J. (2010). Quality and accuracy of sexual health information web sites visited by young people. *Journal of Adolescent Health*, *47*, 206–208. doi:10.1016/j.jadohealth.2010.01.002

Centers for Disease Control and Prevention. (2017). *Sexually transmitted disease surveillance* 2016. Retrieved from https://www.cdc.gov/std/stats16/adolescents.htm

Centers for Disease Control and Prevention. (2018). *6 reasons to get HPV vaccine for your child*. Retrieved from https://www.cdc.gov/hpv/infographics/vacc-six-reasons.html

DeLorme, D. E., Huh, J., & Reid, L. N. (2011). Source selection in prescription drug information seeking and influencing factors: Applying the comprehensive model of information seeking in an American context. *Journal of Health Communication*, *16*, 766–787. doi:10.1080/10810730.2011.561914

Dutta, M. J., Pfister, R., & Kosmoski, C. (2010). Consumer evaluation of genetic information online: The role of quality on attitude and behavioral intentions. *Journal of Computer-Mediated Communication*, *15*, 592–605. doi:10.1111/j.1083-6101.2009.01504.x

Dutta-Bergman, M. J. (2004a). Primary sources of health information: Comparisons in the domain of health attitudes, health cognitions, and health behaviors. *Health Communication*, *16*, 273–288. doi:10.1207/S15327027HC1603_1

Dutta-Bergman, M. J. (2004b). The impact of completeness and web use motivation on the credibility of e-health information. *Journal of Communication*, *54*, 253–269. doi:10.1111/j.1460-2466.2004.tb02627.x

Eisenberg, M. E., Garcia, C. M., Frerich, E. A., Lechner, K. E., & Lust, K. A. (2012a). Through the eyes of the student: What college students look for, find, and think about sexual health resources on campus. *Sexuality Research and Social Policy*, *9*, 306–316. doi:10.1007/s13178-012-0087-0

Eisenberg, M. E., Hannan, P. J., Lust, K. A., Lechner, K. E., Garcia, C., & Frerich, E. A. (2013). Sexual health resources at Minnesota colleges: Associations with students' sexual health behaviors. *Perspectives on Sexual and Reproductive Health*, *45*, 132–138. doi:10.1363/4513213

Eisenberg, M. E., Lechner, K. E., Frerich, E. A., Lust, K. A., & Garcia, C. M. (2012b). Characterizing sexual health resources on college campuses. *Journal of Community Health*, *37*, 940–948. doi:10.1007/s10900-011-9536-6

Escoffery, C. R., Miner, K. R., Adame, D. D., Butler, S., McCormick, L., & Mendell, E. (2005). Internet use for health information among college students. *Journal of American College Health*, *53*, 183–188. doi:10.3200/JACH.53.4.183-188

Eysenbach, G., & Köhler, C. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth

interviews. *BMJ*, *324*, 573–577. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC78994/

Fields, J. (2008). *Risky lessons: Sex education and social inequality*. New Brunswick, NJ: Rutgers University Press.

Fogel, J., Fajiram, S., & Morgan, P. D. (2010). Sexual health information seeking on the Internet: Comparisons between White and African American college students. *ABNF Journal*, *21*, 79–84. Retrieved from https://search.proquest.com/docview/762731718?accountid=14696

Fontenot, H. B., Fantasia, H. C., Sutherland, M. A., & John, T. (2016). HPV and HPV vaccine information among a national sample of college and university websites. *Journal of the American Association of Nurse Practitioners*, *28*, 218–223. doi:10.1002/2327-6924.12312

Gardner, E. A. (2015). Abstinence-only sex education: College students' evaluations and responses. *American Journal of Sexuality Education*, *10*, 125–139. doi:10.1080/15546128.2015.1015760

Hartoonian, N., Ormseth, S. R., Hanson, E. R., Bantum, E. O., & Owen, J. E. (2014). Information-seeking in cancer survivors: Application of the comprehensive model of information seeking to HINTS 2007 data. *Journal of Health Communication*, *19*, 1308–1325. doi:10.1080/10810730.2013.872730

Hicks, R. W., & Dinkel, S. (2016). The hidden gems in student health centers. *Journal of the American Association of Nurse Practitioners*, *28*, 178–180. doi:10.1002/2327-6924.12364

Hust, S. J. T., Adams, P. M., Willoughby, J. F., Ren, C., Lei, M., Ran, W., & Garrigues Marett, E. (2017). The entertainment-education strategy in sexual assault prevention: A comparison of theoretical foundations and a test of effectiveness in a college campus setting. *Journal of Health Communication*, *22*, 721–731. doi:10.1080/10810730.2017.1343877

Hyun, J. K., Quinn, B. C., Madon, T., & Lustig, S. (2006). Graduate student mental health: Needs assessment and utilization of counseling services. *Journal of College Student Development*, *47*, 247–266. doi:10.1353/csd.2006.0030

Johnson, E. K. (2017). Erasing the scarlet letter: How positive media messages about sex can lead to better sexual health among college men and women. *American Journal of Sexuality Education*, *12*, 55–71. doi:10.1080/15546128.2016.1266456

Johnson, J. D., & Meischke, H. (1993). A comprehensive model of cancer-related information seeking applied to magazines. *Human Communication Research*, *19*, 343–367. doi:10.1111/j.1468-2958.1993.tb00305.x

Judson, K., Goldsack, J., & Sonnad, S. S. (2010). Availability of e-information for women's health services: Assessment of California State University student health centers. *Journal of Women's Health*, *19*, 2219–2225. doi:10.1089/jwh.2010.1936

Jue, J. S., & Metlay, J. P. (2011). Web-based health resources at US colleges: Early patterns and missed opportunities in preventive health. *Preventing Chronic Disease*, *8*, A138. Retrieved from http://www.cdc.gov/pcd/issues/2011/nov/10_0236.htm

Koepsel, E. R. (2016). The power in pleasure: Practical implementation of pleasure in sex education classrooms. *American Journal of Sexuality Education*, *11*, 205–265. doi:10.1080/15546128.2016.1209451

Koumans, E. H., Sternberg, M. R., Motamed, C., Kohl, K., Schillinger, J. A., & Markowitz, L. E. (2005). Sexually transmitted disease services at US colleges and universities. *Journal of American College Health*, *53*, 211–217. doi:10.1080/07448481.2010.540764

Krippendorff, K. (2012). *Content analysis: An introduction to its methodology*. Thousand Oaks, CA: Sage.

Li, J. Y., Kim, S. H., & O'Boyle, J. (2017). 'I believe what I see': College students' use of media, issue engagement, and perceived responsibility regarding campus sexual assault. *Journal of Health Communication*, *22*, 772–782. doi:10.1080/10810730.2017.1355419

Luquiz, R. R., Brelsford, G. M., & Rojas-Guyler, L. (2012). Religiosity, spirituality, sexual attitudes, and sexual behaviors among college students. *Journal of Religion and Health*, *51*, 601–614. doi:10.1007/s10943-011-9527-z

Magee, J. C., Bigelow, L., DeHaan, S., & Mustanski, B. S. (2012). Sexual health information seeking online: A mixed-methods study among lesbian, gay, bisexual, and transgender young people. *Health Education & Behavior*, *39*, 276–289. doi:10.1177/1090198111401384

McKinley, C. J., Luo, Y., Wright, P. J., & Kraus, A. (2015). Reexamining LGBT resources on college counseling center websites: An over-time and cross-country analysis. *Journal of Applied Communication Research*, *43*, 112–129. doi:10.1080/00909882.2014.982681

Robson, A., & Robinson, L. (2013). Building on models of information behaviour: Linking information seeking and communication. *Journal of Documentation*, *69*, 169–193. doi:10.1108/00220411311300039

Ruppel, E. K. (2016). Scanning health information sources: Applying and extending the comprehensive model of information seeking. *Journal of Health Communication*, *21*, 208–216. doi:10.1080/10810730.2015.1058438

Santelli, J., Ott, M. A., Lyon, M., Rogers, J., Summers, D., & Schleifer, R. (2006). Abstinence and abstinence-only education: A review of US policies and programs. *Journal of Adolescent Health*, *38*, 72–81. doi:10.1016/j.jadohealth.2005.10.006

Savin-Williams, R. C. (2001). *Mom, dad, I'm gay: How families negotiate coming out*. Washington, DC: American Psychological Association.

Schwartz, R., McMahon, S., & Broadnax, J. (2015). A review of sexual assault information on college web sites. *Health & Social Work*, *40*, 275–282. doi:10.1093/hsw/hlv064

Selkie, E. M., Benson, M., & Moreno, M. (2011). Adolescents' views regarding uses of social networking websites and text messaging for adolescent sexual health education. *American Journal of Health Education*, *42*, 205–212. doi:10.1080/19325037.2011.10599189

Stvilia, B., Mon, L., & Yi, Y. J. (2009). A model for online consumer health information quality. *Journal of the Association for Information Science and Technology*, *60*, 1781–1791. doi:10.1002/asi.21115

Tanner, J. L., Arnett, J. J., & Leis, J. A. (2009). Emerging adulthood: Learning and development during the first stage of adulthood. In C. Smith & N. DeFrates-Densch (Eds.), *Handbook of research on adult learning and development* (pp. 34–67). New York, NY: Routledge.

Tao, D., LeRouge, C., Smith, K. J., & De Leo, G. (2017). Defining information quality into health websites: A conceptual framework of health website information quality for educated young adults. *JMIR Human Factors*, *4*, e25. doi:10.2196/humanfactors.6455

Van Stee, S. K., & Yang, Q. (2018). Online cancer information seeking: Applying and extending the comprehensive model of information seeking. *Health Communication*, *33*, 1583–1592. doi:10.1080/10410236.2017.1384350

Williams, D. J., Prior, E., & Wegner, J. (2013). Resolving social problems associated with sexuality: Can a 'sex-positive' approach help? *Social Work*, *58*, 273–276. doi:10.1093/sw/swt024

Williams, D. R., & Sternthal, M. J. (2007). Spirituality, religion and health: Evidence and research directions. *Medical Journal of Australia*, *186*, 47–47. doi:10.5694/j.1326-5377.2007.tb00793.x

Zhang, Y., Sun, Y., & Xie, B. (2015). Quality of health information for consumers on the web: A systematic review of indicators, criteria, tools, and evaluation results. *Journal of the Association for Information Science and Technology*, *66*, 2071–2084. doi:10.1002/asi.23311