
Childhood, Adolescent Sexual Education and Sexual Behavior Among Ohio State Students

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Abstract

Sexual health is affected by a number of demographic and behavioral factors, including ethnic background, religion and self-efficacy. Sexual health is largely defined by sexual health behaviors, which are a broad, overarching group of health behaviors that can cover everything from abstinence at the simplest level, to any array of nuanced health decisions. There is not much understood about how educational experiences, especially as an adolescent, can affect sexual health behaviors in subsequent college years. This study examines the relationship between childhood and adolescent sexual health education and its effects on sexual health behavior as a college student. A non-randomized, convenience sample of approximately 300 Ohio State students was surveyed in order to elucidate this relationship. Correlation and chi square analyses were performed, and it was found that sexual health education prior to high school graduation has a consistent, but small effect on the frequency of testing for sexually transmitted infections (STI's), demonstrating an important example of a protective sexual health behavior.

Introduction

Sexual and reproductive health are essential aspects of wellbeing yet are frequently stigmatized due to their association with sexuality—an extremely taboo and volatile topic in contemporary American society. The stigma surrounding sexual health has created an information deficit, especially among young people. Younger populations are arguably the group in need of the most access to this information, as they experience a disproportionate number of sexual health issues in comparison to the rest of the population. The U.S. Centers for Disease Control and Prevention (CDC) reports that young adults, ages 15-24, make up only 25% of the United States population, yet account for 50% of the 20 million STI's that occur each year (2017). This means that teens and young adults throughout the United States receive about 10 million new STI's every year, which is equivalent to the population of the entire state of Michigan. In the state in which this research was conducted, Ohio ranks 7th and 10th highest for national Gonorrhea and Chlamydia infections among adolescents, respectively (Centers for Disease Control and Prevention, 2017). Ohio also experiences dramatically high adolescent pregnancy rates, with 23.2 babies born for every 1,000 young women aged 15-19, totaling more than 8,000 babies born to adolescent mothers in 2016 (U.S. Department of Health and Human Services, 2019).

Survey-based studies have compiled statistics for many sexual health behaviors among college students, though the exact, multifactorial mechanisms that determine these behaviors are unknown. Past research into these mechanisms suggests that multiple factors, such as ethnicity, spirituality, and religion, stemming from childhood and adolescent experiences may affect sexual health behaviors in young adults (Adamczyk and Hayes, 2012; Luquis, et al., 2015). Other studies suggest that self-efficacy or access to health care could affect sexual health behaviors (Eisenberg, et al., 2013; Lewis, et al., 2010). However, little is known about how educational experiences affect sexual health behaviors. Considering the poor sexual health outcomes among Ohio's adolescents, the behaviors that precipitate these outcomes could follow young students to higher education. This could potentially lead to poor sexual

health behaviors among college students enrolled in large state universities, where they make up a majority of the student body. This study will examine the association between sexual health behaviors of students at The Ohio State University and potential educational factors that may affect sexual health in this population, with special emphasis on sexual education received prior to high school graduation. Sexual education as a child or adolescent is expected to have an effect on the sexual behaviors among Ohio State students. It is projected that receiving more comprehensive information and less abstinence-based messaging will lead to an increase in protective sexual health behaviors among Ohio State students.

A convenience sample of self-reported survey data from 321 respondents currently attending The Ohio State University was obtained and analyzed in order to examine this relationship. On a written, multiple choice questionnaire, respondents self-identified the type of sexual education that they received before graduating from high school as well as the number of STI tests they have received in the past two years.

Literature Review

Sexual Health Education

Sexual health education is typically provided to students at grade school, middle school, or high school levels. It can also be frequently found on University campuses, typically containing subject matter that has to do with consent and bystander intervention programs. The three types of sexual health education programming typically found in the United States are: abstinence-centered, abstinence-plus, and comprehensive sexual education (Advocates for Youth, n.d.). Abstinence-centered education focuses on emphasizing abstinence until marriage, typically censoring other topics such as contraception or STI transmission. Abstinence-plus education focuses on emphasizing abstinence until marriage, but also will provide information about contraceptives and STI transmission in the context of pushing for abstinence. Comprehensive sexual education teaches abstinence as the only way to 100% avoid STI transmission or unwanted pregnancy, but focuses on contraception, STI, and Human Immunodeficiency Virus (HIV) education, as well as skills to communicate effectively and maintain healthy inti-

mate relationships (Advocates for Youth, n.d.). Sexual education programs differ drastically from school-to-school and state-to-state.

As of 2016, only 24 states mandate the instruction of sexual education in public schools, only 33 states require their schools to distribute information about HIV to their students, and 38 states allow parental censorship of sexual education. Only 20 states require sexual health and HIV education to be deemed medically accurate or evidence-based by the authorities that determine the gold standard for medical practice (National Conference of State Legislatures, 2019). Knowledge of sexual health has been and continues to be restricted to students in grade school to high school in Ohio, which is one of only two states that does not have any form of state-mandated standards for health education in its schools. Our current laws regarding “venereal disease” education mandates that abstinence should be emphasized in all sexual health programs in schools, and that students should be taught that conceiving children while unmarried is harmful to themselves as well as society (Ohio Revised Code, 2001). Thus, sexual education programming is frequently not required to convey factual information and is particularly vulnerable to censorship or manipulation by legislative bodies and parental authority. In restrictive states like Ohio, it is very difficult to obtain accurate information about sexual health, which is not only frustrating to adolescents, but can also be reflected in our high rates of STI transmission and teen pregnancy.

Sexual Health Behavior

A recent national survey of female college students, including a sample of women from Ohio State, found that among the 13,484 women included in the analysis, almost one in every five (18%) were virgins, suggesting that abstinence remains a common sexual health behavior among college students (Armstrong, et al., 2012). Sexual health behaviors may also differ among minority groups. Among Latino students, sexual behaviors were significantly affected by spirituality, which was not found among their white counterparts (Luquis, et al., 2015). On an international scale, Muslims and Hindus report less premarital sex than Christians, Jews, and Buddhists, with Buddhists hav-

ing the most premarital sex of all religions. Different cultures place differential emphasis on abstinence until marriage (Adamczyk and Hayes, 2012). Thus, ethnicity and religion may also influence attitudes towards sexual health.

Though different demographics have shown different sexual health behavioral patterns, other aspects that shape sexual health behavior can be analyzed. College students report lacking self-confidence in their ability to perform protective sexual health behaviors and report low rates of condom usage for oral, vaginal, and anal sex; this is possibly due to ignorance of how to use it or unwillingness to ask that a sexual partner put one on (Lewis, et al., 2010). Students reported low self-efficacy, or self-confidence, in regard to their ability to have discussions with their partners about STI testing or their sexual partner history (Lewis, et al., 2010). Furthermore, the availability of sexual health resources on a college campus could also influence the sexual health behaviors of its students. A study in Minnesota has found that the more sexual health resources that a college provides to its students, the greater the number of students that will have access to reliable birth control and contraceptives. This increased access resulted in fewer students reporting having intercourse without a method of pregnancy or STI prevention (Eisenberg, et al., 2013). Moreover, on the Ohio State Campus, there is free STI testing that is confidential and does not require health insurance. However, students must be aware of this resource and be willing to use it to perform this protective sexual health behavior.

Methods

Sample and Survey

A 61-question survey was created by the Spring 2019 Social Research Methods class, under the supervision of PhD Candidate, Rob VandenBerg to perform a non-randomized sample the student population at The Ohio State University. Each student in the class submitted two to three questions to be included in the survey, some of whom had overlapping questions. In addition to student research questions, demographic questions were used to collect basic information about each respondent at the beginning of the survey. Each student in the class received 15 paper copies of the

survey in class and distributed them to students who attend The Ohio State University. The survey was distributed to a non-randomized, convenience sample of 321 Ohio State University students during March of the Spring 2019 Semester. Response data was added to survey data taken in the previous semester, adding up to a total of 556 respondents.

Questions 22 and 55 of the survey represent the independent and dependent variables studied, respectively (see Appendix A). Both of the questions received 320 responses, indicating that one out of the 321 respondents omitted the question. As these questions were new to the survey and not included in the previous semester's version, data from respondents in the previous semester was marked as missing for each question. In bivariate analysis, 32 respondents who identified as sexually abstinent were excluded from the sample in order to best assess the research question.

Dependent Variable

The dependent variable for this study was sexual health behavior. Sexual health behaviors are a broad, overarching group of health behaviors that can cover everything from abstinence at the simplest level, to any array of nuanced health decisions. Sexual health behaviors could also include the number of sexual partners a person has, condom usage, contraceptives, pre-exposure prophylaxis (PrEP) to prevent HIV infection, as well as STI and HIV testing, and the frequency at which it occurs. For the purpose of this study, sexual health behavior was defined as STI testing and the number of times that respondents have been tested within the last two years given that they have been sexually active. Sexual health behavior can include a number of decisions that have an impact on personal sexual health.

Though there are many different manners by which sexual health behaviors can be measured, STI testing was used to measure this behavior among the respondents as it is a more difficult sexual health behavior to perform that requires a higher degree of sexual education and empowerment. Survey respondents must not only be aware that they should receive STI testing if they are sexually active, but they also need to know

where they can receive these services and have sufficient self-efficacy to do so.

This variable needed to be manipulated in a few ways in order to be best-suited for analysis. First, when it was ordered numerically, it assigned the number 9 to those who have never been sexually active and thus have never received a STI test, which drives up the mean number of STI tests for people who have no medical need for a STI test. Respondents who indicated never being sexually active were recoded as missing data points.

This question should generally have high reliability and validity as it should be relatively easy to answer truthfully. However, those who are sexually active and have not gotten tested for an STI may feel a social desirability bias to say that they have because getting tested for an STI is something that people are supposed to do for their sexual health. Others may be afraid to admit they are not sexually active – because we live in a culture that “prude shames” those who decide to remain abstinent until marriage. Similarly, some may be afraid to admit they are sexually active if they come from a cultural background in which premarital sex is discouraged.

Independent Variable

The independent variable for this study is sexual health education, specifically the sexual health education received up until respondents graduated from high school. For most, this encompasses grade school, middle school, and sometimes high school sexual education. For this reason, the question remained broad and asked respondents about the type of sexual education they received in middle school and in high school. College sexual education was not included in this question because Ohio State students go through the same online modules and classes about consent every year. Since it is a university requirement for all freshmen and transfer students, it is presumed to be standard among all respondents.

Respondents were asked to identify the type of sexual education that they received during their grade school and high school years, measuring their childhood

sexual education in a formal setting. Respondents were asked to indicate whether they received abstinence-centered, abstinence-plus, comprehensive, or no sexual education while attending grade school through high school programs. Definitions of each program were provided to the respondents in the question, as follows: abstinence-centered sexual education only focuses on not having sex until marriage, abstinence-plus sexual education strongly recommends no sex until marriages but also covers some forms of contraception and various STI's, and comprehensive sexual education focuses on the prevention of STI's and contraceptives.

This variable should also have relatively high reliability and validity as it should have been straightforward and simple to answer truthfully among the survey respondents. This question asks about the type of sexual education that someone has received, and there is little-to-no perceived social desirability bias in the reporting of education, even if it has to do with sexual health. The wording of the question spans from grade school to high school and it was assumed that middle school was included in that range.

Control Variables

Question 55 (of a 61 question survey) also gave respondents the ability to indicate that they have not been sexually active in the past two years, which provided a measurement of those who are sexually abstinent among the sample of respondents. This question also sought to separate the portion of respondents who are not sexually active, as it does not make sense for this section of the sample to receive STI tests. For this reason, there is a "Not Applicable" choice included in the question, which gives respondents the option to provide reasoning as to why they have not received any STI testing within the past two years. This controls for respondents who have not received STI testing because they have no medical need for it.

Survey responses were submitted on a Google Form by the students in the Social Research Methods Class. Google form responses were combined with the response data from the previous semester into an Excel file. The Excel file was exported and coded into the STATA Software program by Rob VandenBerg, where

Results

data analysis was performed by the students.

Univariate Analysis

The mean age of the sample was 20.85 years. The gender ratio of the sample was nearly evenly split, with 52.85% female and 47.15% male. 84.9% of the sample identified as an in-state student with Ohio residency. The dependent variable examined was the number of times that a respondent has received an STI test, if they have been sexually active in the past two years, which gives respondents the opportunity to exclude themselves from the analysis. Of the respondents, approximately 10% of the sample, 32 people identified as not receiving any STI tests due to being sexually abstinent for the past two years and were excluded from this analysis. Their responses were coded as missing responses, along with the data from the past semester. The most common response for the dependent variable was receiving no STI test in the last two years, which was 59.9% of respondents, a majority of the sample. The second most common response was having received one STI test within the past two years, which was 17.0% of respondents. The remaining results showed that 14.2% of respondents received two STI tests, and 8.9% received three or more STI tests in the past two years. The mean number of STI tests received among respondents in the past two years was 0.780, less than one STI test on average per person (standard deviation of 1.18), indicating high variability in results.

The independent variable examined was the type of sexual education that respondents have received during their middle school and their high school years. The most common response was abstinence-plus sexual education, which 36.9% of the respondents received. The next common response was comprehensive sexual education, at 30.9% of respondents, and the next smallest category was abstinence-centered sexual education, which was 24.8% of respondents. A small number of respondents, 7.3% reported never receiving sexual health education in school.

Bivariate Analysis

Students who never received formal, classroom sexual education received the second smallest mean number

of STI tests with 0.667 STI tests in the past two years, on average, and a standard deviation of 0.96. Those who received abstinence-centered sexual education received 0.881 STI tests on average with a standard deviation of 1.34. Those who received abstinence-plus sexual education 0.654 STI tests on average with a standard deviation of 0.856, which was the lowest mean number of STI tests and the lowest variation of the number of STI tests in the sample. Finally, respondents who received comprehensive sexual education received 0.888 STI tests on average in the past two years, with a standard deviation of 1.41. Those who did receive comprehensive sexual education received the highest mean number of STI tests, which agreed with the hypothesized results for this experiment. There was a small, positive correlation between childhood sexual education and sexual health behavior, respectively. This means that as sexual health education as a child or teenager becomes less abstinence-based and more comprehensive, it has a small, but consistent effect on sexual health behaviors as a college student (see Appendix B). The correlation coefficient was 0.0251, and though this was a small number, it was found to be significant with a p-value of 0.006. Thus, this indicates that there is a consistent, small effect that causes childhood and adolescent sexual health education experiences to be correlated with sexual health behaviors, specifically STI testing behaviors, at a college age. Thus, these variables do correlate as predicted by the hypothesis. As sexual health education becomes more comprehensive and less abstinence-based, it results in respondents receiving slightly more STI tests as college students.

Discussion

One important caveat is that the correlation coefficient between the independent and dependent variable examined in this study was extremely small, at only 0.0251. However, this value was still statistically significant. When a correlation is very close to 0 and still statistically significant, that means that the independent variable has a consistent, albeit very small, effect on the dependent variable. In the case of this study, childhood sexual education has a small effect on the number of STI tests that respondents have received in the past two years. The cross-tabulated bar graph could also explain why the correlation coefficient is so small, but still significant. For an unknown reason, those who have received abstinence-plus sexual education have received less STI tests, on average, than those who received abstinence-centered sexual education, which was not expected by the hypothesis (see Appendix B). It is clear that each category does not have the same number of average STI tests, but there does appear to be a curvilinear trend, with abstinence-plus sexual education having the lowest mean for STI testing. This could be due to a small sample size.

A more extensive sample size could be much more indicative of the true relationship. Regardless of the relationship between sexual health education and STI testing, it was alarming that the mean number of STI tests that respondents had received over the past two years was smaller than one, at just 0.780 (standard deviation of 1.18) tests. There is a need to increase rates of STI testing among young people, as STI testing is an important way to ensure the maintenance of sexual health and to prevent potential health issues such as HPV-related cancers, painful urination, and pelvic inflammatory disease which can all be caused by STI transmission. Another troubling finding was that 7.3% of respondents reported never receiving sexual education prior to high school graduation.

After finding a statistically significant, small positive correlation between increasingly more comprehensive sexual health education and protective sexual health behaviors, the study could be repeated with different operationalization of the dependent variable of sexual

health behaviors to learn more about the sexual health behaviors of students at The Ohio State University. This research could be repeated with other iterations of the dependent variable, sexual health behavior, in order to examine the relationship between sexual health education and other protective behaviors or indicators that relate to sexual health. There may be specific sexual health behaviors that relate to sexual health education more than others, allowing for findings of larger, positive correlations between comprehensive sexual health education and sexual behavior. There are many ways that the dependent variable could be operationalized in order to measure sexual health behaviors in a different way, which could include condom usage, HIV testing, STI or HIV disclosure to partners, abstinence, monogamy, among many other potentially interesting variables.

It may also be interesting to investigate other childhood factors besides sexual education to study their relationship with adulthood sexual health behaviors. Future research directions could include the use of many different independent variables into a multiple linear regression model in order to consider more variables than just childhood schooling. This could be done by asking questions about familial socioeconomic status, whether they went to public or private school, their religion, whether sex is considered taboo in their household or not, among many other variables that could have an effect on sexual health behaviors. Furthermore, future directions on this topic could also look at the type of grade, middle, and high school that college students have attended. This could include whether they attended public, private with no religious focus, private with a religious focus, or received homeschooling. Students could reflect on how that type of school experience affects the sexual education they received, and whether this affects sexual health behaviors as a young, college-aged adult.

One limitation of the study was the structure of the survey itself – for Question 55, the number of times that respondents have received STI tests in the past two years, the answer choices were split onto two different pages as a result of a page break. The “Not Applicable – I have not been sexually active during

the past two years” option was on the second page, while the “None” option was on the first page directly underneath the question. It is completely possible that respondents who may not have been sexually active but saw the “None” option first before flipping to the next page never saw the “Not Applicable” option and didn’t self-identify as having been abstinent for the past two years. If this survey should be distributed in the future, the “Not Applicable” option should be moved up to be the first answer choice for this question so that respondents, who are very likely experiencing survey fatigue at question 55 on a 60-question survey don’t accidentally skip the answer choice that applies most closely to their situation and paints the most accurate picture of their sexual health. As this question could be considered double-barreled to an extent, as it asks about sexual activity and STI testing, a more effective solution to this limitation could be the creation of a contingency question that first asks about sexual activity for the past two years. If respondents have been sexually active, they will be asked to answer follow-up, contingency questions about their STI testing history during that time period.

Another potential limitation of this study was asking about sexual health education before high school graduation in Question 22, which also could have been considered a double-barreled question for a portion of respondents. Some respondents may have received different types of sexual education on multiple occasions before their high school graduation, potentially in different school districts or even different states or countries. For example, if a respondent received abstinence-centered sexual education in middle school, but comprehensive sexual education in high school, they may not know how to answer the question. A qualifier to help respondents know how to respond to this question would be to add the words “most recent” when describing sexual education experiences before high school graduation to the question.

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Conclusion

This study was performed to examine the relationship between childhood and adolescent sexual education and its effects on sexual health behaviors of college students who attend The Ohio State University. It was predicted that as sexual education prior to high school graduation became more comprehensive and less abstinence-based, protective sexual health behaviors, as measured by the frequency of STI testing in the past two years, would increase. After analyzing this relationship, it was found that sexual education prior to high school graduation was found to have a small, consistent effect on sexual health behavior among college students. These findings warrant greater research on how sexual health education has an effect on sexual health behaviors in adulthood, with great potential for longitudinal studies or linear regression models to try to explain the relationship. This study could also be repeated with a number of operationalizations of the dependent variable, sexual health behavior, in order to better understand this complicated and potentially multifactorial relationship.

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