Analyzing the Risk Factors Associated with Sexually Transmitted Infections and Overall Perception of Sex Among College Students in America: A Literature Review

Garrett McBroom

The University of Georgia

HPRB 5410W

Dr. Walters

October 2018
SEXUAL HEALTH AMONG COLLEGE STUDENTS

Research Question: What are the various risk factors associated with STI contraction, perception of sex, and understanding of negative outcomes of STI contraction among college students?

Abstract

Sex is an integral part of human nature. The basis for life on Earth is dictated by this one act: the ability for an organism to reproduce and pass its own genetic material on to the next generation. Aside from the innate biological basis for sex, intercourse can also occur for many other reasons. Within the realm of ‘sex’ there are various ways for intercourse to occur. Sex is an encompassing term that can refer to vaginal, anal, or oral forms. Like the encompassing nature of sex, the transmission of bacterium and viral agents can occur in any fashion of sex. This literature review examines the varying risk factors associated with sex and the perceptions of sex and sexually transmitted infections (STI) among college students through the analysis of 13 peer reviewed articles and 2 statistical database. The overall findings of this literature review concluded that college students exceedingly partake in risky sexual behaviors and perceive STIs and their negative outcomes differently than younger or older individuals. Risky sexual behaviors, such as unprotected sex and consuming alcohol and drugs in excess, in college students expose individuals to higher chances of contracting an infection and skew the perception of what it means to have an STI. Future studies can focus on methods to change the stigma associated with sexually transmitted infections as well as hypothesize new interventions that could deter the risky behaviors of sex among the college population. STIs and the act of sex should not be perceived as a taboo item in today’s culture but rather an outcome of bad practice of such a natural facet of life.
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Introduction

Sexually transmitted infections (STIs), previously referred to as sexually transmitted diseases (STDs) have been stigmatized for many years as evident in the diction of the former term STD. STIs can be contracted in various modes such as vaginal, anal, or oral sex. These infections can also be caused by numerous bacterial and viral agents. The most common STIs are gonorrhea, chlamydia, herpes, human papilloma virus (HPV), syphilis, and human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) (Eastman-Mueller, Habel, Oswalt, & Liddon, 2018). In some cases, like HIV/AIDS and syphilis, the infection can be fatal. In most STI cases, the infection is curable, while other STIs, like HIV/AIDS and herpes, are not and will require life long treatment (Buhi et al., 2010).

In recent decades, rates of STIs have been on the rise across the United States affecting individuals aged 14-30 most significantly (Buhi, Marhefka, & Hoban, 2010). This population was comprised of college students aged 17-23, falling in the middle of the most afflicted population. Furthermore, the negative outcomes associated with these infections can be debilitating and carry a host of stigmatized social consequences. Risky sexual behavior, lack of comprehensive knowledge of barrier methods and negative outcomes, and social perception of STIs play a pivotal role in the rise of infection rates among the college population.

Risky sexual behaviors are defined as sexual behaviors that expose an individual to a greater chance of emotional, physical, and mental disability affecting overall health negatively (Desiderato, Crawford, & Adolescence, 1995). Among these risky sexual behaviors, lack of barrier use (condom and/or diaphragm), sequential sexual partners, and concurrent sexual partners are leading causes of STI transmission (Griner et al., 2017). Other behaviors are included in the realm of risky sexual behaviors, not because they occur during sex, but because
they can lead to unsafe sexual practices. These behaviors include increased alcohol consumption and the use of drugs (Desiderato et al., 1995). Contraceptives, such as condoms and diaphragms, have been shown to reduce the transmission of STIs significantly and are widely viewed as the best method for safe sexual practices next to abstaining from sex all together (Kohler, Manhart, & Lafferty, 2008). Increasingly, however, it appears college students forgo the use of condoms and diaphragms (Griner et al., 2017). Without the use of contraceptives, students are increasing their risks of potentially contracting an infection. Other methods of contraceptive did appear to increase with age among the college population, but proper barrier usage remained the same among all age levels in college (Siegel, Klein, & Roghmann, 1999). Proper barrier methods consist of condom and diaphragm use during all sexual interactions (Siegel et al., 1999).

The college population has also shown a lack of or improper knowledge of STIs and the potential negative outcomes caused by contraction. Human papilloma virus (HPV) is the only STI that can lead to cancer (cervical cancer) and many college students are unaware of this fact (Dillard & Spear, 2011). Barriers to proper identification of an infection have also been reported due to the lack of knowledge associated with the various tests one can partake in to confirm if they are infected or not (Barth, Cook, Downs, Switzer, & Fischhoff, 2002). Furthermore, the different degrees of sexual education provided to college students can differ in many cases. In the United States many states do not allow for a comprehensive sexual health education course to be taught in high school, but rather choose an abstinence-only approach to teaching about sexual health (Kohler et al., 2008). Increasingly, studies have shown abstinence only programs do not delay the onset of sexual activity and can lead to the increased reporting of teen pregnancies (Kohler et al., 2008).
Many college students reported an outright fear of getting tested as being a reason for not wanting to know if they are infected or not (Barth et al., 2002). Individuals cited this fear was bred off the idea that their peers could potentially judge them or ostracize them. Other individuals believed only the presence of symptoms as a reason to get tested and the sheer absence of symptoms would indicate they are healthy, not infected. However, many individuals are asymptomatic for a prolonged period of time before they definitively know that they have contracted an STI (Buhi et al., 2010). This erroneous perception relays to the lack of proper sexual education and information.

Another potential aspect of the rise in STIs among college students is the new idea of a ‘hookup’ culture. A ‘hookup’ is characterized as a sexual encounter that usually lasts only one night, between two individuals who have no previous social interaction or even any knowledge of each other (Paul, McManus, & Hayes, 2000). This behavior escalates the risks of transmission. This is because the individuals ‘hooking up’ do not know each other well. Because either individual may not see the other individual again, it can be hard to determine if either individual is infected and if they are, they may not be able to contact the other partner. This can lead to an increase in disease transmission if not quelled.

Objectives

The rising rates of STI transmission among college students is an important matter that must be discussed. College students, ages ranging from 17-23, carry a high potential year of life lost variable if they succumb to an STI and develop disabilities or pass away. Also, a college student’s quality of life can be significantly altered by such an infection. Some STIs, such as HIV/AIDS and herpes, are not curable and require treatment for life if contracted. Other STIs
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can lead to cancer (HPV) and uterine/ovarian scarring, which is the case with chlamydia, gonorrhea, and syphilis (Smith & Roberts, 2009).

The purpose of this literature review is to explore the many stigmatized aspects of sex among college students and how they can negatively affect health outcomes. This paper aims to (1) examine the numerous risky sexual behaviors participated by college students, (2) assess the difference in education and knowledge of STIs and their outcomes, and (3) understand the effects of the social stigma surrounding sex and STIs amid the college population. This review will discuss the perspectives of college students and healthcare professionals for further knowledge on why the rates of sexually transmitted infections are on the rise among college students.
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Methods

This literature review is comprised of articles found from the databases Web of Science (Web of Knowledge), OASIS, and PubMed. Web of Science is a reliable database consisting of a variety of information areas including sexual health among college students, STI incidence and prevalence rates, and intervention methods for STIs. PubMed is a reliable source because the institution uses the United States National Library of Medicine’s database Medline which is made up of millions of peer reviewed journals on various health-related topics. The database known as OASIS (Online Analytical Statistical Information System) is a tool used to access the Georgia Department of Public Health’s health data repository which allows for improved mapping of various health statistics in the state of Georgia. Multiple terms were used to search each database. Ten articles were obtained from the Web of Science database. Three articles were chosen from the PubMed database and 2 references were gathered from OASIS. All references gather are peer reviewed journals or public data supported by the Georgia Department of Public Health and are suitable for this literature review.

As shown in Figure 1: Process for article selection, the first search consisted of the term “sexually transmitted diseases” which yielded a wide variety of statistical data. The second search term added all counties of Georgia which yielded the same wide array of statistical data as the previous search. The third search added the age group 18-24, excluding anyone younger or older than the age range. This stratification excluded any individuals not in the prescribed age range of most college students. To further narrow down the data sets inclusions and exclusions were chosen. The inclusions chosen were yearly data from 2010-2016, excluding any data sets from previous years. There was a singular, 1, table chosen from the OASIS database.
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Also seen in Figure 1: Process of article selection, the second search was also conducted on the OASIS database. The initial search also consisted of the term “sexually transmitted disease” which yielded the same, large data set as previously noted. In the second, stratifying search, the counties Baldwin, Bibb, Bulloch, Clarke, Chatham, Cobb, Fulton, and Lowndes were chosen. These counties were chosen to include large universities that are situated in these locations. This excluded all other counties in Georgia that do not have a large university in their county limits. The third search criteria included individuals age 18-24, as previously done, to exclude any individual not in the college-age range. The was a single table chosen from the OASIS database following this search criteria.

The third search criteria evident in Figure 1: Process for article selection, was conducted using the Web of Science database. The first search term included the phrase “sexually transmitted diseases” and yielded 6,113 articles. The addition of the phrase “college” and “negative outcomes” using AND garnered a total of 10 articles. Stratifying the results further with the phrase “18-25” and selecting years 2010-2016 produced a total of 8 articles. An additional 2 articles were chosen from the previous total of 10 articles because they were relevant to the literature review on a wider concept of sexual behavior. A total of 10 articles were acquired from the Web of Science database.

Figure 1. also depicts the search process used for the PubMed database. The initial search used the term “sexually transmitted diseases among college students in the United States” yielding a total of 447 articles. The secondary search used AND with the addition of “STD rates stratified by age group” and produced 7 articles. The third search added “risky sexual behaviors among college students” using AND, leaving only 1 article left. Inclusion criteria focused on peer reviewed articles published during the 2010-2016 date range. Because so few articles were
produced by the entire search, a total of 3 articles were chosen using the secondary search criteria because the articles gathered produced slight elements of relevant material for the literature review. After examining the articles, a total of 13 articles were chosen with the addition of 2 tables.

Figure 1: Process for article selection

Number of articles chosen: 15
Results

After reviewing the 13 articles pertaining to STIs in the college population, three main topics were evident to contribute to increase risks, transmission, and contraction of STIs. Increased risky sexual behaviors, the perception of sex and STI contraction, and understanding of the negative outcomes of STI contraction impact the incidence and prevalence of sexually transmitted infections among college students. An in-depth analysis of all articles and tables mentioned are presented below in Table 1: Articles reviewed.

Risky Sexual Behaviors

A very important aspect of the transmission and contraction of STIs pertains to the types of behaviors taken by college students when performing sexual acts. The lack of proper barrier methods, such as condoms and diaphragms, is a major factor in the transmission of infections (Griner et al., 2017). Condoms and diaphragms are used to reduce the likelihood of acquiring an infection transmitted in the various fluids exchanged during all forms of intercourse. In a study conducted by Buhi and colleagues (2010), only 58% of participants had used a condom in their most previous vaginal sexual experience. Furthermore, only 4.3% and 31.4% of the study’s individuals had used condoms during oral or anal sex, respectively (Buhi et al., 2010). Being a natural behavior, sex is hard to prevent. However, reducing the potential for acquiring or transmitting an infection can be repressed by the proper use of barrier methods.

College students also engage in activities which increase the chances of risky sexual behavior. Alcohol and drug use has been shown to be a main predicator of risky sexual behavior among the college population (Desiderato et al., 1995). An individual in an altered state, induced by alcohol or drugs, may not be as receptive to condom usage.
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Furthermore, a new culture has arisen on college campuses centered around one-night stands. The ‘hookup’ culture, as it is deemed, focuses on random sexual encounter between individuals who do not know each other (Paul et al., 2000). This new facet of college campus exposes individuals to more and more sexual partners who may be carrying a bacterium or virus that can be transmitted sexually. Due to the lack of knowledge of each partner’s sexual history or sexual status, and the short experience of time involved together, it is likely individuals could obtain an infection and not know they are carriers. If the ‘hookup’ cycle continues before proper testing is done, several individuals could become infected.

Increasingly across college campuses, students are having sex with concurrent or sequential sexual partners. Concurrent sexual partners are defined as sexual activities involving different individuals during the same, singular period or over an extended period of time. Sequential sexual partners are defined as having sex with different individuals but not during overlapping periods. Individuals partaking in either grouping of sexual activity reported lower condom use than individuals who maintained a single sexual partner (Kelley, Borawski, Flocke, & Keen, 2003).

Lastly, another risky behavior that can occur is the failure of a sexual partner to disclose sexual history such as number of previous sexual partners, lack of barrier usage, or testing positive for HIV (Desiderato et al., 1995). In a study conducted by Desiderato and colleagues (1995) it was found that three-fourths of individuals had not used barriers in their previous sexual experience and these same individuals failed to disclose any previous, relevant, sexual health information.

Alone, one risky sexual behavior can have a lasting impact on an individual. Coupling the risky behaviors together can have an exponentially greater negative impact on the health
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outcomes of an individual. An individual’s perception of STIs can play a major role in the risky sexual behaviors they partake in.

Perception of STI Contraction

How an individual believes his or her peers view or will view them has a large impact on the actions they take when talking about sexual health. In a study conducted by Barth and colleagues (2002), many participants noted their reasoning for rejecting an STI test to be based on what other people would think of them. They did not want to be perceived as “dirty” or “irresponsible” by their classmates, friends, and peers (Barth et al., 2002). Sixty-one percent in the same study mentioned embarrassment as the greatest predator of their rejection for STI testing.

Other students perceived STI contraction as being lesser when compared to an unwanted pregnancy. In a study produced by Siegel and colleagues (1999), college students used birth control more as they became older but used condoms and diaphragms at the same rate they had has freshmen. The perception of an STI was concluded to be less demeaning, socially, than having an unwanted pregnancy.

It is evident that the normal behaviors of one’s peers and the pressure induced by peers can have a significant effect on sexual behaviors. Led by Paul and colleagues (2000), the ‘hookup’ culture was heavily influenced by the sexual norms and pressures of peers when pertaining to risky sexual behaviors. Individuals who had experienced hookups had shown signs of increased dependence on the attitudes expressed by their peers in relation to their sexual acts (Paul et al., 2000). Acceptance by others can be exemplified by the increasing rates of STIs in
college students by the consistent changing of social norms and attitudes, that illustrate what one’s peers think of an individual can affect their decisions more than the current social climate.

*Perception of Negative Outcomes*

The last topic summarizing the results observed from this literature review can be illustrated by the opinions of individuals that can be affected by STIs. In a study by Barth and colleagues (2002), it was shown that the presence of symptoms was a negative consequence and the absence of symptoms was a positive consequence. Many individuals stated that the absence of symptoms was the main predicting factor for why they would not get tested. Many individuals do not perceive STIs as “serious medical problems” and claim “who cares about the other STIs” when AIDS is the number one killer (Barth et al., 2002).

In some cases, the infectious agent or the infection may be known, but the outcomes of the infection are not. In the case of a study produced by Dillard and colleagues (2011), 96% of respondents had heard of HPV and 98% were aware that a vaccine, Gardasil, was available to the public. However, respondents were greatly unaware that HPV is the only known cause of cervical cancer and is a leading cause of genital warts (Dillard & Spear, 2011).

Roughly 3 million new STI cases occur each year in the United States in the population below 25 years of age (Barth et al., 2002). Unfortunately, many of the cases affect the college population disproportionately. With STIs rising in this population, it is important to develop ways to show students that STIs can have negative outcomes far lasting than just a few weeks. Also perceived as a negative outcome of risky sexual behaviors is an unwanted pregnancy.
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Though the rates are on the decline in the college aged population, pregnancies in the age range studied, cost taxpayers 10.9 billion dollars in 2008 (Sieving et al., 2014).
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Table 1: Articles and Statistical Databases Reviewed

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Article Title and Journal</th>
<th>Purpose of article</th>
<th>Sample info</th>
<th>Type of Research</th>
<th>Research Findings</th>
<th>Limitations of Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barth, K. R. Cook, R. I. Downs, J. S.</td>
<td>2002</td>
<td>Social stigma and negative consequences: Factors that influence college students' decisions to seek testing for sexually transmitted infections.</td>
<td>Identify and describe key factors that influence STI test-seeking behavior among college students.</td>
<td>41 college students age 18-23</td>
<td>Cross-sectional research (surveys) and semistructured interviews</td>
<td>Minimal media portrayal of STIs portrays an unimportant attitude; perceived negative consequences of testing, caused by social stigma, is the main reason for delayed or no testing.</td>
<td>Actual behaviors were never assessed, study population was limited to a single university, and a comprehensive ethnic sample was not confirmed.</td>
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<td>Switzer, G. E. Fischhoff, B.</td>
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<td>Buhi, E. R. Marhefka, S. L. Hoban, M. T.</td>
<td>2010</td>
<td>The State of the Union: Sexual Health Disparities in a National Sample of US College Students.</td>
<td>Examine the sexual health behaviors and outcomes among black and white college students so to identify disparities</td>
<td>44,165 undergraduate students at 110 postsecondary institutions across the US</td>
<td>Analysis of the ACHA-NCHA database</td>
<td>Condom use, and anal/vaginal sex experiences varied across groups. Consistent condom use was low and white students reported less condom use than their black counterparts.</td>
<td>Black undergraduate students and students attending 2-year colleges were underrepresented. Self-report bias by the students is also a limitation of concern.</td>
</tr>
<tr>
<td>Desiderato, L. L. Crawford H. J.</td>
<td>1995</td>
<td>Risky sexual behavior in college students: Relationships between number of sexual partners, disclosure of previous risky behavior, and alcohol use.</td>
<td>Examine relationships between disclosure of previous sexually risky behavior to current sexual partners, multiple sexual partners, condom and alcohol use, and vulnerability to AIDS</td>
<td>427 unmarried undergraduate students</td>
<td>Cross-sectional research (survey)</td>
<td>A third of participants had more than one sexual partner in the prior 11 weeks, three-fourths reported inconsistent or no condom use, self-disclosure about past risky behavior does not appear to lead to higher levels of condom use.</td>
<td>Failure to disclose all information and dishonesty may have occurred with surveys.</td>
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<td></td>
<td>Author(s)</td>
<td>Year</td>
<td>Title</td>
<td>Methodology</td>
<td>Participants</td>
<td>Study Type</td>
<td>Summary</td>
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<td>4</td>
<td>Dillard, J. P. Spear, M. E.</td>
<td>2011</td>
<td>Knowledge of Human Papillomavirus and Perceived Barriers to Vaccination in a Sample of US Female College Students.</td>
<td>To assess the knowledge of HPV and perceived barriers to being vaccinated against the virus.</td>
<td>1800 undergraduate women enrolled at Penn State University in the Fall semester of 2008</td>
<td>Cross-sectional study (survey)</td>
<td>Respondents were unaware that HPV is the only cause of cervical cancer, half of respondents did not know HPV is the most common STD, and there was no correlation between sexual behavior and knowledge of HPV. The poor response rate leads to a lack of confidence in conclusions, selection bias caused by intruding questions leading to drop outs, and several survey questions were deemed imperfect.</td>
</tr>
<tr>
<td>5</td>
<td>Eastman-Mueller, H. P. Habel, M. A. Oswalt, S. B. Liddon, N.</td>
<td>2018</td>
<td>Get Yourself Tested (GYT) Campaign: Investigating Campaign Awareness and Behaviors Among High School and College Students.</td>
<td>Examine the relationship between the Get Yourself Tested campaign and several sexual health behaviors.</td>
<td>2,329 high school and college students across the US</td>
<td>Cross-sectional study (online panel survey)</td>
<td>College students were more aware of the GYT campaign than high school students. College students also had more positive outcomes than high school students in concert with their knowledge of the GYT campaign. The small sample size representing the national population in question, self-reporting bias due to the questions of the survey, and the broad ranging age group and cultural differences across US regions.</td>
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<td>6</td>
<td>Griner, S. B. Thompson, E. L. Vamos, C. A. Logan, R. Vazquez-Otero, C. Daley, E. M.</td>
<td>2017</td>
<td>College institutional characteristics and the use of barrier methods among undergraduate students.</td>
<td>Assess the usage of barrier methods by undergraduate students during three sexual activities based off several varying institutional characteristics.</td>
<td>13,400 college students from 57 colleges</td>
<td>Cross-sectional study (secondary analysis of the NCHA-II)</td>
<td>Eighty-six percent of students had had sex within the prior 30 days, only 23.5% used barriers during anal sex and 63.3% used barriers during vaginal sex. Barrier use during vaginal sex was shared proportionally among all students and their respective institution of enrollment. Definitions of vaginal, oral, and anal sex were not thoroughly designated, gender of the sexual partner was not asked but assumed, and self-reported barrier usage may have been skewed.</td>
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| #  | Year | Health  | 2018          | Sexually Transmitted Disease (STD) Statistics
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<td></td>
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<td></td>
<td>Determine the current trend in Chlamydia infections among all age groups from 2010-2016, in the state of Georgia</td>
<td>Cross-sectional study (secondary analysis of Georgia Department of Public Health data on STDs)</td>
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<td>267,456 Chlamydia infected patients from 2010-2016 in the state of Georgia</td>
<td>Infection rates dropped from 2011 to 2013, but then rose sharply from 2014-2016.</td>
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<td>OASIS by Georgia DPH</td>
<td>Self-reporting bias could have occurred if individuals never reported the infection, asymptomatic individuals may not be aware they are affected and will not be included in the data.</td>
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<tr>
<td>7b</td>
<td>2018</td>
<td>Health</td>
<td>Determine the current trend in Chlamydia infections among college students in counties with postsecondary institutions, from 2010-2016 in Georgia</td>
<td>Cross-sectional study (secondary analysis of Georgia Department of Public Health data on STDs)</td>
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<td>84,265 Chlamydia infected patients, ages 18-23, in counties of large postsecondary institution s in Georgia from 2010-2016</td>
<td>Infection rates dropped from 2011 to 2013, but then rose sharply from 2014-2016.</td>
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<tr>
<td></td>
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<td></td>
<td>OASIS by Georgia DPH</td>
<td>Self-reporting bias could have occurred if individuals never reported the infection, asymptomatic individuals may not be aware they are affected and will not be included in the data.</td>
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<tr>
<td></td>
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<td>To explore whether sexual relationships as sequential or concurrent, are more important indicators of STD risk than number of sexual partners.</td>
<td>Thirty-five percent of sexually active teens had more than one partner in the past 18 months, and 40% of the relationships were overlapping or concurrent. Teens in both relationships reported less condom use and higher degree of regret due to alcohol.</td>
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<tr>
<td></td>
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<td></td>
<td>Journal of Adolescent Health</td>
<td>Assumption that monogamous adolescents are infection-free prior to starting a new relationship, prevalence rate of STDs was low reducing the ability to detect differences among groups. The follow-up survey did not specifically note the dates of diagnosis.</td>
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<tr>
<td></td>
<td>Author(s)</td>
<td>Year</td>
<td>Title</td>
<td>Methodology</td>
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<tr>
<td>9</td>
<td>Kohler, P. K., Manhart, L. E., Lafferty, W. E.</td>
<td>2008</td>
<td>Abstinence-Only and Comprehensive Sex Education and the Initiation of Sexual Activity and Teen Pregnancy.</td>
<td>Cross-sectional study (analysis of Cycle 6 of the National Survey of Family Growth)</td>
</tr>
<tr>
<td>10</td>
<td>Parsons, J. T., Halkitis, P. N., Binbi, D., Borkowski, T. J.</td>
<td>2000</td>
<td>Perceptions of the benefits and costs associated with condom use and unprotected sex among late adolescent college students.</td>
<td>Cross-sectional study (research assistant administered questionnaire)</td>
</tr>
<tr>
<td></td>
<td>Paul, E. L., McManus, B., Hayes, A.</td>
<td>2000</td>
<td>“Hookups”: Characteristics and correlates of college students' spontaneous and anonymous sexual experiences.</td>
<td>Cross-sectional study (research assistant administered questionnaire)</td>
</tr>
</tbody>
</table>
### SEXUAL HEALTH AMONG COLLEGE STUDENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Abstracts</th>
<th>Study Type</th>
<th>Sample Size</th>
<th>Key Findings</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Siegel, D. M. Klein, D. I. Roshmann, K. J.</td>
<td>1999</td>
<td>Sexual behavior, contraception, and risk among college students. <em>Journal of Adolescent Health</em></td>
<td>Characterize the differences and similarities among all college grade levels regarding sexual behaviors, including contraception choices and HIV risk.</td>
<td>Cross-sectional study (41-item sexual behavior questionnaire)</td>
<td>797 college students</td>
<td>Increased oral contraception as students became older, low level HIV testing before and/or after sexual encounters, condom use did not increase with grade level.</td>
<td>Bias caused by self-reporting, small sample size, imperfect questions on the questionnaire</td>
</tr>
<tr>
<td>13</td>
<td>Sieving, R. E. McRee, A. L. Secor-Turner, M. Garwick, A. W. Bearinger, L. H. Beckman, K. J. Rosnich, M. D</td>
<td>2014</td>
<td>Prime Time: Long-Term Sexual Health Outcomes of a Clinic-Linked Intervention. <em>Perspectives on Sexual and Reproductive Health</em></td>
<td>Analyze the long-term effects of preventative health services on youth pertaining to teen pregnancy and sexual risks</td>
<td>Quasi-experimental study (Prime Time youth intervention or regular clinical services)</td>
<td>253 sexually active females, ages 13-17, at high risk for pregnancy</td>
<td>The intervention group reported more months of consistent condom use and dual contraception use than did the control group. Those in the Prime-Time intervention group were also more likely to enrol in postsecondary schools.</td>
<td>Data was collected using self-reporting leading to potential response bias, populations of high risk females who do not have access to clinical services are excluded</td>
</tr>
<tr>
<td>14</td>
<td>Smith, P. D. Roberts, C. M.</td>
<td>2009</td>
<td>American College Health Association Annual Pap Test and Sexually Transmitted Infection Survey: 2006. <em>Journal of American College Health</em></td>
<td>Describe the testing patterns of STIs in US college health centers</td>
<td>Cross-sectional study (online survey)</td>
<td>128 self-selected US college health centers (representing more than 2 million college students)</td>
<td>Three percent of chlamydia tests were positive, herpes simplex virus I accounted for 60% of genital herpes infections.</td>
<td>Health centers were self-selected for schools with best data systems, data may have been inputted incorrectly or not at all for some sections, true incidence versus prevalence was not stratified in detail</td>
</tr>
<tr>
<td>15</td>
<td>Zinnet, G.D., Rosenthal, S.L.</td>
<td>2010</td>
<td>HPV vaccine and males: Issues and challenges. <em>Gynecologic Oncology</em></td>
<td>Examine the attitudes of parents, young males, and health care professionals towards HPV vaccination and other STIs</td>
<td>Analysis of many published journals</td>
<td>Qualitative research study</td>
<td>HPV vaccination for women is most cost effective versus vaccinating males and females, females have a low vaccination rate, males lack enough knowledge about HPV compared to females.</td>
<td>Articles chosen for review may have been chosen for non-scientific reasons, the overall populations of the study may not be comprehensive to draw concise conclusions about the larger population</td>
</tr>
</tbody>
</table>
### Table 2: STI statistics, individuals aged 18-24, for 2010-2016 in Georgia (Health, 2018)

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Selected Total Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>cases</td>
<td>35,018</td>
<td>3,608.60</td>
<td>38,759</td>
<td>3,909.50</td>
<td>37,114</td>
<td>3,670.90</td>
<td>34,831</td>
<td>3,432.80</td>
</tr>
<tr>
<td>rate</td>
<td>0.26</td>
<td>0.13</td>
<td>0.16</td>
<td>0.10</td>
<td>0.12</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
</tr>
</tbody>
</table>

### Table 3: STI statistics, individuals aged 18-24, for 2010-2016 in select counties of Georgia (Health, 2018)

<table>
<thead>
<tr>
<th>Counties and Universities</th>
<th>2010 STD Cases</th>
<th>STD Rate</th>
<th>2011 STD Cases</th>
<th>STD Rate</th>
<th>2012 STD Cases</th>
<th>STD Rate</th>
<th>2013 STD Cases</th>
<th>STD Rate</th>
<th>2014 STD Cases</th>
<th>STD Rate</th>
<th>2015 STD Cases</th>
<th>STD Rate</th>
<th>2016 STD Cases</th>
<th>STD Rate</th>
<th>Selected Years Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin (GCSU)</td>
<td>253</td>
<td>3,016.60</td>
<td>191</td>
<td>2,337.00</td>
<td>152</td>
<td>1,702.90</td>
<td>159</td>
<td>1,820.90</td>
<td>192</td>
<td>2,210.50</td>
<td>176</td>
<td>2,039.60</td>
<td>206</td>
<td>2,436.10</td>
<td>1,329</td>
</tr>
<tr>
<td>Bibb (Mercer)</td>
<td>753</td>
<td>4,582.80</td>
<td>1,146</td>
<td>6,914.90</td>
<td>1,236</td>
<td>7,431.00</td>
<td>833</td>
<td>5,086.70</td>
<td>1,097</td>
<td>6,786.70</td>
<td>1,136</td>
<td>7,080.10</td>
<td>1,120</td>
<td>7,110.70</td>
<td>7,321</td>
</tr>
<tr>
<td>Chatham (AASU, SSU)</td>
<td>1,656</td>
<td>4,749.10</td>
<td>1,642</td>
<td>4,684.30</td>
<td>1,679</td>
<td>4,738.80</td>
<td>1,539</td>
<td>4,543.60</td>
<td>1,607</td>
<td>4,719.00</td>
<td>1,851</td>
<td>5,535.50</td>
<td>1,862</td>
<td>5,638.20</td>
<td>11,836</td>
</tr>
<tr>
<td>Clarke (UGA)</td>
<td>543</td>
<td>1,535.70</td>
<td>542</td>
<td>1,467.20</td>
<td>620</td>
<td>1,727.00</td>
<td>689</td>
<td>1,991.00</td>
<td>741</td>
<td>2,223.00</td>
<td>770</td>
<td>2,224.50</td>
<td>746</td>
<td>2,231.70</td>
<td>4,651</td>
</tr>
<tr>
<td>Cobb (KSU)</td>
<td>1,618</td>
<td>2,567.60</td>
<td>2,051</td>
<td>3,238.50</td>
<td>1,724</td>
<td>2,665.80</td>
<td>1,738</td>
<td>2,633.50</td>
<td>2,108</td>
<td>3,118.20</td>
<td>2,488</td>
<td>3,686.50</td>
<td>2,719</td>
<td>3,982.00</td>
<td>14,446</td>
</tr>
<tr>
<td>Lowndes (VSU)</td>
<td>834</td>
<td>4,379.10</td>
<td>1,060</td>
<td>5,155.40</td>
<td>919</td>
<td>4,180.90</td>
<td>747</td>
<td>3,531.90</td>
<td>743</td>
<td>3,504.70</td>
<td>876</td>
<td>4,336.80</td>
<td>1,055</td>
<td>5,193.50</td>
<td>6,234</td>
</tr>
<tr>
<td>Fulton (Emory, GaStU, GT)</td>
<td>4,826</td>
<td>4,885.10</td>
<td>5,282</td>
<td>5,255.70</td>
<td>4,737</td>
<td>4,513.70</td>
<td>4,155</td>
<td>4,010.50</td>
<td>4,550</td>
<td>4,383.50</td>
<td>4,962</td>
<td>4,718.60</td>
<td>5,772</td>
<td>5,528.80</td>
<td>34,284</td>
</tr>
<tr>
<td>Bulloch (GaSoU)</td>
<td>598</td>
<td>3,038.80</td>
<td>616</td>
<td>2,887.70</td>
<td>590</td>
<td>2,946.30</td>
<td>599</td>
<td>3,179.90</td>
<td>626</td>
<td>3,351.90</td>
<td>612</td>
<td>3,342.30</td>
<td>523</td>
<td>2,857.10</td>
<td>4,164</td>
</tr>
<tr>
<td>County Summary</td>
<td>11,081</td>
<td>3,748.90</td>
<td>12,530</td>
<td>4,142.60</td>
<td>11,657</td>
<td>3,778.40</td>
<td>10,459</td>
<td>3,449.90</td>
<td>11,664</td>
<td>3,843.00</td>
<td>12,871</td>
<td>4,235.50</td>
<td>14,003</td>
<td>4,637.40</td>
<td>84,265</td>
</tr>
</tbody>
</table>
Discussion

The aim of this literature review is to explore the different stigmatized aspects of sex and STIs in college students and how this stigma can negatively affect behaviors and health outcomes. There were three notable outcomes to be addressed regarding STI transmission and contraction among college populations: risky sexual behaviors, perception of STI contraction, and perception of the negative outcomes common with STI contraction. The overall findings of the literature reviewed were that many college aged individuals partake in risky sexual behaviors, predominantly in the form of not wearing any barrier contraceptives, but also in the consumption of alcohol and drugs which can lead to risky sexual behaviors. Furthermore, many college students do not perceive STIs, other than HIV/AIDS, as being dangerous to their health and therefore do not recognize the negative outcomes, such as symptoms, as being important. In addition, an effort should be made to educate the youth more comprehensively in sex, STIs, and proper ways to prevent transmission and contraction (Kohler et al., 2008).

In a study conducted with 797 college students, 44 percent stated that they do not use condoms and the majority of individuals stated incorrect knowledge concerning the effectiveness of oral contraceptives in preventing STIs (Siegel et al., 1999). This statistic not only emphasizes the need to wear protective barriers, such as condoms and diaphragms, but to also educate individuals who are becoming sexually active. It is important that individuals who are going to participate in sex have the right information on the proper ways to do so. In another study produced by Desiderato and colleagues (1995), it was found many of the participants failed to disclose having previous sexual partners, their lack of condom use, and testing positive for HIV. This inherent lack of knowledge about the other sexual partner is also deemed a risky behavior.
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because it puts one at an increased risk for infection. Proper use of condoms, diaphragms, and other barrier methods can significantly reduce the risk of STI contraction and transmission.

The overall perception of STIs is of main concern in its effect on STI incidence and prevalence rates in the college population. Because of the HIV/AIDS epidemic that has come to light in the past fifty years, many of the other STIs are no longer perceived with the same severity as AIDS. For instance in a study conducted by Barth and colleagues (2002), one individual stated, “People don’t care about the other STIs, just AIDS”. This same theme is evident in the way HPV is perceived or not perceived. Many individuals are misconceived that HPV is not HIV and that HPV is the leading cause of cervical cancer (Dillard & Spear, 2011). Because the perception of STIs, mainly STIs other than HIV/AIDS, is more latent, transmission and contraction of these infections is not deemed as importantly as it should be.

Finally, the negative outcomes of the majority of STIs appears to be less concerning when compared to HIV/AIDS. In the instance of potentially having an STI that is not HIV/AIDS, many individuals did not get tested for fear that their peers were view them in a lesser manner (Barth et al., 2002). As previously noted, the severity of the infections was also a large predicator on how people saw their testing options. If an individual thought he or she might have contracted HIV, then testing would be more likely to occur versus contracting any of the other STIs (Barth et al., 2002).

Limitations

In the 13 articles chosen for review, there were ample limitations noted by researchers found to be a potential cause for skewing of collected data. In most of the studies, small sample sizes did not allow for generalizations to drawn about the entire college student population in the
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United States. In various studies, the only individuals participating were strictly heterosexual. This type of data collection excluded individuals who have sexual encounters with the same sex. In some studies, racial and ethnic stratifications were not conducted. This was not viewed as a limitation by these studies, but when taken into context with data gathered by other studies, it would appear ethnic and racial backgrounds do have an effect on risky sexual behaviors, perception of STI contraction, and perception of the potential negative outcomes of such a contraction. Various articles reviewed used surveys administered by aides. In one study for example, it was noted that some of the questions on the survey were ambiguous or too elevated in language to be properly understood by the population. Several of the surveys and questionnaires conducted were based off of self-reporting by the participant. This method could lead to self-reporting bias and recall bias, potentially effecting the data gathered. Limitations are always present in studies because of the difficulty there is to account for any bias, confounding, or reporting issues.

Further Research

Barth and colleagues suggested making sure individuals know their confidentiality rights and are aware their STI testing will be kept confidential to improve the delayed timing of individuals to get tested (Barth et al., 2002). Implementing new teaching techniques to educate individuals on sex, STIs, and contraceptives can also require some further research. Formal comprehensive sex education programs have been shown to reduce teen pregnancy (Kohler et al., 2008). Furthermore, illustrating the negative outcomes of all STIs, not just HIV/AIDS, could be beneficial in creating an openness around the topic of sex and infections. The lack of media attention applied to STIs other than HIV/AIDS may convey a notion that the other infections are superficial and unimportant (Barth et al., 2002).
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Conclusion

In the wake of the three most encompassing factors, risky sexual behavior, perception of STIs, and perception of negative outcomes of STIs, the findings note the necessity to provide more accurate information, educate individuals on a more in-depth scale, and improve the stigma associated with sex and sexually transmitted infections. The data gained by the articles illuminated the need to decrease the rates of STIs among college students to help prevent negative outcomes on the growing generation. Providing proper information on all STIs, not just HIV/AIDS, can provide a broad scope of the potential downfalls associated with contraction. Discussing the proper ways to deter contraction using condoms and barriers is useful in preventing the spread of infections and unwanted pregnancies. Talking, openly, about what sex is and the potential risks that can arise when partaking in the act may help suppress the rising rates of STIs among college students. Future studies can be performed to assess other factors more thoroughly, such as STI stratification among race/ethnicity. Individuals in college bare a great burden of the STI contraction and transmission in this nation and are very vulnerable to not receiving proper testing and education due to peer normality. With decreased risky sexual behaviors, the proper use of barrier methods, and the de-stigmatized role STIs play in popular culture, college students could reduce STIs rates and improve their health.
References


doi:10.1080/07448480209596021


doi:10.1080/07448480903501780


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