

Changes in Formal Sex Education: 1995–2002

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CONTEXT: Although comprehensive sex education is broadly supported by health professionals, funding for abstinence-only education has increased.

METHODS: Using data from the 1995 National Survey of Adolescent Males, the 1995 National Survey of Family Growth (NSFG) and the 2002 NSFG, changes in male and female adolescents' reports of the sex education they have received from formal sources were examined. Life-table methods were used to measure the timing of instruction, and *t* tests were used for changes over time.

RESULTS: From 1995 to 2002, reports of formal instruction about birth control methods declined among both genders (males, from 81% to 66%; females, from 87% to 70%). This, combined with increases in reports of abstinence education among males (from 74% to 83%), resulted in a lower proportion of teenagers' overall receiving formal instruction about both abstinence and birth control methods (males, 65% to 59%; females, 84% to 65%), and a higher proportion of teenagers' receiving instruction only about abstinence (males, 9% to 24%; females, 8% to 21%). Teenagers in 2002 had received abstinence education about two years earlier (median age, 11.4 for males, 11.8 for females) than they had received birth control instruction (median age, 13.5 for both males and females). Among sexually experienced adolescents, 62% of females and 54% of males had received instruction about birth control methods prior to first sex.

CONCLUSIONS: A substantial retreat from formal instruction about birth control methods has left increasing proportions of adolescents receiving only abstinence education. Efforts are needed to expand teenagers' access to medically accurate and comprehensive reproductive health information.

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Comprehensive sex education—teaching that provides balanced and accurate information on both abstinence and birth control—is a crucial part of equipping adolescents with the necessary skills to achieve healthy sexuality throughout their lives. Although comprehensive sex education is broadly supported by U.S. health professionals,¹ it is being increasingly replaced by abstinence-only education. In 1999, 23% of secondary school sex education teachers taught abstinence as the only way to prevent pregnancy and STDs; only 2% had done so in 1988. In 1999, one-quarter of sex education teachers said they were prohibited from teaching about contraception.² In 2000, 92% of all U.S. middle and junior high schools and 96% of high schools had at least one required class that taught abstinence as the best way to avoid pregnancy, HIV and STDs, while 62% and 87%, respectively, had a class about methods of contraception.³

Since 1996, there have been major expansions in federal support for abstinence education programs, and the balance of funding has shifted toward programs that teach only abstinence and restrict other information. Federally funded abstinence education programs are required by law to teach “that sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects” and “that a mutually faithful, monogamous rela-

tionship in the context of marriage is the expected standard of human sexual activity”; discussion of the benefits of contraception is prohibited in these programs.⁴ Federal and matching state funding for these programs rose from approximately \$10 million in fiscal year 1997 to \$167 million in 2005.⁵ The expansions in federal support for abstinence-only education are occurring in the absence of substantial scientific evidence supporting the effectiveness of this approach to reduce sexual risk behaviors among adolescents.⁶ In a rigorous review of sex education programs, Kirby found that none of the abstinence-only programs evaluated demonstrated efficacy in delaying sexual debut or reducing sexual risk behaviors among sexually experienced teenagers.⁷

This analysis examines changes between 1995 and 2002 in adolescents' reports of the sex education they have received from formal sources such as schools, churches and other community groups. We assess trends in the extent to which adolescent men and women received instruction about one or both of two key topics, abstinence and birth control methods, as well as the proportion of adolescents receiving instruction in neither topic. We describe differences in receipt of sex education by the following characteristics: gender, age, race or ethnicity, household poverty status and residence.

METHODS

Data

Data for this analysis were drawn from three nationally representative household surveys: the 1995 National Survey of Adolescent Males (NSAM), which surveyed males aged 15–19; the 1995 National Survey of Family Growth (NSFG), which surveyed women aged 15–44; and the 2002 NSFG, which surveyed males and females aged 15–44. The methodology of each survey has been described in detail elsewhere.⁸ In brief, each survey used a multistage, stratified, clustered sampling frame. Our analytic sample was limited to respondents aged 15–19 at the time of the interview—for the 1995 NSAM, 1,729 males; for the 1995 NSFG, 1,396 females; and for the 2002 NSFG, 1,150 females and 1,121 males. Each survey, using face-to-face interviews, focused on sexual and family formation behaviors, and collected information about receipt of sex education. The NSAM was designed as a counterpart to the NSFG, to collect data on adolescent males. Substantial efforts were made when designing the 2002 NSFG to maintain comparability over time and across gender.

Measures

• **Formal instruction.** From each of the data sets examined, we developed measures of whether respondents had received “formal instruction” before they were 18 years old about methods of birth control and abstinence.* The exact question wording varied slightly across the surveys. In the 1995 NSAM, respondents were asked whether they had ever received “formal instruction in school or in an organized program,” while the 1995 and 2002 NSFGs asked about “formal instruction at school, church, a community center or some other place.” Analysis of the 1988 NSAM found that most males (91–96%) had received their formal instruction about birth control at school,⁹ suggesting that the difference in question wording is of minimal substantive concern. In each survey, respondents were asked specifically about receipt of instruction on “methods of birth control.” In all but the 1995 NSFG, respondents were asked about receipt of instruction on “how to say no to sex”; females in 1995 were asked about “abstinence or how to say no.” We use these terms interchangeably.

In each survey, the measures of reproductive health instruction reflect adolescents’ recall of such instruction. Although this information cannot be interpreted as a direct measure of school policies or of the specific content of curricula, it is indicative of overall levels of and relative differences across time periods and subgroups in the provision of information on these two topics.

• **Timing.** We calculated measures of the timing of formal instruction about birth control methods and abstinence. Respondents were asked in what grade they had first received instruction in each topic; since age at instruction was not reported directly, our age estimate was based on the assumption that children in first grade are approximately six years old. Thus, we calculated respondents’ age at first instruction by adding five to the grade in which they said

they first received the instruction.^{†10} We used life-table methods to calculate the proportion of adolescents who had received instruction by each age and the median age at first instruction.

Additionally, we assessed whether sexually experienced respondents had received instruction prior to first intercourse. Following the approach used in earlier research, instruction was considered to have preceded first intercourse if age at first instruction (in whole years) was younger than reported age at first intercourse; if the same age was reported for both, instruction was considered to have occurred after first intercourse.¹¹

• **Demographic variables.** We examined differences in receipt of sex education according to key demographic characteristics, defined consistently across the three surveys. We included age at interview (15–17, 18–19), race or ethnicity (non-Hispanic white, non-Hispanic black, Hispanic[‡]) and sexual experience (ever vs. never engaged in vaginal intercourse). Residence (central city, other metropolitan area, nonmetropolitan area) is based on the respondent’s address at the time of the interview, classified according to the 1990 census (for the 1995 NSFG) or 2000 census (for the 2005 NSFG). Place of residence was not available for the NSAM respondents.

We also included a measure of household poverty level (less than 200% of poverty, greater than or equal to 200% of poverty). Household poverty level was determined by the respondent’s report of combined household income from all sources in the year prior to the interview, divided by annual weighted average threshold incomes as defined by the U.S. Census Bureau for family size of the respondent’s household. The 1995 and 2002 NSFG household poverty measures were calculated directly by the National Center for Health Statistics and made available on the public-use data tape. For the 1995 NSAM, we calculated the household poverty level using the same formula.¹² Household poverty data were missing for 5.3% of respondents in the 1995 NSAM. Analysis revealed that sex education among this group of respondents did not differ significantly from males in any income group. We do not report separately on the respondents with missing income data, but include them in all other measures.

Analysis

In the first component of the analysis, we examined changes in the receipt of formal instruction on abstinence and birth control methods between 1995 and 2002. We measured the prevalence of each type of instruction, alone and in combination, as well as the proportion of adolescents who had

*In the 1995 NSAM, respondents aged 15–19 were asked about any instruction ever received. Using estimated age at first instruction, we limited the NSAM reports to instruction received prior to age 18.

†In prior analysis of the 1995 NSAM, males’ reports of having repeated a grade in school were incorporated into this calculation (source: reference 10); since this measure was not available for the other surveys, it was not included in this study. For this reason, the measures of timing reported here differ from those reported previously.

‡Respondents reporting “other” race or ethnicity are included in the totals, but excluded from the subgroup analysis because of small sample size.

TABLE 1. Percentage distribution of respondents aged 15–19 in surveys assessing receipt of formal sex education, by selected characteristics, according to survey

Characteristic	Males		Females	
	1995 NSAM (N=1,729)	2002 NSFG (N=1,121)	1995 NSFG (N=1,396)	2002 NSFG (N=1,150)
Race/ethnicity				
Non-Hispanic white	67.4	63.7	66.4	63.6
Hispanic	12.6	15.9	12.8	15.5
Non-Hispanic black	14.3	14.4	15.6	15.2
Other	5.7	5.9	5.2	5.7
Age				
15–17	61.8	56.3	60.0	59.2
18–19	38.3	43.7	40.0	40.8
Residence				
Central city	u	28.0	32.5	29.1
Other metropolitan	u	52.8	43.8	48.5
Nonmetropolitan	u	19.2	23.7	22.5
Household poverty level*				
<200%	38.1	40.7	38.9	49.1
≥200%	56.6	59.3	61.1	51.0
Missing	5.3	0.0	0.0	0.0
Ever had sex				
Yes	55.3	46.0	51.7	46.8
No	44.7	54.0	48.3	53.2
Total	100.0	100.0	100.0	100.0

*Percentage of federal poverty line. Notes: Percentages may not total 100.0 because of rounding. u=unavailable.

received instruction in neither topic. In addition to testing for overall changes between 1995 and 2002, we tested for differences within each period by gender, age, race or ethnicity, sexual experience, residence and poverty status. Next, using life-table methods, we measured changes over time in the age at first instruction in each topic, by gender. Finally, to examine changes in the timing of instruction relative to the timing of first intercourse, we measured changes in the proportion of sexually experienced adolescents who had received instruction in each topic prior to first intercourse and tested for differences by demographic characteristics using t tests.

In all analyses, standard errors and tests of statistical significance were calculated using the `svy` series of commands in Stata 8.2 to account for the stratified survey designs. We report only differences with a p value of 5% or less, given limitations of space and the number of tests performed.

RESULTS

Sample Characteristics

About two-thirds of the adolescents in each sample were white, and most of the rest were Hispanic or black; 5–6% identified their race or ethnicity as “other” (Table 1). About 60% of each sample were aged 15–17 at the time of the interview. In each year, about three in 10 female respondents resided in central cities, while close to half resided in other metropolitan areas; three in 10 male respondents in 2002 resided in central cities, and half lived in other metropolitan

*Our measure of receiving only abstinence education is not directly comparable to the formal federal definition of abstinence-only education, a stringent eight-point definition that emphasizes abstinence until marriage.

areas. Fewer than one-quarter of respondents in each sample resided in nonmetropolitan areas. In each sample, the majority of respondents resided in households with incomes of 200% or more of the federal poverty line. In the 1995 NSAM, the household poverty measure could not be calculated for 5% of the sample. Slightly more than half of adolescents were sexually experienced in 1995 (52% of females and 55% of males), but the proportions declined to 46–47% in 2002. For each sample, sexually experienced adolescents were younger than their sexually inexperienced peers (not shown).

Formal Instruction

• *Receipt of formal instruction.* The content and prevalence of formal sex education shifted away from birth control instruction between 1995 and 2002 (Table 2). The proportion of adolescents who had received any formal instruction about methods of birth control declined significantly for each gender (from 81% to 66% of males, and from 87% to 70% of females); by 2002, one-third of adolescents of each gender had not received any instruction about birth control methods. The proportion of adolescents who had ever received instruction in “how to say no to sex” increased among males between 1995 and 2002 (from 74% to 83%), while declining significantly among females (from 92% to 86%). The broader wording in 1995 for females (“abstinence or how to say no”) may have elicited greater reporting. If so, some portion of the decline among females may be the result of the change in wording. By 2002, both male and female teenagers were significantly more likely to have received instruction about how to say no to sex than they were to have received instruction about birth control methods ($p \leq .001$ —not shown).

Formal instruction for adolescents became less comprehensive between 1995 and 2002, as the proportion of adolescents who had received instruction on both birth control methods and abstinence declined significantly, especially among females (84% to 65%). In contrast, for both males and females, receipt of abstinence education alone became significantly more common between 1995 and 2002, when it rose to more than one out of five adolescents (males, from 9% to 24%; females, from 8% to 21%).* The proportion of males who had received birth control instruction alone declined from 16% to 7%; the proportion of females increased a small but significant amount, from 3% to 5%. Finally, the proportion of adolescents who had received formal instruction about neither birth control methods nor abstinence did not change significantly from 1995 to 2002 for males (about 10% for both years), but increased from 5% to 9% for females. These patterns of change in formal instruction occurred within nearly all of the population groups examined.

In 2002, there were significant differences among subgroups of male adolescents in the receipt of formal instruction. Compared with other teenage males, black males, those residing in nonmetropolitan areas and those living with incomes of less than 200% of the federal poverty line were less likely to have received both instruction about birth control

TABLE 2. Percentage of males and females aged 15–19 who had received instruction on specific sex education topics by age 18, by selected characteristics, 1995 and 2002

Characteristic	Birth control		Abstinence		Both		Abstinence only		Birth control only		Neither	
	1995	2002	1995	2002	1995	2002	1995	2002	1995	2002	1995	2002
MALES	81.2*	66.2†	74.1*	82.6†	64.8*	58.8*,†	9.3	23.8†	16.4*	7.4†	9.5*	10.0
Race/ethnicity												
Non-Hispanic white (ref)	81.1	69.4†	74.0	84.2†	65.0	61.4	9.0	22.8†	16.1	7.9†	10.0	7.9
Hispanic	79.0	62.2†	75.2	77.8	65.2	54.0†	10.0	23.8†	13.7	8.1†	11.1	14.1†
Non-Hispanic black	80.0	54.6†,‡	75.8	79.3	63.6	48.3†,‡	12.2	31.1†	16.5	6.3†	7.7	14.4
Age												
15–17 (ref)	79.2	64.0†	75.2	83.8†	64.7	56.9	10.5	26.9†	14.5	7.1†	10.3	9.1
18–19	84.6	69.0†	72.3	81.0†	65.1	61.2	7.3	19.8†,‡	19.5	7.8†	8.2	11.1
Residence												
Central city (ref)	u	71.0	u	83.6	u	62.8	u	20.8	u	8.2	u	8.2
Other metropolitan	u	68.0	u	85.4	u	61.0	u	24.4	u	7.0	u	7.6
Nonmetropolitan	u	54.1†	u	73.5‡	u	46.7‡	u	26.8	u	7.4	u	19.1‡
Household poverty levels												
<200% (ref)	78.7	56.9†	72.9	80.1†	61.5	49.3†	11.4	30.8†	17.2	7.7†	9.9	12.2
≥200%	83.9‡	72.6†,‡	75.7	84.3†	68.2	65.3‡	7.5‡	19.0†,‡	15.7	7.2†	8.6	8.4
Ever had sex												
Yes (ref)	83.1	65.1†	69.8	79.3†	62.7	56.1†	7.1	23.2†	20.4	9.0†	9.8	11.6
No	78.9	67.1†	79.3‡	85.4†,‡	67.4	61.1	11.9‡	24.3†	11.5‡	6.0†	9.1	8.6
FEMALES	87.1	69.9†	92.0	85.5†	84.4	64.9†	7.6	20.7†	2.8	5.1†	5.3	9.4†
Race/ethnicity												
Non-Hispanic white (ref)	88.3	72.2†	92.7	86.8†	85.5	67.2†	7.2	19.7†	2.8	5.0	4.5	8.2†
Hispanic	84.9	64.9†	85.6	81.4	80.8	59.1†	4.8	22.3†	4.7	5.8	9.6	12.8
Non-Hispanic black	86.3	64.2†,‡	93.5	84.4†	84.7	60.5†	8.8	23.8†	1.5	3.7	5.0	11.9†
Age												
15–17 (ref)	87.3	66.6†	93.1	86.6†	85.1	61.9†	8.0	24.7†	2.3	4.7†	4.6	8.7†
18–19	86.7	74.8†,‡	90.3	84.0†	83.3	69.2†,‡	7.1	14.8†,‡	3.5	5.6	6.2	10.5†
Residence												
Central city (ref)	84.4‡	68.4†	93.5	83.1†	87.4	63.0†	6.1	20.1†	3.3	5.4	3.2	11.6†
Other metropolitan	90.7	73.2†	90.0	89.9‡	81.7‡	69.5†	8.3	20.4†	2.7	3.7	7.3	6.4‡
Nonmetropolitan	83.9‡	64.8†	92.0	79.2†	82.4	57.2†	9.5	22.0†	1.8	7.6†	6.2	13.2†
Household poverty level												
<200% (ref)	84.1	67.5†	90.6	83.4†	81.4	62.0†	9.2	21.4†	2.6	5.5†	6.7	11.1†
≥200%	89.0‡	72.2†	92.8	87.5†	86.2‡	67.6†	6.6	19.9†	2.9	4.6	4.3	7.8†
Ever had sex												
Yes (ref)	87.3	72.9†	90.6	83.5†	83.5	65.7†	7.1	17.7†	3.8	7.1†	5.8	9.4†
No	86.8	67.3†	93.5	87.3†	85.1	64.1†	8.2	23.3†	1.7‡	3.2‡	4.8	9.4†

*Significantly different from total percentage of females at $p < .05$. †Significantly different from percentage for 1995 at $p < .05$. ‡Significantly different from percentage for reference group at $p < .05$. §Percentage of federal poverty line. Notes: ref=reference group. u=unavailable.

methods and instruction addressing both topics. Among females in 2002, there were fewer subgroup differences.

There were few differences in instruction by sexual experience. In both 1995 and 2002, receipt of instruction about abstinence was significantly less common among sexually experienced than inexperienced males (in 1995, 70% vs. 79%; in 2002, 79% vs. 85%); there was no difference across these categories for females. However, in both years, significantly higher proportions of sexually experienced females than of virgins had received instruction only about birth control (in 1995, 4% vs. 2%; in 2002, 7% vs. 3%).

Between 1995 and 2002, differences by gender overall diminished. In 1995, a significantly lower proportion of males than of females had received birth control education, abstinence education or both, and a significantly higher

proportion of males than of females had received only birth control education or neither form of instruction. By 2002, most of these differences were no longer significant. The proportion who had received both forms of instruction remained significantly smaller among males than among females (59% vs. 65%), but the difference was far smaller than it had been in 1995.

• **Age at instruction.** Our life-table analyses indicate that teenage males in 2002 had received abstinence education at a younger age than had their counterparts in 1995; the median age was 11.4 years in 2002 and 13.5 in 1995 (Figure 1, page 186). The timing of birth control education did not change significantly (median age, 13.3 in 1995 and 13.5 in 2002), so by 2002, males had received abstinence education two years earlier than birth control instruction.

FIGURE 1. Cumulative percentage of males aged 15–19 who had received instruction on specific sex education topics, by age, according to topic and year

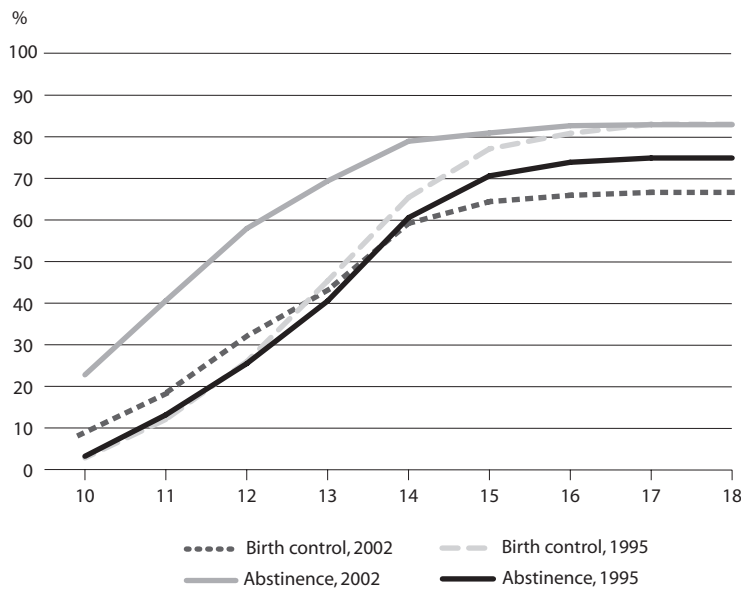
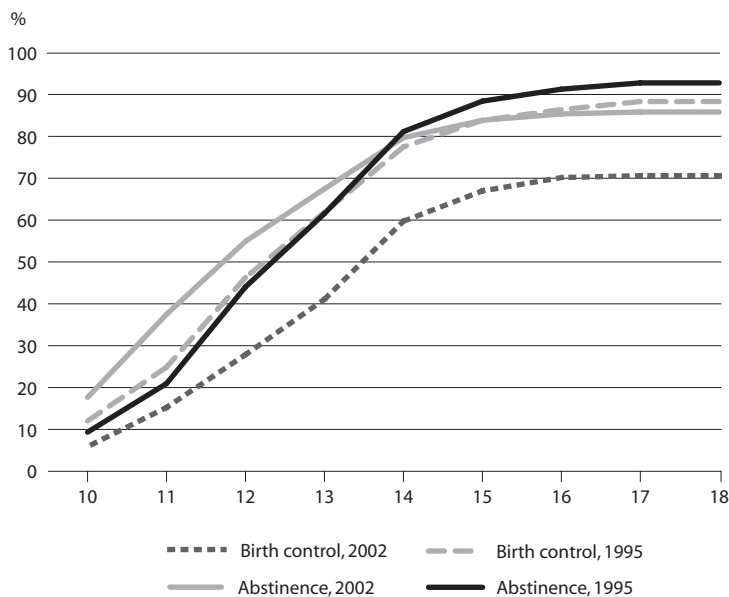


Figure 2 shows that among females, there was no significant difference between the timing of abstinence education and birth control education (median ages, 12.4 and 12.3) in 1995; half of females had received instruction on both topics by 12.5 years of age (not shown). By 2002, abstinence education occurred earlier than in 1995 (median age, 11.8), while the age at receipt of birth control education increased by about one year (median age, 13.5). These opposite trends resulted, by 2002, in female adolescents' having received abstinence education about two years earlier than birth control education. The net result of these different trends among males and females over the period is that the median ages at first instruction in each topic did

FIGURE 2. Cumulative percentage of females aged 15–19 who had received instruction on specific sex education topics, by age, according to topic and year



not differ by gender in 2002, when all adolescents reported having received abstinence education two years earlier than instruction about birth control methods.

Older teenagers were less likely to have received birth control education in 2002 than 1995. In 1995, 70% of adolescent males had obtained instruction about birth control methods by age 14.5, and 80% by age 16; however, in 2002, only 67% had obtained birth control education by age 18. Similarly, nearly 90% of females had obtained formal instruction about birth control methods by age 18 in 1995, compared with 71% in 2002.

• **Timing of formal instruction relative to first intercourse.** As shown in Table 3, among sexually experienced males, the decline in birth control education prior to first sex did not reach statistical significance (61% vs. 54%, $p=.06$), and there was a large increase in the share who had received abstinence education before first intercourse (52% vs. 70%). In contrast, among sexually experienced adolescent females, the share who had received instruction about methods of birth control prior to first sex decreased significantly from 72% in 1995 to 62% in 2002, but the proportion of sexually experienced females who had received instruction about abstinence before first sex did not change significantly. By 2002, significantly higher proportions of sexually experienced adolescents of both genders had received abstinence instruction than had received birth control instruction prior to first sex (not shown).

There were some significant differences by gender in both 1995 and 2002. Receipt of formal instruction about birth control methods was significantly less common among males than among females in both 1995 (61% vs. 72%) and 2002 (54% vs. 62%). A lower proportion of sexually experienced males than females had received instruction about abstinence prior to first sex in 1995 (52% vs. 73%). However, the substantial increase in abstinence instruction among males resulted in no gender differences by 2002.

In 2002, there were significant differences by race or ethnicity and poverty status in the receipt of birth control instruction prior to first intercourse. Only one out of three sexually experienced black males and fewer than one in two sexually experienced black females had received instruction about birth control methods prior to first sex, as compared with two-thirds of their white peers; proportions among Hispanic teenagers were also significantly lower than those for white teenagers. For both males and females in both years, those living below 200% of poverty were less likely to have received birth control education before first sex than were their higher income peers.

We focus our discussion of the results on the relative timing of instruction about birth control and first intercourse. However, the general lack of demographic differences in the timing of abstinence education prior to first sex is noteworthy in its contrast to the differentials observed for birth control education. In 2002, there were no differences by gender in the receipt of abstinence education prior to first sex. Among sexually experienced males, the only demographic difference was that a lower proportion of Hispanic-

ic males than of their white peers had received abstinence education before first sex. Among sexually experienced females, a lower proportion of blacks than of whites had received abstinence education prior to first intercourse (64% vs. 80%), while the proportion was greater among females who resided in a central city than among those in other metropolitan areas (79% vs. 69%).

DISCUSSION

Most adolescents, and their parents, believe that adolescents need information about abstinence and birth control.¹³ However, our study has found that in practice, there was a substantial retreat from a comprehensive approach to sex education from 1995 to 2002. Large declines in instruction about birth control methods, combined with increases in abstinence education, resulted in a lower proportion of teenagers' having received formal instruction about both abstinence and birth control methods, and a higher proportion of teenagers' having received instruction only about abstinence. Not only had a lower proportion of adolescents learned about birth control methods in school or through other formal sources, but this instruction had occurred at later ages than previously, while the median age at abstinence education declined. A lower proportion of sexually experienced adolescents had received instruction about birth control methods before first sex, and one-quarter of sexually experienced teenagers had not received instruction about abstinence prior to first sex. Abstinence education was received relatively uniformly by adolescents, regardless of their demographic characteristics. In contrast, declines from 1995 to 2002 in birth control instruction and comprehensive education were particularly marked for black males and males living below 200% of the poverty level; as a result, these groups were less likely than their peers to have received such instruction by 2002. Additionally, in 2002, males living in nonmetropolitan areas had significantly lower levels of receipt of instruction about birth control, abstinence and both types of education when compared with males living in metropolitan areas.

The trend in formal instruction observed over the recent decade pertains primarily to school-based education, and is a continuation of the trend documented in national surveys showing that 2% of sex education teachers in 1988 taught abstinence only, but 23% did so in 1998. During this same period, there were declines in broader instruction about sexual orientation, abortion, and where to go for birth control and STD services.¹⁴ Similar trends were documented by the Youth Risk Behavior Survey: The proportion of students in grades 9–12 being taught about AIDS or HIV infection in school declined between 1997 and 2003 (from 92% to 88%), following a period of increase between 1991 and 1997 (from 83% to 92%).¹⁵ Analyses of the 1988 and 1995 rounds of the NSAM had documented that adolescent males were growing increasingly likely to have received instruction on both abstinence and birth control methods, and were receiving it at earlier ages; even so, they were less likely to have received this instruction than were

TABLE 3. Percentage of sexually experienced males and females aged 15–19 who had ever received instruction on specific sex education topics prior to first intercourse, by selected characteristics, 1995 and 2002

Characteristic	Birth control				Abstinence			
	Males		Females		Males		Females	
	1995	2002	1995	2002	1995	2002	1995	2002
Total	61.2*	54.3*	72.4	61.8†	52.0*	70.3†	72.5	75.1
Race/ethnicity								
Non-Hispanic white (ref)	69.4	65.6	75.3	67.8	55.7	75.1†	74.8	79.8
Hispanic	52.8‡	44.9‡	65.8	50.8‡	51.5	59.3‡	64.0	69.9
Non-Hispanic black	41.9*‡	32.8‡	68.2	45.1†‡	43.2‡	68.5†	70.7	63.9‡
Age								
15–17 (ref)	57.7	49.1	70.6	57.0†	50.8	70.2†	71.1	76.3
18–19	64.4	57.6	73.8	64.8†	53.1	70.4†	73.5	74.3
Residence								
Central city (ref)	u	55.9	75.8	56.5†	u	71.2	75.1	68.9
Other metropolitan	u	54.9	68.3	64.7	u	72.3	69.3	79.0†‡
Nonmetropolitan	u	49.6	72.6	63.5	u	63.4	72.7	76.3
Household poverty levels								
<200% (ref)	55.6	43.5	65.2	56.2	46.1	66.2†	67.9	73.6
≥200%	65.5‡	61.7‡	77.8‡	66.9†‡	56.9*‡	73.0†	75.9‡	76.5

*Significantly different from total percentage of females at $p < .05$. †Significantly different from percentage for 1995 at $p < .05$. ‡Significantly different from percentage for reference group at $p < .05$. §Percentage of federal poverty line. Note: u=unavailable.

adolescent females, as reported in the 1995 NSFG.¹⁶

An unexpected finding of this study is that while the proportion of males who had received formal instruction about abstinence increased, this proportion decreased for females (although neither change was large). The gap between males and females in receipt of abstinence education was 18 percentage points in 1995, but had almost disappeared by 2002 (females were still slightly more likely to report receipt of abstinence instruction than males in 2002). Combined with the lack of other social and demographic differentials in the receipt of abstinence education, this suggests that information about abstinence, which used to be reserved for distinct groups of students, had become more widely integrated into reproductive health curricula.

The alarming trends away from birth control instruction and comprehensive sex education for black males, males living below 200% of poverty and males living in nonmetropolitan areas are of particular concern, as they create growing inequities. In 2002, fewer than 60% of black males, males living below 200% poverty and males living in nonmetropolitan areas had received any formal instruction about birth control methods. Among sexually experienced males in these groups, no more than half had received instruction about birth control prior to first sex. National public health goals set by the Department of Health and Human Services should seek, at a minimum, to return formal instruction to its 1995 levels, as well as to reduce inequities.

Limitations

This study has a number of limitations. The measures of receipt of instruction are very narrow—they report if any instruction occurred, but tell us nothing about the quan-

tity or quality of this education. There is likely substantial variation in quantity and quality of the instruction provided that we are not able to describe. Past reviews have identified a range of program characteristics that influence the effectiveness of sexual risk reduction interventions for adolescents, including a focus on curriculum development, content and implementation—all factors that likely varied across the formal instruction reported here by adolescents.¹⁷

A more important limitation of these measures may be that they do not provide information about the tone or the content of instruction, which is particularly relevant for understanding the measures of receipt of instruction about birth control. Abstinence instruction may include discussions about birth control that emphasize its ineffectiveness, as part of a focus on the risks of sexual activity.¹⁸ This tone is far different from one that includes instruction about birth control as a means of pregnancy prevention and protection. Depending on the tone and content of information provided about birth control, the reported proportion of adolescents receiving comprehensive sex education may be overestimated, as it may include some teenagers who were taught that birth control methods are generally ineffective. Although we documented a downward trend in the prevalence of birth control instruction, this negative trend may be even more pervasive if some adolescents did not receive accurate information about birth control.

Another limitation is that adolescents' reports of what they were taught may not fully reflect actual instruction that schools provide. Factors such as the perceived relevance of the information and the quality of the teaching may affect the likelihood that individuals remember receiving instruction on particular topics. For example, past studies that found parents reporting more communication on sexual topics than teenagers also found that teenagers' reports have a stronger statistical association with their behavior and knowledge than do parents' reports.¹⁹ This would argue that the information presented here provides valuable insights into what is perhaps the most important dimension of sex education—what individuals remember and consider they have received.

The survey measures in this study provide a view of only a narrow slice of sex education. First, since they ask only about abstinence and birth control, we do not know about instruction in other important topics, such as HIV and AIDS or other STDs. Second, schools and other formal sources are not the only possible sources of information on sexual and reproductive health. Given the decreasing involvement of schools in comprehensive instruction, other sources of information, such as peers or the media, may become more important. For example, as the Internet becomes increasingly accessible, teenager-focused health Web sites may become an increasingly critical information source for teenagers. Sexual health advocates and educators may need to focus on developing medically accurate, unbiased information sources; disseminating this information; and monitoring the quality and accuracy of available resources.

CONCLUSIONS

Our analysis points to the need for a broader assessment of trends in sex education, in terms of a range of key subjects (including STDs) and the timing of instruction; a more specific assessment of where formal instruction is occurring also would be useful. Although the vast majority of males (91–96%) in 1988 who had received formal instruction said they had gotten it from school,²⁰ this may have changed with the expansion of and funding opportunities for community-based programs. Given the differences observed by residence, it is also necessary to assess differences in coverage of topics among school districts across the country.

Any study measuring only the receipt of education does not provide information about its effectiveness. There has been little well-executed research on the effectiveness of abstinence-only education for adolescents. In a cross-national review of 83 sex and HIV education programs for adolescents, only six programs focused on abstinence only or abstinence until marriage.²¹ The large shift away from teaching teenagers about birth control methods as part of their formal instruction has occurred without firm evidence documenting the positive effects of abstinence only instruction. There is a continued need for research on the direct causal links between education received and relevant behaviors that follows teenagers over an extended period of time. The large changes in the content of sex education described here warrant substantial investigation of its impact on adolescents' reproductive health knowledge, behaviors and outcomes.

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