Factors Associated with the Content of Sex Education In U.S. Public Secondary Schools

CONTEXT: *While sex education is almost universal in U.S. schools, its content varies considerably. Topics such as abstinence, and basic information on HIV and other sexually transmitted diseases (STDs), are commonly taught; birth control and how to access STD and contraceptive services are taught less often. Factors potentially associated with these variations need to be examined.*

METHODS: *Data on 1,657 respondents to a 1999 national survey of teachers providing sex education in grades 7–12 were assessed for variation in topics covered. Logistic regression was used to ascertain factors associated with instruction on selected topics.*

RESULTS: *The content of sex education varied by region and by instructors' approach to teaching about abstinence and contraception. For example, teaching abstinence as the only means of pregnancy and STD prevention was more common in the South than in the Northeast (30% vs. 17%). Emphasizing the ineffectiveness of contraceptives was less common in the Northeast (17%) than in other regions (27–32%). Instructors teaching that methods are ineffective and presenting abstinence as teenagers' only option had significantly reduced odds of teaching various skills and topics (odds ratios, 0.1–0.5).*

CONCLUSIONS: *Instructors' approach to teaching about methods is a very powerful indicator of the content of sex education. Given the well-documented relationship between what teenagers learn about safer sexual behavior and their use of methods when they initiate sexual activity, sex education in all U.S. high schools should include accurate information about condoms and other contraceptives.*

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As in most other countries, men and women in the United States typically begin having sexual intercourse during late adolescence: at a median age of 16.9 years for men and 17.4 for women.[1] To make healthy and responsible decisions about whether to have intercourse and how to protect themselves and their partners from unwanted pregnancies and sexually transmitted diseases (STDs), young men and women need relevant information and education.[2]

National organizations such as the American Medical Association, the American Academy of Pediatrics and the National Academy of Sciences have recommended that schools implement comprehensive sex education strategies. Such strategies not only teach students that abstinence is the best way to prevent unintended pregnancy and STDs, but also provide students with the information and skills they need to reduce their number of partners and to use contraceptive and disease prevention methods effectively when they become sexually active.[3]

In contrast, federal legislation since the late 1990s has funded abstinence-only programs, which promote abstinence exclusively. Such legislation explicitly excludes advocating contraceptive use or teaching about contraceptive methods, except to stress their failure rates.[4] Abstinence-only programs gained prominence in 1998, when Section 510 of the Social Security Act began providing $50 million in annual grants, to be matched with $37.5 million annually in state funds. In almost every jurisdiction, programs funded under Section 510 support school-related activities.[5] Since Section 510 was established, two other federal programs—the Adolescent Family Life Act and the maternal and child health block grant's Special Projects of Regional and National Significance—have specified that their funds cannot be used to discuss contraceptives, except to emphasize their failure rates.[6]

Although comprehensive sex education and abstinence-only education are often contrasted against one another in policy arenas,[7] the way in which these approaches are implemented in the nation's schools is largely unknown. In this article, we report findings from our analysis of data from a nationally representative survey of sex education teachers in U.S. schools that examined whether and how abstinence, contraception and other topics were taught.

SEX EDUCATION IN U.S. SCHOOLS

Sex education is taught in almost all public secondary schools in the United States (93%); more than 95% of 15–19-year-olds have had sex education instruction.[8] However, the content of sex education—notably, the emphasis teachers give to abstinence and their coverage of the effectiveness of contraceptive methods—varies widely.[9]

A 1998 survey found significant regional differences in school district policies on whether sex education should be taught and, if so, how abstinence and contraceptive methods should be presented.[10] Sixty-nine percent of U.S. school districts had a policy to teach sex education. In 35% of these districts, the policy was to teach abstinence as the only positive option outside of marriage, and to highlight the ineffectiveness of methods for preventing pregnancy and STDs (if these methods were covered at all). Among districts with a policy, those in the South were significantly more likely than those in other regions to require teaching abstinence as the only option for unmarried teenagers (55% vs. 20–35%). These differences in policies raise questions about whether regional patterns exist in instructors' approaches to teaching about abstinence and contraceptive methods—including whether they teach specific skills and topics.

Regional differences in contextual factors, such as local public opinion on teaching students about birth control and STD prevention, may help explain variations in sex education instruction. Analyses from the General Social Survey have demonstrated that adults living in the South typically have less permissive attitudes about sexuality than do those in other regions (as gauged by attitudes toward premarital and extramarital sex, and homosexuality). This may reflect more traditional values and attitudes generally among Southern residents, and a relatively high proportion who belong to fundamentalist religious denominations.[11]

A region's proportion of youth who are sexually active, and its pregnancy rate relative to other regions, also may be related to the content of sex education; however, relationships are likely to be complex, and their direction hard to identify. For example, relatively low rates of teenage sexual activity and pregnancy may reflect a region's lower need for sex education compared with other regions', or they may result from more widespread sex education. Similarly, a relatively high STD prevalence among adolescents may increase community support for sex education or may reflect deficits in current programs.

Comparisons between the United States and other countries might help inform our understanding of regional patterns in the United States. In many Western, developed countries with adolescent pregnancy and STD rates lower than U.S. rates, there is not only greater societal acceptance of sexual activity among teenagers, but also more comprehensive and balanced sex education and greater access to condoms and other forms of birth control.[12] Thus, regional variations in the United States in societal acceptance of sexual activity among adolescents and approval of sex education could be associated with differences in what is taught in schools.

Factors other than region and instructors' approach to teaching abstinence and method effectiveness may also be related to the content of sex education classes. For example, health educators receive more training in sex education than physical education teachers do.[13] Moreover, because schools with a large student enrollment or a high proportion of impoverished students generally have a relatively high proportion of sexually active students, they may receive increased support from officials and the local community for instruction on birth control and STD prevention.[14]

In this article, we establish a context in which to understand regional patterns of sex education, and we report survey findings on how instructors approach the teaching of abstinence and method effectiveness, according to region. We also examine differences in the proportion of instructors teaching 27 selected topics and skills, according to region and to a measure of how instructors teach abstinence and method effectiveness. Finally, we examine whether region, teaching approach and other factors are independently associated with the proportions of instructors teaching selected key topics and skills related to preventing sexual behavior, pregnancy and STDs, and to accessing contraceptives and STD services.

METHODS

Sample and Survey of Teachers

We analyzed data collected by The Alan Guttmacher Institute (AGI) in a 1999 nationally representative survey of public school teachers of grades 7–12 who are responsible for the subject areas that usually include sex education—biology, health education, family and consumer science (also known as home economics), and physical education—and school nurses. In all, 3,754 teachers responded to the survey, representing 49% of eligible participants. Our analysis is based on the 1,657 respondents who had taught sex education in the current or preceding school year.

Market Data Retrieval supplied a systematic random sample of teacher names, stratified by teaching specialty; their company also provided data on each teacher's school, including state, number of students enrolled and the proportion of students living in poverty. More information about the survey methods has been described previously.[15]

To measure how a teacher approached abstinence, the survey asked, "Which one of the following best describes the way you teach about abstinence from intercourse in your sexuality education instruction?" Respondents could indicate that they presented abstinence as one alternative, as the best alternative or as the only alternative for pregnancy and STD prevention, or that they do not teach about abstinence.*

Instructors' approaches to teaching about condoms and birth control were assessed through two questions. First, "Which one of the following best describes the way you teach about condoms in your sexuality education instruction?" Respondents could indicate one of three options: They emphasize that condom use can be an effective means of preventing STDs among sexually active persons, they emphasize that it is ineffective, or they do not teach about condom use to prevent STDs. The second question asked, "Which one of the following best describes the way you

*Questionnaire items about STDs usually used the term "STDs/HIV." In this article, we have generally shortened the term to "STDs."

teach about birth control in your sexuality education instruction?" Response choices indicated emphasizing that use of birth control methods can be an effective means of pregnancy prevention for sexually active persons, emphasizing that it is ineffective or never teaching about birth control.

Other Data Sources

To consider other factors that may be related to geographic variation in sex education, we examined regional data from additional sources. Public opinion data come from unpublished tabulations of a 1999 national poll of 1,050 adults, conducted by Hickman-Brown Research for Advocates for Youth and the Sexuality Information and Education Council of the United States; at a 95% confidence level, the survey had a sampling error of plus or minus three percentage points.[16] Data on 20–24-year-old women come from the 1995 National Survey of Family Growth.[17] Finally, rates of pregnancies, births, abortions and miscarriages were calculated from previously reported AGI data.[18] To calculate regional-level estimates, we aggregated the state-level data within each region, taking into account state differences in the number of female residents aged 15–17.

Statistical Analysis

Data from the survey of teachers were weighted to reflect the national distribution of sex education teachers in 1999. To analyze data from this complex, stratified sample, we performed t-tests to assess significant differences among proportions by using Stata software, version 7.0. (This software package uses the unweighted number of cases and incorporates information from the sample weights and stratified sample design to inflate the standard errors for significance testing.)

We conducted multivariate logistic regression analysis to ascertain whether region and contextual factors were independently associated with instructors' approach to teaching about abstinence and method effectiveness. Moreover, we conducted additional multivariate logistic regression analyses to explore the potential independent associations between these factors and the likelihood of an instructor's teaching selected key skills and topics representing three broad subject areas: sexual behavior and abstinence (how to say no to sexual intercourse); methods for prevention of pregnancy and infection (the importance of correct, consistent method use; the proper way to use a condom; and specific clinics or physicians where students can get birth control); and other means of prevention of and services specifically for STDs (monogamy as a way to prevent STDs and the names of clinics or other resources for STD services). The independent variables included teacher-reported levels of community and school administration support for sex education, the source of the school's sex education policy, school enrollment, the proportion of the student body living in poverty, the instructor's area of specialty, and the instructor's approach to teaching abstinence and contraceptive effectiveness.

TABLE 1. Selected measures of public opinion on premarital sex and sex education, and of young women's sexual behavior and reproductive experience, United States, by region

Measure	Total	Northeast	South	Midwest	West
Public opinion, 1999					
% who believe sex should occur only in marriage	33	26	40*	34*	29
% who support the teaching of sex education in high school	93	94	92	92	93
% who support the teaching of sex education in junior high school	84	82	82	85	87
% who agree that by grades 11–12, the following topics are appropriate to be taught					
Abstinence	95	96	93	96	93
Contraception	91	94	90*	89*	95
Condoms	90	93	89*	89*	93
Sexual behavior/reproductive experience					
% of sexually experienced 20–24-year-old women who had had sex by age 17, 1995	47	43	47	49	46
Rate per 1,000 women aged 15–17, 1996					
Pregnancies†	62	56	67	50	69
Births	34	24	41	29	36
Abortions	19	25	16	14	24

*Differs significantly from proportion in the Northeast at $p<.05$. †Includes miscarriages. *Note:* The four U.S. regions are as follows: **Northeast**—Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont. **South**—Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. **Midwest**—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin. **West**—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming. *Sources:* **Public opinion**—unpublished tabulations of a nationwide poll of 1,050 respondents, aged 18 or older (reference 16). **Sexual behavior**—reference 17. **Reproductive experience**—calculated from previously reported findings by The Alan Guttmacher Institute (reference 18).

RESULTS

Variations in Context

In 1999, one-third of Americans believed that sexual intercourse should occur only in marriage (Table 1); the proportions in the Midwest and South (34% and 40%, respectively) were higher than those in the West and Northeast (29% and 26%, respectively). However, the level of public support for teaching sex education in schools—93% of U.S. adults supported such instruction in high school, and 84% in junior high school—did not vary by region. Support for teaching specific topics was high—93–96% for abstinence, 89–95% for contraception and 89–93% for condoms—although for some topics, it was lower in the South and Midwest than in the Northeast and West.

Nationally, 47% of women aged 20–24 in 1995 had had intercourse by age 17; a small sample size precluded our detecting statistically significant differences by region. Regions varied little in the proportion of females aged 15–19 reporting nonuse of a contraceptive at their first intercourse (range, 22–28%) or most recent intercourse (18–29%) (not shown).

Sixty-two per 1,000 U.S. women aged 15–17 became pregnant in 1996; 34 per 1,000 of these adolescent women gave birth, 19 had abortions and nine had miscarriages. The West and South had the highest rates of teenage pregnancy. The South had the highest birthrate; the West and Northeast had the highest abortion rates. More current national data show that birthrates and abortion rates have declined; regional data are not available beyond 1996, but differences probably have not changed substantially.[19]

TABLE 2. Percentage distribution of U.S. public secondary school sex education teachers, by their presentation of abstinence and the effectiveness of methods for preventing pregnancy and STDs, according to region, 1999

Presentation of topics	Total (N=1,657)	Northeast (N=305)	South (N=510)	Midwest (N=560)	West (N=282)
Abstinence					
The only option	23.4	16.8	29.7***	22.4	21.1
One option/the best option	71.8	78.1	64.9***	72.6	75.9
Not taught	4.8	5.1	5.4	5.0	3.1
Method effectiveness†					
Effective	60.3	72.2	55.3***	54.9***	64.4
Ineffective	27.5	17.1	29.1***	32.3***	26.8**
Not taught	12.2	10.7	15.6*	12.8	8.8
Method effectiveness and abstinence‡					
Methods effective, abstinence best	51.2	62.1	45.5***	47.4***	57.2
Methods effective, abstinence only	9.1	10.4	10.2	8.1	7.4
Methods ineffective, abstinence best	25.5	21.3	25.0	30.2**	21.9
Methods ineffective, abstinence only	14.2	6.2	19.4***	14.3***	13.5**
Total	100.0	100.0	100.0	100.0	100.0

*Differs significantly from proportion in the Northeast at p<.05. **Differs significantly from proportion in the Northeast at p<.01. ***Differs significantly from proportion in the Northeast at p<.001. †"Effective" includes instructors who taught that use of birth control can be an effective means of preventing pregnancy, condom use can be an effective means of preventing STDs or both. The category does not include teachers emphasizing that birth control or condoms are ineffective. "Ineffective" includes instructors emphasizing the ineffectiveness of birth control methods for pregnancy prevention, the ineffectiveness of condoms for STD prevention or both. ‡Instructors not teaching about abstinence were included with "abstinence best"; those not teaching about pregnancy prevention methods and STD prevention methods were included with "methods ineffective." *Notes:* Ns are unweighted. For a list of states by region, see note to Table 1.

Variations in Teaching Approach

In 1999, 23% of sex education teachers taught abstinence as the only option for preventing pregnancy and STDs (Table 2). Sixty percent of sex education teachers presented birth control as an effective means of preventing pregnancy among sexually active persons, condoms as an effective means of preventing HIV and other STDs, or both; the rest emphasized the ineffectiveness of preventive methods (28%) or did not teach about them at all (12%). Therefore, the proportion of sex education instructors emphasizing the ineffectiveness of methods or not teaching about methods at all (40%) was substantially higher than the proportion teaching abstinence as the only option (23%).

The South had the highest proportion of instructors teaching abstinence only (30%), and the Northeast had the lowest (17%). Regional differences in teaching approaches were greater for method effectiveness than for abstinence. Whereas 72% of teachers in the Northeast emphasized that contraceptive methods can be effective, only 55% in the South and Midwest did so. Seventeen percent of teachers in the Northeast emphasized the ineffectiveness of methods, compared with 27–32% in other regions.

Instructors' approach to teaching abstinence did not perfectly reflect their approach to teaching method effectiveness, as we found when we combined both variables to form a four-category measure. Nationally, 51% of sex education teachers used what might be called a comprehensive approach to sex education: They taught that abstinence is the best option for young people to prevent pregnancy and STDs, and also taught that contraception and condoms can be effective for preventing pregnancy and STDs. Fewer than half of teachers in the South and Midwest used this approach, compared with three-fifths in the Northeast. In contrast, the approach of 14% of all teachers followed more closely the federal definition of abstinence-only education—teaching that abstinence is the only option, and either not teaching about other preventive methods or emphasizing their ineffectiveness. A significantly greater proportion of teachers in the South, Midwest and West (14–19%) than in the Northeast (6%) reported using this approach.

Roughly one-third of teachers nationwide taught abstinence and method use in a manner inconsistent with the positions of advocates of abstinence-only education and advocates for comprehensive sex education: Twenty-six percent taught that abstinence is the best option and that methods are ineffective, and 9% taught that abstinence is the only option and that methods are effective. Teachers using these approaches together formed a substantial group in all regions.

Variations in Specific Content

• *Regional differences.* No significant differences were found by region in the proportion of instructors teaching how alcohol and drug use affects behavior, negative consequences of sexual intercourse, how to resist peer pressure to have sexual intercourse, signs and symptoms of STDs, or that only some STDs are curable (Table 3). These topics were taught by at least 84% of instructors in each region. In addition, all but four of the 27 topics and skills were taught by similar proportions of teachers in the West and Northeast. However, a significantly higher proportion of teachers in the Northeast than in the South provided instruction on 19 of the 27 skills and topics examined, including all those related to STD services or to pregnancy and STD prevention. Regional differences were greatest for the following topics and skills: sexual orientation, which methods can be purchased over the counter and which require a medical visit, the proper way to use a condom, and the importance of using both a condom and a more effective birth control method to avoid pregnancy and STDs (difference between proportions teaching these topics in the Northeast and South, 19–27 percentage points).

Similar proportions of instructors in the Midwest and Northeast taught most topics related to sexual behavior and abstinence, and STD facts and prevention. However, instruction on most topics related to STD services and to pregnancy and STD prevention was less common among Midwestern teachers than among Northeastern teachers.

• *Differences by approach to abstinence and method effectiveness instruction.* In general, instructors' approach to teaching abstinence and method effectiveness was related to the specific topics and skills they taught, except for sexual abstinence as a form of STD prevention (Table 3). For most of the topics and skills examined in bivariate analyses, the proportion of instructors covering each topic or skill was significantly lower among instructors emphasizing method ineffectiveness, regardless of abstinence approach, than among instructors emphasizing method effectiveness and teaching abstinence as the best option.

TABLE 3. Percentage of U.S. public secondary school sex education teachers covering selected topics and skills, by region and approach to teaching about abstinence and method effectiveness, 1999

Topics and skills	Total	Region†				Teaching approach‡			
		Northeast	South	Midwest	West	Methods effective		Methods ineffective	
						Abstinence best	Abstinence only	Abstinence best	Abstinence only
Sexual behavior and abstinence									
How alcohol/drug use affects behavior	91.2	92.3	90.4	91.3	91.3	91.7	95.8*	88.7	91.1
Negative consequences of intercourse	91.1	90.8	88.8	92.2	93.4	92.7	97.3*	85.4**	92.6
How to resist peer pressure to have intercourse	85.7	84.8	84.1	85.4	90.3	86.9	90.5	79.0**	89.8
Sexuality as a natural and healthy part of life	83.1	85.7	77.0**	84.3	89.3	87.5	80.5	75.5***	84.8
How to refuse intercourse	77.0	77.8	74.9	78.2	77.7	77.0	90.0***	70.3*	83.5**
Consensual vs. forced sexual contact	68.7	74.9	63.0***	69.9	69.9	73.6	78.1	57.7***	65.5*
Importance of both partners' agreeing to any sexual behavior	68.2	74.6	61.1***	71.4	67.3	75.5	78.9	56.6***	57.7***
Abortion—factual information	63.0	69.7	58.1**	62.3*	65.7	74.1	63.3*	50.3***	45.6***
Abortion—ethical issues	57.4	61.8	53.5*	57.0	60.2	67.0	59.3	44.9***	41.3
Sexual orientation/homosexuality	51.3	65.2	39.5***	54.2**	51.5**	63.3	61.3	34.1***	32.0***
How to negotiate sexual limits	47.1	51.2	43.0*	48.7	46.6	51.3	55.6*	40.6**	40.3**
STD facts and prevention									
Sexual abstinence as a way to prevent STDs	94.6	92.8	93.8	95.4	96.7*	97.4	99.1	86.0	98.5
STD symptoms can be hidden, absent or unnoticed	93.6	90.7	93.1	94.4	96.1**	96.3	99.0*	86.7**	93.8
Only some STDs are curable	91.7	89.4	91.6	92.9	92.0	95.7	98.6**	82.5***	89.8**
Signs and symptoms of STDs	91.7	89.6	91.7	92.3	93.1	95.3	99.2***	83.4***	90.1*
Monogamy as way to prevent STDs	80.1	82.1	73.5**	82.1	86.1	86.2	81.8	71.6***	73.0***
STD risk from oral/anal sex	80.4	84.5	71.8***	84.5	83.8	88.4	85.4	68.3***	70.5***
STD services									
Importance of notifying all sexual partners if infected	78.1	82.2	75.6*	78.3	78.0	84.6	88.2	66.2***	69.4***
Confidential services available without parental consent	62.7	71.2	58.1***	60.5**	65.9	72.7	71.7	49.9***	44.5***
Specific sources of STD services	58.7	64.6	54.7**	56.9*	63.0	66.7	68.5	45.6***	50.9***
Methods for pregnancy/STD prevention									
Condom use to prevent STDs	78.0	84.0	71.7***	78.4	82.2	94.3	84.7**	61.7***	44.3***
Importance of correct, consistent method use	61.8	71.2	55.7***	59.8**	67.0	80.4	69.8*	38.8***	32.1***
Importance of using dual methods to avoid pregnancy/infection	60.2	71.3	52.5***	58.5***	65.7	78.7	73.5	36.1***	27.4***
Which methods can be purchased at a store, and which require physician/clinic visit	50.3	62.2	43.3***	48.8***	53.3*	49.2	41.0	18.7***	14.3***
How to communicate with partner about birth control	47.0	55.6	40.7***	47.5*	48.1	60.7	54.8	28.7***	26.2***
Specific sources of birth control	35.3	43.3	28.7***	32.8**	43.8	47.2	31.7**	19.6***	8.5***
Proper way to use condoms	33.4	48.8	22.3***	31.5***	40.8	68.4	52.3**	28.8***	22.6***

*p<.05. **p<.01. ***p<.001. †Significance levels refer to the difference between the specified proportion and the proportion for the Northeast. ‡Significance levels refer to the difference between the specified proportion and the proportion for "methods effective, abstinence best." "Effective" includes instructors who taught that use of birth control can be an effective means of preventing pregnancy, condom use can be an effective means of preventing STDs or both. The category does not include teachers emphasizing that birth control or condoms are ineffective. "Ineffective" includes instructors emphasizing the ineffectiveness of birth control methods for pregnancy prevention, the ineffectiveness of condoms for STD prevention or both. Instructors not teaching about abstinence were included with "abstinence best"; those not teaching about pregnancy prevention methods and STD prevention methods were included with "methods ineffective." *Notes:* Ns are unweighted. For a list of states by region, see note to Table 1.

Among teachers emphasizing method effectiveness, we observed some differences between those teaching abstinence as the only option and those teaching abstinence as the best option. Nonetheless, the findings of our bivariate analyses show that instructors' approach to teaching method effectiveness may be an important determinant of the topics and skills taught in sex education classes.

• *Differences by other factors.* Teachers' inclusion of specific topics and skills generally was associated with contextual factors. For example, teachers' concern about possible adverse community reaction, and teaching in a school without a district- or school-level sex education policy, each had a positive association with instruction on topics related to abstinence and had a negative association with instruction on topics related to pregnancy and STD prevention (not shown). We subsequently performed multivariate logistic regression analysis to ascertain which variables are associated independently with teachers' presentation of specific topics and skills.

Multivariate Results

• *Method effectiveness and abstinence.* In our analyses controlling for contextual factors (Table 4, page 266), teachers in the South, Midwest and West were more likely than those in the Northeast to emphasize the ineffectiveness of methods for preventing pregnancy and STDs or not to cover methods at all (odds ratios, 1.7–2.4). Similarly, teachers in the South and Midwest were more likely than teachers in the Northeast to teach abstinence as the only option (1.6–2.7).

Teachers concerned about the potential for adverse

TABLE 4. Percentage distribution of U.S. public secondary school sex education teachers, by selected contextual characteristics, and odds ratios from multivariate logistic regression analyses of the association between those characteristics and teachers' presentation of selected topics

Characteristic	%	Methods not taught or ineffectiveness emphasized	Abstinence only	How to refuse intercourse	Importance of correct, consistent method use	Proper way to use condoms	Specific sources of birth control	Monogamy as a way to prevent STDs	Specific sources of STD services
Region†									
Northeast (ref)	18.9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
South	31.1	2.36***	2.71***	1.00	0.63*	0.31***	0.67*	0.77	0.68
Midwest	33.6	2.33***	1.57*	1.31	0.75	0.52***	0.76	1.15	0.83
West	16.4	1.68*	1.32	1.13	0.96	0.67	1.12	1.38	0.81
Consider administration nervous about community reaction to sex education									
No (ref)	78.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	21.9	0.98	1.39	1.06	0.69*	0.58**	1.22	0.92	0.90
Concerned about community reaction to sex education									
No (ref)	68.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	32.0	1.91***	1.18	0.64*	0.52***	0.43***	0.38***	0.69*	0.86
Sex education policy									
District-level (ref)	68.3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
School-level	7.4	0.77	0.94	0.57	1.05	0.89	1.29	1.13	1.20
Up to teacher	24.3	1.02	0.67*	0.49***	1.09	0.71*	1.00	0.82	0.77
No. of students enrolled at the school									
<300 (ref)	10.9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
300–499	14.9	1.37	0.73	0.92	1.33	0.99	1.23	1.04	1.31
500–999	36.8	1.42	0.73	0.99	1.21	1.25	1.12	1.09	1.20
≥1,000	37.4	0.97	0.47***	1.39	1.69*	2.22***	2.00**	1.19	2.06***
% of student body in poverty									
<6.0 (ref)	16.3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6.0–15.9	41.0	0.87	0.94	0.93	1.02	1.67*	1.62*	1.25	1.44*
16.0–29.9	31.3	0.81	0.74	1.11	1.14	2.13***	1.67*	1.39	1.91***
≥30.0	11.4	0.58*	0.75	1.74	0.72	1.57	1.32	0.91	1.35
Instructor's specialty									
Health (ref)	30.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Family/consumer science	18.2	0.78	0.56**	1.06	2.69***	1.14	1.41	0.79	1.07
Biology	21.0	1.30	0.42***	0.05***	0.35***	0.23***	0.31***	0.28***	0.18***
Nurse	2.7	0.95	0.79	0.37***	1.15	0.98	2.50***	0.61*	1.33
Physical education	28.1	1.43*	1.31	0.72	1.05	1.16	1.32	0.68	0.95
Instructor's approach to presenting preventive method use and abstinence‡									
Methods effective, abstinence best (ref)	51.2	na	na	1.00	1.00	1.00	1.00	1.00	1.00
Methods effective, abstinence only	9.1	na	na	2.31*	0.53**	0.44***	0.74	0.59	1.01
Methods ineffective, abstinence best	25.5	na	na	0.90	0.16***	0.33***	0.28***	0.42***	0.47***
Methods ineffective, abstinence only	14.2	na	na	1.40	0.12***	0.10***	0.17***	0.41***	0.47***

*p<.05. ** p<.01. ***p<.001. †For a list of U.S. states by region, see note to Table 1. ‡"Effective" includes instructors who taught that use of birth control can be an effective means of preventing pregnancy, condom use can be an effective means of preventing STDs or both. The category does not include teachers emphasizing that birth control or condoms are ineffective. "Ineffective" includes instructors emphasizing the ineffectiveness of birth control methods for pregnancy prevention, the ineffectiveness of condoms for STD prevention or both. Instructors not teaching about abstinence were included with "abstinence best"; those not teaching about pregnancy prevention methods and STD prevention methods were included with "methods ineffective." *Notes:* Percentages are weighted. na=not applicable. ref=reference category.

community reaction to sex education were more likely than other teachers to emphasize method ineffectiveness or not to discuss preventive methods (1.9). Compared with respondents in schools with a district-level policy on sex education, respondents in schools without a district- or school-level policy had reduced odds of presenting abstinence as the only option (0.7).

There were few differences by school enrollment, or by relative affluence of the student body, in teachers' approach to presenting method effectiveness or abstinence. However, teachers in the largest schools (student enrollment of at least 1,000 pupils) were less likely than those in the smallest schools (fewer than 300 students) to teach abstinence as the only option (odds ratio, 0.5); teachers at schools with at least 30% of students living in poverty were less likely than teachers at schools with fewer than 6% in poverty to emphasize method ineffectiveness (0.6).

Family and consumer science teachers and biology teachers each were less likely than health education teachers to teach abstinence as the only method of prevention. Physical education teachers were more likely than health education teachers to emphasize the ineffectiveness of methods or not to teach the topic at all.

• *Sexual behavior and abstinence.* Teachers concerned about potential adverse community reaction, or teaching in a school and district with no sex education policy, had re-

duced odds of teaching students how to say no to a boyfriend or girlfriend who wants to have sex. Biology teachers and nurses were less likely than health teachers to cover this topic. However, odds of teaching this topic were higher for teachers who presented method use as effective and abstinence as the only option than for instructors who presented method use as effective but taught abstinence as the best of several options (odds ratio, 2.3).

• *Methods for pregnancy and STD prevention.* Southern teachers were significantly less likely than Northeastern instructors to teach the importance of correct and consistent contraceptive use (odds ratio, 0.6) or the proper way to use a condom (0.3), or to provide information on specific sources of birth control (0.7). Midwestern teachers differed significantly from Northeastern teachers on only one of these variables—instruction on proper condom use (0.5). Teachers generally were less likely to teach these pregnancy prevention and service topics if they had concerns, or perceived that their school administration had concerns, about possible adverse community reaction (odds ratios, 0.4–0.7).

Teachers were more likely to discuss the topics related to pregnancy prevention and services if they taught at one of the largest schools instead of one of the smallest (odds ratio, 1.7–2.2). Teachers in schools with at least 6% but fewer than 30% of students living in poverty were more likely than teachers at the most affluent schools to discuss proper condom use and specific sources of birth control. Biology teachers were less likely than health education teachers to teach each of the pregnancy prevention and services topics. Family and consumer science teachers had elevated odds of discussing the importance of correct, consistent method use, and school nurses had elevated odds of providing information on specific sources of birth control.

Teachers who emphasized the ineffectiveness of contraception, regardless of how they presented abstinence, were considerably less likely to teach the three pregnancy prevention topics than were instructors who teach that method use is effective and abstinence is best. Instructors who teach that method use is ineffective and abstinence is the only option had the lowest odds of teaching these three topics (odds ratios, 0.1–0.2). And among teachers who emphasize the effectiveness of contraceptives, those using an abstinence-only approach were less likely than those using an abstinence-best approach to teach two of these three topics.

• *Prevention and services for HIV and other STDs.* Few variables showed significant variation in the likelihood of an instructor's teaching about monogamy as a form of STD prevention. In part, this was probably because most teachers (80%) reported that they taught this topic. However, instructors who taught that method use is ineffective and that abstinence is the best or only option for adolescents were substantially less likely to teach about monogamy than were teachers who taught that method use is effective and abstinence is the best option (odds ratios, 0.4).

Teachers emphasizing the ineffectiveness of method use or not teaching about method use had reduced odds of providing students with names of specific places offering STD services (0.5). Teachers in schools with the largest student enrollments, or with 6% to nearly 30% of students living in poverty, had increased odds of providing information about places where students can obtain STD services (1.4–2.1).

DISCUSSION

Current controversies over sex education imply that the disagreements are primarily about whether instruction should stress abstinence. However, there appears to be little disagreement over this point in the United States: Surveys show overwhelming support among adults in the general public and among sex education teachers for teaching adolescents to be abstinent.[20] In fact, almost all sex education teachers in our survey presented abstinence as the only or the best option for teenagers.

According to our findings, the controversy between abstinence education and more comprehensive approaches centers, instead, on what information should be presented to students about how sexually active people can prevent unwanted pregnancy and STDs. Although public support for instruction on condoms and other contraceptives is almost as high as that for abstinence instruction, recipients of federal funds for education programs promoting abstinence are prohibited from using their grants to advocate contraceptive use.

Furthermore, our findings suggest that federal requirements are out of step not only with the desires of almost all the general public, but also with how sex education is taught in the majority of U.S. public schools: Six in 10 sex education teachers in our survey reported teaching contraceptive method use as an effective means of preventing pregnancy and STDs among sexually active people.

Since public education is generally a local or state responsibility, it is not surprising that instruction in most schools does not follow the federal concept of abstinence education. Still, a high proportion of secondary school sex education instructors reported presenting abstinence as the only way of preventing pregnancy and STDs (23%), and an even greater proportion reported presenting methods as ineffective (28%) or not teaching about them at all (12%). These findings are of grave concern because they indicate that students are not receiving accurate information, or are receiving no information at all, on methods in their sex education classes.

We found that instructors who stressed the ineffectiveness of methods—regardless of their approach to teaching about abstinence—had significantly reduced odds of teaching most of the topics and skills examined in our multivariate analysis. In particular, instructors teaching that contraceptives are ineffective and abstinence is the only option were the least likely to teach the topics and skills related to pregnancy prevention. In contrast, instructors presenting abstinence as the best among multiple options and stressing method effectiveness were more likely than other instructors to teach nearly all topics and skills related to pregnancy and STD prevention and services.

At the same time, our analyses show that teachers' approaches to covering abstinence and method effectiveness are not the only factors that potentially explain the specific skills and topics taught. Teachers in the South, the Midwest and, to a lesser extent, the West were significantly more likely than those in the Northeast to emphasize method ineffectiveness or not to cover methods at all. And while fewer than half of sex education teachers in the Northeast and West (41–49%) taught the proper way to use a condom or provided information about specific places where students can access birth control services, the proportions among Southern and Midwestern teachers were even lower.

Worry about adverse community reaction was associated with reduced odds of teaching skills and topics related to prevention of pregnancy. In contrast, teaching in schools with a moderate to high proportion of students in poverty was associated with increased odds of teaching most of these topics and skills.

Teaching students that contraceptive methods are ineffective, and not providing them information on how to use methods effectively, may contribute to poor use or even nonuse.[21] Results from the Youth Risk Behavior Survey demonstrate that condom use among high school students significantly increased during the 1990s, but the rate of increase slowed by the end of the decade.[22]

Federally sponsored abstinence-only funding has increased substantially since our survey of teachers was conducted in 1999. Future research is needed to examine to what extent these funds have influenced public school instruction—especially whether they have increased teachers' likelihood of emphasizing the ineffectiveness of contraceptive methods, and decreased their likelihood of instructing students on how to use contraceptives effectively. If a trend toward emphasizing contraceptive ineffectiveness exists, we would expect that regional differences will be exacerbated, and students in the South and Midwest will be even less likely than students living elsewhere to receive accurate information about pregnancy and STD prevention.

Our study has several limitations. Of note, although the survey captured whether instructors taught certain topics and skills, it did not measure the quality of instruction, the amount of time spent on topics, details of what was taught on each topic or the message delivered about specific topics. In addition, the teaching of sex education and regional variation may be influenced by characteristics that we were unable to measure directly, such as religiosity and conservatism of the local area.

Young people who are taught both that they should delay becoming sexually active and that they should use methods if and when they do have sex are more likely than others to engage in these preventive behaviors.[23] These facts and the data presented here make clear that it is time to shift the debate about sex education instruction from whether and how to teach abstinence to whether and how condoms and other methods are taught in sex education classes. Instructors' approach to teaching about methods is a very powerful indicator of the content of sex education today.

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