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Professional Development on Sexual Health Education Is Associated With Coverage of Sexual Health Topics

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Abstract

Background.—Sexual health education plays a vital role in preventing adverse consequences of sexual behavior. Data are limited on how professional development (PD) for teachers is associated with teaching sexual health content.

Method.—We used data from the 2014 School Health Policies and Practices Study, a cross-sectional survey that included a nationally representative sample of middle and high school health education courses (n = 328; 96.2% of those sampled). We examined whether teacher characteristics and receipt of PD on four sexual health domains (human sexuality and the prevention of pregnancy, HIV, and sexually transmitted diseases) were associated with teaching those four domains and whether PD was associated with teaching specific topics within each domain. In a second set of analyses, we compared the difference in coverage of specific topics by receipt of PD among only the teachers who reported teaching the domain.

Results.—The prevalence of teaching sexual health content was higher among courses in which teachers had a degree in health education or were certified to teach health education. A robust relationship between teachers' receipt of PD and the teaching of nearly all sexual health topics as well as an increase in the mean number of topics taught and the time devoted to the domain was demonstrated.

Conclusions.—PD has a positive impact on the coverage of sexual health topics among middle and high school courses. These data suggest a need for more PD on sexual health education content to ensure that sexual health topics are taught in the classroom.

Keywords

professional development; sexual health education; teaching; school-based

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Introduction

Almost half of all high school students in the United States have had sexual intercourse (Centers for Disease Control and Prevention [CDC], 2016a). Sexual risk taking among adolescents is an important public health concern because of its association with human immunodeficiency virus (HIV) infection, other sexually transmitted infections (STIs), and unintended pregnancy (CDC, 2016b, 2016c). Unfortunately, the United States ranks higher than many other developed countries in teen pregnancy (United Nations, 2015), youth aged 13 to 24 years accounted for one in five new HIV diagnoses (CDC, 2016b), and youth aged 15 to 24 years account for 50% of new STIs in the United States each year (CDC, 2016c; Satterwhite et al., 2013). School-based sexual health education can be an effective means of reducing sexual risk behaviors among students (Chin et al., 2012; Kirby, 2007), and parents, registered voters, and other adult populations support these programs in public schools (Barr, Moore, Johnson, Forrest & Jordan, 2014; Bleakley, Hennessy & Fishbein, 2006; Constantine, Jerman & Huang, 2007; Lindley et al., 1998).

Despite the efficacy of sexual health education, and public support for such programs, many middle schools and high schools in the United States do not teach about sexual health: According to the CDC's (2015) School Health Profiles, which provides data from representative samples of principals and lead health education teachers from schools in 45 states, the percentage of schools that covered 16 HIV, sexually transmitted disease (STD), or pregnancy prevention topics in a required course in Grades 6, 7, or 8 ranged from 3.7% to 45.6% across states (median: 17.1%), and the percentage that covered these topics in a required course in Grades 9, 10, 11, or 12 ranged from 21.0% to 89.5% (median: 45.5%; Demissie et al., 2015). There are several possible reasons why teachers are not teaching about sexual health education topics. State-level policies addressing sexual health education vary substantially (Guttmacher Institute, 2017). In addition, teachers have named lack of training, funding, and support from administration; inadequate instructional time; and concerns about responses from parents as impediments to teaching a range of topics in sexual health education (Eisenberg, Madsen, Oliphant & Sieving, 2013).

To provide quality instruction, teachers must acquire proficiency in the content that they teach. Those who teach health education topics are more effective if they have up-to-date knowledge of specific health education topics and the skills needed to engage students (Brener, McManus, Wechsler, & Kann, 2013; Kann, Telljohann, & Wooley, 2007). Teachers can gain this expertise through preservice training (e.g., a degree in health education or certification as a health education specialist) or through professional development (PD; Brener, McManus, Wechsler, & Kann, 2013). PD may increase a teacher's confidence in teaching, and may provide opportunities for teachers to learn more innovative techniques for engaging students. Health education teachers who have recently received PD on health domains are more likely to teach those health domains than teachers who have not recently received PD (Jones, Brener, & McManus, 2004). Information on the influence of recent PD on teachers' coverage of sexual health domains in the classroom, however, is limited. One study found that recent PD on sexual health domains such as HIV prevention, STI prevention, and pregnancy prevention was associated with a greater proportion of teachers reporting having taught each of those domains in the classroom (Jones et al., 2004).

Although that study suggests PD may influence teachers' coverage of sexual health domains, it did not identify which specific topics were taught. That is, it is not well understood whether recent PD on sexual health domains results in greater coverage of important domain-specific sexual health topics (e.g., correct and consistent use of condoms). If PD is associated with teaching specific topics related to sexual health domains, then interventions to increase PD might improve the quality and quantity of sexual health education in schools.

The purpose of this current analysis was to examine whether preservice training, health education certification, and recent PD related to sexual health were associated with teachers' coverage of sexual health domains and domain-specific topics in their classrooms.

Method

This study uses data from the 2014 School Health Policies and Practices Study (SHPPS), a nationally representative study of school health policies and practices conducted periodically by the CDC (2015). The purpose of the SHPPS survey is to solicit information on policies and practices aimed at reducing the leading causes of morbidity and mortality among youth and young adults (CDC, 2015). SHPPS 2014 was conducted from February through June 2014 and obtained data from nationally representative samples of schools, health education classes (elementary level) and courses (middle and high school levels), and physical education classes and courses. Out of 828 eligible schools, 631 (76.2%) participated in the study by responding to at least one module of one school-level questionnaire (CDC, 2015). The current analysis only included middle and high school health education courses due to differences in coverage of sexual health topics by grade level. Courses were selected using the following protocol: During the study's recruitment of middle and high schools, a school contact identified all required health education courses, and with few exceptions (such as when a course was only offered in the spring), the courses were selected from the fall course offerings. From the available health education courses at each school, a maximum of two courses was selected at random. For each course that was selected, all teachers who taught the course were listed, and then one teacher per course was randomly selected for participation. All sections of the course that the selected teacher taught were identified, and one section was selected randomly to serve as the point of reference for the health education questionnaire. Because the sampling unit for classroom-level data was the health education course, the results are generalizable to the course, not the teacher. Teachers in the selected courses were interviewed as a means of assigning characteristics to their selected course. Of 354 sampled health education courses at the middle and high school levels, teachers of 328 courses (92.6%) completed the health education classroom questionnaire. Data were collected by trained interviewers who conducted face-to-face interviews with teachers using computer-assisted personal interviewing. More detailed information on the 2014 SHPPS methods has been published elsewhere (CDC, 2015).

The classroom-level questionnaire included questions assessing teacher characteristics. The characteristics included in this analysis were whether the teacher had a degree in health education (minor, undergraduate- or graduate-level degree); whether the teacher was a certified health education specialist; whether the teacher was certified by the state to teach health education; the number of years the teacher taught health education; and whether the

teacher was a coach of an interscholastic sport. The number of years the teacher taught health education was categorized as <10 years and 10+ years. This categorization was based on examining the median number of years the respondents spent teaching health education courses (9.7 years).

Recent receipt of PD on sexual health domains was ascertained using the question: "During the past 2 years, did you receive any professional development on …" The list of domains included, among others, "pregnancy prevention," "HIV, or human immunodeficiency virus, prevention," "other STD, or sexually transmitted disease, prevention," and "human sexuality." For each of these domains, the response options were coded as yes or no. The specific topics contained in each of these domains are enumerated in Tables 2 to 4.

Teachers also were asked whether they taught each of these four domains using the question,

> As I read the list of topics on this card, please tell me if you taught about each one in the class. By "teach," I mean some advanced planning on your part was involved; the subject was not just brought up in class.

For each of these domains, the response options were coded as yes or no and served as gateway questions that triggered a skip pattern. That is, only respondents who taught the domain were asked whether they taught specific topics related to that domain and the number of hours spent teaching the domain. For example, only respondents who indicated they taught pregnancy prevention in their course were asked which specific pregnancy prevention topics were taught as well as the number of hours spent teaching about pregnancy prevention. The only exception to this skip pattern procedure was for the specific human sexuality topics. Respondents were asked the expanded set of questions focused on human sexuality if they indicated in the initial gateway question that they taught any of the four domains (i.e., human sexuality, pregnancy prevention, HIV prevention, and other STD prevention). For each of the topics in an expanded set of questions, the response options were coded as yes or no. For respondents who had not taught the domain; that is, responded "no" to the gateway question, responses for the specific topics were coded as no. From the expanded set of questions within each domain, we created a variable that was a count of the topics taught specific to that domain.

To account for the complex sample design of the survey, we conducted all analyses using SUDAAN statistical software (Research Triangle Institute, Research Triangle Park, North Carolina), and results presented are based on weighted data. We performed two separate sets of analyses comparing the prevalence of teaching specific sexual health topics within each domain by receipt of PD. In the first set of analyses, the denominator was all courses, regardless of whether the domain was taught in the course. This denominator allows for nationally generalizable estimates of the coverage of specific topics within domains by receipt of PD. In the second set of analyses, we compared the difference in coverage of specific topics by receipt of PD only among courses in which teachers taught the domain. All significant group differences were determined by the Rao–Scott Chi-Square test. The *t* test was used to compare the mean number of hours spent teaching each of the four sexual health domains and the mean number of topics taught within each domain by recent receipt

of PD. All statistical comparisons in our analyses were considered statistically significant if $p < .05$.

This study was approved by the institutional review boards of the CDC and ICF International (the contractor that conducted fieldwork for SHPPS 2014), and determined to be exempt.

Results

Overall, 50.2% (95% confidence interval [CI], [42.7, 57.7]) of middle and high school health education courses included teaching of human sexuality, 46.7% (95% CI [39.7, 53.9]) covered pregnancy prevention, 52.1% (95% CI [44.7, 59.3]) covered HIV prevention, and 49.3% (95% CI [42.0, 56.7]) covered STD prevention. Teaching these domains was more common when the course was taught by a teacher who had a degree in health education, was certified by the state to teach health education, and had recently received PD on the relevant domain (Table 1). The prevalence of teaching these domains did not vary by whether the teacher was a certified health education specialist, taught health education for 10 or more years, or coached an interscholastic sport.

Tables 2 to 4 show how the prevalence of teaching specific topics within each domain varied by the receipt of PD on that domain, among all courses, and for the subset of courses in which a domain was taught. When the denominator for the analysis was all courses, all topics but one (“marriage and commitment” in the human sexuality domain) for each domain were more likely to have been taught in courses in which the teacher reported recent receipt of PD on that domain. Furthermore, for each domain, both the mean number of topics taught within a domain, and the mean number of hours spent teaching the domain were significantly greater for courses in which teachers received PD on that domain.

Among courses in which human sexuality was taught (i.e., the teacher reported teaching human sexuality, pregnancy prevention, HIV prevention, or other STD prevention in the gateway question), 6 of 19 specific topics related to human sexuality were more likely to be covered if the teacher had received recent PD on human sexuality, pregnancy prevention, HIV prevention, or other STD prevention than if the teacher had not received such PD (Table 2). Those topics included condom efficacy, how to correctly use a condom, how to obtain condoms, the importance of using condoms consistently and correctly, the importance of using a condom at the same time as another form of contraception to prevent both STDs and pregnancy, and sexual identity and sexual orientation. Furthermore, among courses in which human sexuality was taught, the mean number of human sexuality topics taught and the mean number of hours spent teaching human sexuality was significantly higher among courses in which teachers had received PD compared with courses in which teachers had not received PD on any of the sexual health domains ($p < .01$ for mean number of topics; $p < .001$ for mean number of hours).

Among courses in which pregnancy prevention was taught (i.e., the teacher reported teaching pregnancy prevention in the gateway question), the proportion of courses in which specific pregnancy prevention topics were taught did not vary significantly by whether

teachers had received PD on pregnancy prevention (Table 3). Furthermore, neither the mean number of pregnancy prevention topics, nor the mean number of hours spent teaching pregnancy prevention differed significantly by whether teachers received recent PD on pregnancy prevention.

Among courses in which HIV prevention was taught (i.e., the teacher reported teaching HIV prevention in the gateway question), one out of eight specific topics related to HIV prevention (compassion for persons living with HIV or AIDS) was more likely to have been taught if the teacher had received PD on HIV prevention than if the teacher had not received such PD (Table 4). The mean number of HIV prevention topics taught by teachers did not differ significantly by whether teachers received PD on HIV prevention; however, in courses in which teachers taught HIV prevention, the mean number of hours spent teaching HIV prevention was significantly greater among teachers who received PD, compared with teachers who did not receive PD ($p = .01$).

Among courses in which STD prevention was taught (i.e., the teacher reported teaching STD prevention in the gateway question), courses in which teachers recently received PD on STD prevention were more likely than courses in which they did not to teach one of the six specific STD prevention topics: long-term health consequences of STDs. The mean number of STD prevention topics taught did not differ significantly by whether teachers received PD on STD prevention, but the mean number of hours spent teaching STD prevention was significantly greater in courses where teachers received PD on STD prevention ($p = .03$).

Discussion

Similar to previous studies (Barr, Goldfarb, et al., 2014; Jones et al., 2004), this analysis found that teachers with a health education degree, health education certification, and PD on sexual health content are more likely to teach human sexuality, pregnancy prevention, HIV prevention, and STD prevention in a required health education course than teachers without these degrees or training. Other teacher characteristics hypothesized to be associated with teaching these domains, namely being a certified health education specialist and having taught health education for 10 or more years, were not. Teachers of health education benefit from increasing knowledge and skills on not only updated content but also methodologies for teaching and engaging students (Herr, Telljohann, Price, Dake, & Stone, 2012). Preservice training, the requirements of state certification, and ongoing PD can each contribute to increasing a teacher's ability to teach health education (Blank, de las Alas, & Smith, 2008; Kirby, 2007).

PD can be accessed by current health education teachers, regardless of degree or certification status or number of years since preservice education. In the analysis of all courses, PD for teachers was associated with not only the coverage of all topics (but one) within each sexual health content domain but also with both the number of topics taught within a domain and the time allotted to the teaching of the domain. Additional time on a topic not only allows teachers to provide more information to students but may allow more time for students to practice essential skills such as decision making, negotiation, and refusal, important components of effective sexual health education programs (Kirby, Laris,

& Rolleri, 2006). This is consistent with research from other education fields which show more improvement in English, science, and mathematics achievement among students whose teachers received substantial PD compared with students whose teachers did not (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Teachers express a desire for more PD on sexual health education topics than they are currently receiving (Eisenberg, Madsen, Oliphant, Sieving, & Resnick, 2010). PD may help all teachers of sexual health education, regardless of degree or certification status, add to their knowledge, skills, and comfort level, all of which can contribute to their confidence in teaching challenging topics. Although about 85% of states and 50% of districts in 2012 offered PD or provided funding for PD in the prevention of HIV and STDs (CDC, 2012b), rates of recent PD in these domains among teachers remains relatively low (CDC, 2015). In 2014, only about 25% of middle school health education courses and a third of high school health education courses had a teacher who recently received PD on HIV prevention, human sexuality, or other STD prevention (CDC, 2015).

A unique contribution of this study is the examination of which topics were taught among courses in which the teacher reported teaching the domain. Analysis of all courses demonstrated a robust relationship between teachers' receipt of PD and the teaching of nearly all sexual health topics as well as an increase in the mean number of topics taught and the time devoted to the domain. Restricting the analysis to courses in which teachers had taught each domain demonstrated that PD was associated with an increase in the mean number of human sexuality topics taught and the time devoted to the human sexuality, HIV prevention, and STD prevention domains, plus coverage of specific topics related to condoms and sexual orientation and identity. These disparities in coverage of condoms and sexual orientation and identity are especially noteworthy because information on condoms and sexual orientation and identity are inadequately covered in sexual health classes nation-wide (Guttmacher Institute, 2017; Rhodes, Kirchofer, Hammig, & Ogletree, 2013). It is notable that condom use among high school students has declined nation-wide from 2003 to 2015 (CDC, 2016a).

There are many reasons why topics related to condoms or sexual orientation may not be adequately covered. Many states do not mandate or encourage condom instruction or teaching about sexual orientation, whereas several states either mandate teaching about sexual orientation in a negative light or allow coverage only when adverse outcomes are emphasized (Guttmacher Institute, 2017). A recent study found that teachers were significantly less likely to teach about sexual orientation compared with other sexual health topics (Rhodes et al., 2013). The study authors hypothesized that this may have been due to the fact that sexual orientation may be a more threatening (i.e., controversial) topic compared with other sexual health topics (Rhodes et al., 2013). Even when policies allow for coverage, some teachers may fear that teaching about these topics will be controversial with parents and others in their communities, despite decades of polls showing that a majority of adults, including parents, are in support of sexual health education that discusses condoms and other contraception (Bleakley et al., 2006; Kirby et al., 2006). Public sentiment about teaching about sexual orientation is less clear but there is limited evidence for public support (Eisenberg, Bernat, Bearinger & Resnick, 2008; Millner, Mulekar, & Turrens, 2015). Finally, teachers themselves also report feeling uncomfortable with discussing sexual health

education topics, particularly ones that are thought of as more contentious such as condom use (Cohen, Byers, Sears & Weaver, 2004; Wight & Buston, 2003).

Both condoms and sexual orientation are important topics particularly when it comes to HIV prevention among youth (Blake et al., 2001; Chin et al., 2012). Among students who choose to become and remain sexually active, learning accurate information about condoms, including how to use them properly, is one of the most important strategies for preventing pregnancy, HIV, and many STDs. In addition, HIV incidence continues to grow among young men who have sex with men (CDC, 2012a) who often report feeling alienated from and failing to receive adequate information from their sexual health education classes in school (Fisher, 2009; Gowen & Winges-Yanez, 2014). One study conducted with lesbian, gay, and bisexual students found that those in schools with inclusive sexual health education reported fewer sexual partners, less recent sex, and less substance use before having sex than those in schools that did not provide inclusive sexual health education (Blake et al., 2001). Literature on how to make sexual health education more relevant for sexual minority youth is sparse but growing, and it calls for discussions of sexual orientation as a way to keep these youth, who may be at a greater risk of adverse sexual health outcomes, engaged in sexual health education (Blake et al., 2001; CDC, 2012; Cohen et al., 2004; Decker, Berglas, & Brindis, 2015; Fisher et al., 2009; Gowen & Winges-Yanez, 2014). Recent calls-to-action have further described inclusive sexual health education (Advocates for Youth, 2016).

Our results suggest overall that PD for health educators has a positive impact on the coverage of most sexual health education topics among middle and high school courses. There are several methods by which the provision of PD for health education teachers may be improved. For example, state and local education agencies may increase the number of health education teachers who receive PD by providing PD in the topics teachers want to learn, facilitating support for teacher attendance, and providing adequate follow up. School administrator support for PD for health teachers may also increase the likelihood that teachers are sharing key content with students. Furthermore, it is important for school administrators to consider professional preparation (e.g., degrees or certification in health education) of teachers when selecting sexual health educators. Parents can advocate that school administrators support and invest in the recruitment of well qualified health educators, and ongoing faculty development opportunities in sexual health education.

While these analyses contribute to the literature regarding the relationship between teacher preparation opportunities (e.g., degrees, certification, or PD) and the teaching of sexual health education topics, several limitations must be noted. For example, although SHPPS captures information on whether teachers received PD on sexual health domains during the past 2 years, the data do not provide information on the quality of the PD nor on whether receiving PD improved the quality of how teachers taught each topic. It is also possible that teachers received PD on these topics, but fell outside of the 2-year cutoff to be considered “recent” PD. Due to the cross-sectional design of this study, it is not possible to determine whether PD led teachers to teach sexual health topics, whether teachers who taught specific sexual health topics sought PD opportunities, or whether school administrators who understand the importance of supporting teacher PD were also more likely to support teaching sensitive sexual health education topics. Also, because teachers

who teach the sexual health domains were more likely to have received PD, restricting the analysis to courses in which teachers taught the domain may mean that the relationship between PD and specific topics is masked by the already existing relationship between the broader domain and PD. Furthermore, the sample restriction reduced statistical power for the subanalysis, which made it more difficult to detect statistically significant associations between PD and teaching specific topics. Finally, it should be noted that sexual health education as ascertained by SHPPS is focused on preventing the major contributors of morbidity and mortality among youth and young adults. The sexual health content of SHPPS is not inclusive of all potential aspects of sexual health education.

Sexual health education helps adolescents reduce their risk of HIV, other STDs, and unplanned pregnancy (Chin et al., 2012; Kirby, 2007). Our results suggest overall that PD for health educators has a positive impact on the coverage of most sexual health education topics among middle and high school courses. Given these findings, school administrators may improve coverage of sexual health education topics by hiring health educators who have appropriate professional preparation and by providing opportunities and support for PD related to sexual health education.

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Table 1.

Percentage of Middle and High School Health Education Courses in Which Specific Sexual Health Topics Were Taught, by Teacher Characteristics: United States, 2014.

Characteristics of teachers who taught required health education courses	Teachers taught about							
	Human sexuality		Pregnancy prevention		HIV prevention		Sexually transmitted diseases prevention	
	% [CI]	*p* [b]	% [CI]	*p*	% [CI]	*p*	% [CI]	*p*
Degree in health education[a]								
Yes	74.6 [65.6, 82.0]	<.0001	57.2 [48.2, 65.8]	<.001	62.6 [52.1, 72.1]	<.01	58.4 [48.4, 67.7]	<.01
No	44.5 [34.4, 55.1]		33.0 [24.1, 43.4]		38.4 [29.1, 48.7]		37.6 [28.5, 47.6]	
Certified health education specialist								
Yes	62.4 [40.7, 80.1]	*ns*	60.7 [39.2, 78.7]	*ns*	60.1 [39.1, 77.9]	*ns*	57.7 [36.6, 76.4]	*ns*
No	61.2 [53.3, 68.6]		45.8 [38.1, 53.7]		51.4 [43.5, 59.2]		48.6 [40.7, 56.6]	
Certified to teach health education								
Yes	70.1 [62.0, 77.0]	<.0001	55.6 [47.5, 63.3]	<.0001	60.7 [51.8, 68.9]	<.0001	57.8 [49.3, 65.9]	<.0001
No	29.0 [17.4, 44.2]		14.3 [7.3, 26.3]		21.0 [12.4, 33.4]		18.4 [10.6, 30.2]	
Taught health education for ≥10 years[c]								
Yes	62.1 [52.1, 71.1]	*ns*	48.0 [39.4, 56.8]	*ns*	52.7 [43.9, 61.4]	*ns*	50.1 [41.3, 58.8]	*ns*
No	60.8 [49.4, 71.1]		44.7 [34.3, 55.7]		50.9 [39.2, 62.5]		48.0 [36.3, 59.9]	
Coached an interscholastic sport								
Yes	63.6 [52.8, 73.2]	*ns*	47.8 [37.8, 57.9]	*ns*	52.7 [42.0, 63.1]	*ns*	50.0 [39.7, 60.3]	*ns*
No	59.1 [49.1, 68.4]		45.5 [36.1, 55.2]		51.3 [41.5, 61.0]		48.5 [38.9, 58.2]	
Received professional development on specific sexual health domain[d]								
Yes	71.7 [61.2, 80.3]	<.05	67.4 [53.0, 79.1]	<.01	71.4 [59.5, 80.9]	<.001	63.6 [51.0, 74.6]	<.01
No	55.3 [46.2, 64.1]		40.5 [32.8, 48.6]		44.4 [36.2, 53.0]		44.1 [36.2, 52.3]	

Note. CI = confidence interval; *ns* = not statistically significant.

[a]Received an undergraduate degree or minor or a graduate degree in health education.

[b]Rao–Scott chi-square.

[c]Cut point created based on median value of 9.7 years.

[d] Received professional development on a specific sexual health domain—human sexuality, pregnancy prevention, HIV prevention, or sexually transmitted diseases prevention, compared with whether or not the teacher taught the corresponding sexual health domain.

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Table 2.

Percentage of Middle School and High School Health Education Courses That Had a Teacher Who Taught Specific Human Sexuality Topics, by Receipt of Professional Development on Human Sexuality: United States, 2014.

	Among all courses, received professional development on human sexuality[b]		Among courses where human sexuality content was taught, received professional development on human sexuality[c]	
Taught about specific human sexuality topics[a]	**Yes, % [CI]**	**No, % [CI]**	**Yes, % [CI]**	**No, % [CI]**
Abstinence as the most effective method to avoid pregnancy, HIV, and other sexually transmitted diseases (STDs)	65.3 [52.2, 76.4] *	48.1 [39.5, 56.8]	91.4 [72.5, 97.7]	83.1 [73.0, 89.9]
The relationship among HIV, other STDs, and pregnancy	58.0 [44.1, 70.7] *	42.7 [34.8, 50.9]	81.2 [64.5, 91.1]	73.3 [63.5, 81.3]
Dating and healthy relationships	64.4 [51.5, 75.5] *	45.3 [37.2, 53.6]	90.1 [72.4, 96.9]	77.8 [68.9, 84.7]
Marriage and commitment	44.8 [31.2, 59.3]	35.4 [28.3, 43.2]	62.7 [45.6, 77.2]	60.8 [51.6, 69.3]
Human development issues, such as reproductive anatomy and puberty	60.0 [46.3, 72.3] *	41.7 [34.2, 49.5]	84.1 [68.8, 92.7]	71.6 [63.3, 78.7]
Risks associated with having multiple sexual partners	60.0 [46.8, 71.9] *	40.7 [32.9, 48.9]	84.0 [68.5, 92.7]	69.9 [60.1, 78.2]
Condom efficacy, that is, how well condoms work and do not work	53.0 [38.5, 67.1] *	32.1 [25.2, 39.8]	74.2 [56.2, 86.6] *	55.1 [45.4, 64.4]
How to correctly use a condom	40.8 [26.5, 56.9] *	10.3 [6.8, 15.3]	57.1 [38.6, 73.9] *	17.8 [11.9, 25.8]
How to obtain condoms	45.7 [31.4, 60.7] *	20.1 [14.3, 27.5]	63.9 [46.4, 78.4] *	34.6 [25.2, 45.4]
The importance of using condoms consistently and correctly	50.8 [36.4, 65.0] *	24.8 [19.2, 31.3]	71.1 [52.8, 84.4] *	42.7 [33.7, 52.3]
The importance of using a condom at the same time as another form of contraception to prevent both STDs and pregnancy	52.2 [38.0, 66.1] *	26.1 [19.2, 34.3]	73.1 [54.8, 85.9] *	44.9 [34.3, 55.9]
Sexual identity and sexual orientation	47.1 [32.4, 62.4] *	23.5 [17.2, 31.2]	66.0 [49.1, 79.6] *	40.5 [31.1, 50.6]
The influence of families on sexual behavior	54.2 [40.7, 67.1] *	35.7 [28.0, 44.3]	75.9 [60.2, 86.7]	61.7 [51.4, 71.1]
The influence of the media on sexual behavior	58.6 [44.9, 71.1] *	41.3 [33.1, 50.1]	82.0 [65.8, 91.5]	71.4 [61.4, 79.7]
Social or cultural influences on sexual behavior	58.7 [45.8, 70.4] *	40.6 [32.7, 48.9]	83.6 [68.4, 92.3]	70.1 [60.8, 78.0]
The influence of peers on sexual behavior	60.6 [48.3, 71.6] *	46.0 [37.7, 54.6]	86.3 [68.3, 94.9]	79.5 [70.4, 86.4]
Resisting peer pressure to engage in sexual behavior	64.8 [52.6, 75.4] *	46.3 [37.9, 54.9]	92.4 [71.2, 98.4]	79.9 [70.5, 86.9]
How students can influence, support, or advocate for others to make healthy decisions related to sexual behaviors	59.8 [47.1, 71.4] *	42.4 [34.1, 51.2]	85.3 [69.4, 93.7]	73.3 [64.1, 80.9]
The relationship between alcohol or other drug use and risk for HIV, other STDs, and pregnancy	62.2 [50.3, 72.9] *	44.2 [36.1, 52.6]	88.7 [71.6, 96.1]	76.3 [67.1, 83.6]
Mean number of human sexuality topics taught	10.5 [8.4, 12.6][d]*	6.9 [5.6, 8.1]	14.7 [12.8, 16.5][d]*	11.8 [10.5, 13.0]

Taught about specific human sexuality topics[a]	Among all courses, received professional development on human sexuality[b]		Among courses where human sexuality content was taught, received professional development on human sexuality[c]	
	Yes, % [CI]	No, % [CI]	Yes, % [CI]	No, % [CI]
Mean number of hours spent teaching about human sexuality	5.2 [4.0, 6.4][d*]	2.9 [2.3, 2.9]	7.2 [6.2, 8.3][d*]	5.0 [4.4, 5.7]

[a] Comparisons used the Rao–Scott chi-square unless otherwise indicated.

[b] During the 2 years before the study among all courses.

[c] During the 2 years before the study, among courses in which respondents indicated “yes” for taught about human sexuality, pregnancy prevention, HIV prevention, or STD prevention.

[d] t test.

[*] Significant at $p < .05$.

Table 3.

Percentage of Middle School and High School Health Education Courses That Had a Teacher Who Taught Specific Pregnancy Prevention Topics, by Receipt of Professional Development on Pregnancy Prevention: United States, 2014.

	Among all courses, received professional development on pregnancy prevention[b]		Among courses where pregnancy prevention content was taught, received professional development on pregnancy prevention[c]	
Taught about specific pregnancy prevention topics[a]	**Yes, % [CI]**	**No, % [CI]**	**Yes, % [CI]**	**No, % [CI]**
How to prevent pregnancy	65.2 [51.0, 77.1] *	38.6 [30.9, 46.9]	96.8 [87.0, 99.3]	95.4 [88.9, 98.2]
Risks associated with teen pregnancy	62.3 [48.0, 74.7] *	36.6 [29.3, 44.7]	92.5 [82.3, 97.0]	90.5 [82.1, 95.2]
The educational and social impact of teen pregnancy	62.1 [47.6, 74.7] *	36.4 [28.7, 44.9]	92.2 [82.2, 96.8]	89.9 [81.9, 94.6]
How to find valid information or services related to pregnancy or pregnancy testing	56.4 [41.5, 70.2] *	31.2 [24.3, 39.1]	83.7 [64.3, 93.6]	77.1 [66.4, 85.2]
Methods of contraception	54.0 [39.0, 68.3] *	28.0 [21.3, 35.9]	80.2 [62.2, 90.9]	69.5 [58.0, 78.9]
The importance of using contraception consistently and correctly	53.2 [38.0, 67.9] *	27.3 [20.6, 35.1]	79.0 [59.9, 90.4]	67.4 [55.7, 77.2]
How to obtain contraception	45.5 [30.4, 61.4] *	23.1 [17.3, 30.3]	67.5 [47.8, 82.5]	57.4 [45.6, 68.5]
Contraception efficacy, that is, how well contraception works and does not work	55.8 [41.3, 69.4] *	28.6 [22.0, 36.3]	82.9 [65.5, 92.5]	70.8 [60.2, 79.4]
Mean number of pregnancy prevention topics taught	4.6 [3.5, 5.6][d*]	2.5 [1.9, 3.1]	6.8 [6.0, 7.5][d]	6.2 [5.6, 6.7]
Mean number of hours spent teaching about pregnancy prevention	3.0 [1.8, 4.2][d*]	1.3 [1.0, 1.6]	4.5 [3.2, 5.7][d]	3.2 [2.6, 3.8]

[a] Comparisons used the Rao–Scott chi-square unless otherwise indicated.

[b] During the 2 years before the study among all courses.

[c] During the 2 years before the study, among courses in which respondents indicated “yes” for taught about pregnancy prevention.

[d] *t* test.

* Significant at $p < .05$.

Table 4.

Percentage of Middle School and High School Health Education Courses That Had a Teacher Who Taught Specific HIV and Sexually Transmitted Disease (STD) Prevention Topics, by Receipt of Professional Development on HIV and STD Prevention: United States, 2014.

	Among all courses, received professional development on HIV prevention[b]		Among courses where HIV prevention content was taught, received professional development on HIV prevention[c]	
Taught about specific HIV prevention topics[a]	**Yes, % [CI]**	**No, % [CI]**	**Yes, % [CI]**	**No, % [CI]**
How to prevent HIV infection	67.1 [55.1, 77.3]*	42.6 [34.4, 51.3]	94.0 [79.4, 98.4]	97.5 [92.1, 99.2]
Signs and symptoms of HIV and AIDS	62.7 [50.7, 73.4]*	41.2 [33.2, 49.6]	87.8 [74.5, 94.7]	92.7 [85.0, 96.6]
How HIV is transmitted	67.1 [55.1, 77.3]*	42.6 [34.5, 51.1]	94.0 [79.4, 98.4]	95.8 [88.9, 98.5]
How HIV affects the human body	68.8 [57.1, 78.5]*	41.9 [33.7, 50.6]	96.3 [88.8, 98.9]	94.2 [88.6, 97.2]
Long-term health consequences of HIV and AIDS	66.7 [54.5, 77.0]*	42.0 [33.9, 50.6]	93.9 [79.1, 98.4]	94.5 [88.2, 97.6]
Compassion for persons living with HIV or AIDS	59.5 [46.8, 71.1]*	28.2 [20.8, 37.0]	83.3 [67.6, 92.3]*	63.4 [50.7, 74.5]
How to find valid information or services related to HIV or HIV counseling and testing	54.5 [42.1, 66.4]*	33.9 [26.2, 42.5]	76.3 [61.0, 86.9]	76.2 [64.5, 85.0]
How HIV is diagnosed and treated	58.8 [46.5, 70.1]*	37.6 [29.8, 46.1]	82.3 [68.0, 91.1]	84.6 [74.8, 91.1]
Mean number of HIV prevention topics taught	5.0 [4.2, 5.9]d*	3.1 [2.5, 3.7]	7.1 [6.5, 7.7]d	7.0 [6.6, 7.3]
Mean number of hours spent teaching about HIV prevention	2.4 [1.6, 3.1]d*	1.0 [0.7, 1.2]	3.3 [2.5, 4.1]d*	2.2 [1.8, 2.6]
	Among all courses, received professional development on STD prevention[b]		**Among courses where STD prevention content was taught, received professional development on STD prevention[e]**	
Taught about specific STD prevention topics[a]	**Yes, % [CI]**	**No, % [CI]**	**Yes, % [CI]**	**No, % [CI]**
How to prevent STDs	62.0 [49.0, 73.6]*	41.2 [33.3, 49.5]	97.8 [85.5, 99.7]	93.5 [86.8, 96.9]
How STDs, other than HIV, are transmitted	61.7 [48.6, 73.4]*	40.4 [32.7, 48.7]	97.8 [85.4, 99.7]	91.8 [84.6, 95.8]
Signs and symptoms of STDs	60.3 [47.2, 72.1]*	38.3 [30.9, 46.2]	95.5 [83.4, 98.9]	86.9 [78.7, 92.3]
How to find valid information or services related to STDs or STD screening	52.5 [39.1, 65.6]*	35.7 [28.0, 44.2]	83.2 [66.7, 92.4]	81.1 [70.8, 88.3]
How STDs are diagnosed and treated	55.4 [42.4, 67.8]*	37.3 [29.7, 45.6]	87.8 [73.9, 94.9]	84.6 [76.4, 90.4]
Long-term health consequences of STDs	60.3 [47.2, 72.1]*	37.8 [30.1, 46.2]	95.5 [83.4, 98.9]*	85.8 [77.4, 91.4]
Mean number of STD prevention topics taught	3.5 [2.8, 4.2]d*	2.3 [1.8, 2.8]	5.5 [5.1, 5.9]d	5.2 [4.9, 5.6]
Mean number of hours spent teaching about STD prevention	2.4 [1.6, 3.1]d*	1.2 [0.9, 1.5]	3.7 [3.0, 4.5]d*	2.8 [2.3, 3.2]

[a]Comparisons used the Rao–Scott chi-square unless otherwise indicated.

[b] During the 2 years before the study among all courses.

[c] During the 2 years before the study, among courses in which respondents indicated "yes" for taught about HIV prevention.

[d] *t* test.

[e] During the 2 years before the study, among courses in which respondents indicated "yes" for taught about STD prevention.

* Significant at $p < .05$.