Explaining Recent Declines in Adolescent Pregnancy in the United States: The Contribution of Abstinence and Improved Contraceptive Use

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Objectives. We explored the relative contributions of declining sexual activity and improved contraceptive use to the recent decline in adolescent pregnancy rates in the United States.

Methods. We used data from 1995 and 2002 for women 15 to 19 years of age to develop 2 indexes: the contraceptive risk index, summarizing the overall effectiveness of contraceptive use among sexually active adolescents (including nonuse), and the overall pregnancy risk index, calculated according to the contraceptive risk index score and the percentage of individuals reporting sexual activity.

Results. The contraceptive risk index declined 34% overall and 46% among adolescents aged 15 to 17 years. Improvements in contraceptive use included increases in the use of condoms, birth control pills, withdrawal, and multiple methods and a decline in nonuse. The overall pregnancy risk index declined 38%, with 86% of the decline attributable to improved contraceptive use. Among adolescents aged 15 to 17 years, 77% of the decline in pregnancy risk was attributable to improved contraceptive use.

Conclusions. The decline in US adolescent pregnancy rates appears to be following the patterns observed in other developed countries, where improved contraceptive use has been the primary determinant of declining rates. (*Am J Public Health.* 2007;97:150–156. doi:10.2105/AJPH.2006.089169)

In recent years, the United States has had the highest rate of adolescent pregnancy of any of the world's developed nations.[1,2] However, since 1991 these rates have declined dramatically. Pregnancy rates among 15- to 19-year-olds declined 27% from 1991 to 2000,[3] and birth rates (for which more recent published data are available) dropped 33% between 1991 and 2003.[4]

The pattern of decline in US birth rates among adolescents is considerably different from the pattern in non–English-speaking European countries, where adolescent pregnancy rates peaked between 1965 and 1980 and then dropped dramatically.[1] Little of the decline in Europe seems attributable to delay in initiation of sexual intercourse, given that the median age at initiation has fallen since 1965, indicating that more teens were having sex.[1,5] In fact, the age at which young people initiate sexual activity has become increasingly similar across developed countries.[1,5] A mid-1990s analysis of 5 developed countries showed that adolescents in the United States initiated sexual activity at an age similar to that of adolescents in Sweden, France, Canada, and Great Britain but that they used contraceptives less frequently.[6]

Reductions in adolescent pregnancy rates are the result of shifts in 2 key underlying behaviors: sexual activity and contraceptive use. Between 1971 and 1988, age at sexual initiation among US teenagers became increasingly younger, as demonstrated by increases in the proportion of adolescents who had ever experienced coitus.[7–9] At the beginning of the 1990s this trend reversed, and declines in early sexual experience have since been documented in both school-based and household surveys.[10–12]

Social conservatives in the United States have ascribed much of the recent decline in adolescent pregnancy rates to increased abstinence from sexual intercourse.[13] Consequently, the US government now promotes abstinence until marriage ("abstinence only") as its primary prevention message for teenagers.[14] Federal government requirements for abstinence-only programs specify that these programs must have as their "exclusive purpose" the promotion of abstinence outside of marriage and that they must not, in any way, advocate contraceptive use or discuss contraceptive methods other than to emphasize their failure rates.[15]

Federal government funding for abstinence-only education in the United States has grown rapidly since 1998, despite a lack of scientific evidence in support of these programs and concerns about their informational content and ethical acceptability.[13,14] In addition, the federal government, through its foreign aid programs, has vigorously promoted abstinence as a means of preventing HIV infection among adolescents.[15]

In a previous analysis, we examined nationally representative data derived from samples of US high-school students in an attempt to understand declining adolescent pregnancy rates.[16] We found significant increases in use of contraception among 15- to 17-year-olds between 1991 and 2001 and estimated that improved contraceptive use and delay in initiation of intercourse made equal contributions to declining pregnancy rates.

In an effort to update that study, we conducted a more comprehensive analysis of the roles of increased contraceptive use and delayed initiation of sexual activity in explaining changes in pregnancy risk over the period 1995 to 2002 among young people aged 15 to 19 years. We used data from the 1995 and 2002 versions of the National Survey of Family Growth (NSFG), a nationally representative household survey that provides more complete coverage of female adolescents (particularly older adolescents and those who are out of school) than high-school surveys. The NSFG also provides detailed information about contraceptive use, allowing assessment of trends in dual- and

multiple-method use, which can greatly reduce pregnancy risk.

METHODS

Data

The NSFG is a periodic (every 7 years) national probability survey conducted among noninstitutionalized adult (15–44 years of age) residents of the United States.[17] Our analyses were limited to young women who were aged 15 to 19 years at the time they were interviewed in 1995 (n=1396) or 2002 (n=1150). Further information about the design of the NSFG is available elsewhere (http://www.cdc.gov/nchs/nsfg.htm.).

Measures

Sexual activity and contraceptive use. We recoded the publicly available NSFG data to increase the comparability of the relevant measures in the 2 waves of data collection. Our analyses were based on 2 central measures: recent sexual activity and contraceptive use at most recent intercourse. Young women who had engaged in vaginal intercourse at any point during the 3 months before the interview were defined as having been recently sexually active. For comparison purposes, we also examined the percentage of young women in each group who were sexually experienced (i.e., had ever engaged in vaginal intercourse).

We assessed contraceptive use at most recent sexual intercourse only among women who had been sexually active in the preceding 3 months, reducing measurement issues related to recall. Women could report use of up to 4 contraceptive methods in combination at their most recent sexual intercourse or no contraceptive use. Young women who were pregnant at the time of the interview (55 in 1995, 32 in 2002) were coded as having used the contraceptive method they were using when they became pregnant (most were using no method); these data were collected in a separate section of the interview in which detailed histories were obtained.

Contraceptive failure rates. In addition to the sexual activity and contraceptive use measures, our calculations required measures of method-specific contraceptive failure rates (CFRs). A "typical-use" CFR is the number of pregnancies occurring among 100 women using a specific contraceptive method over a 12-month period. We used published CFRs for women's first year of typical use based on the 1988 and 1995 versions of the NSFG, adjusted for underreporting of abortion.[18] Failure rates from the 2002 NSFG were not available at the time this article was written.

The failure rate for nonuse of contraception was based on widely accepted data provided by Trussell.[19] We estimated failure rates for combined method use at most recent intercourse by multiplying the method-specific failure rates calculated for the 2 methods. Although women could report simultaneous use of up to 4 contraceptive methods, we limited our failure rate calculations to the 2 most effective methods.

Risk indices. We created 2 related indexes for this study: (1) the contraceptive risk index, a weighted-average contraceptive use/nonuse pregnancy risk index (the same as our previously labeled weighted-average contraceptive failure rate index[16]), and (2) the overall pregnancy risk index. The contraceptive risk index summarizes the overall effectiveness of a group's contraceptive use and essentially represents pregnancy risk for the sexually active proportion of that population by summing the product of each method-specific failure rate and the proportion of those who are sexually active using that method at their most recent sexual intercourse.[18,19] In these calculations, nonuse of contraception was considered a "method" involving a specific risk of pregnancy. Thus, here the contraceptive risk index can be represented as follows: Σ(percentage of sexually active women using method $x \times$ CFR for method x), where x=each specific method or method combination. (The CFR for each method is reported in Table 2.)

The overall pregnancy risk index summarizes the risk of pregnancy among all adolescents (including those who are not currently sexually active), incorporating information about both the level of recent sexual activity and the level of contraceptive risk among those who were sexually active at the time of the study. Thus, the overall pregnancy risk can be defined as follows: percentage of women who were sexually active multiplied by contraceptive risk index.

Data on pregnancies. We used data on 1991 to 2000 pregnancy and birth rates obtained from the National Center for Health Statistics to compare our measure of overall pregnancy risk with actual pregnancy rates.[3] The pregnancy rates for 2001 were computed using the same method employed by the National Center for Health Statistics. To estimate pregnancy rates for 2002, we calculated a linear extrapolation based on changes from 1995 to 2001.

Analysis

We initially estimated, for both 1995 and 2002, the percentages of female adolescents who were sexually active. We then tested for changes in percentage over time overall and by age and race/ethnicity. Next, we measured the specific contraceptive methods these young women had used at their most recent sexual intercourse, as well as the number of methods they had used and common method combinations. Each sexually active woman was assigned an individual contraceptive risk score on the basis of the 2 most effective contraceptive methods she had used at her most recent sexual intercourse. We used this information to calculate the mean and variance of the contraceptive risk index and test for changes in the index between 1995 and 2002, both overall and separately according to age and race/ethnicity.

In the next part of our analysis, we calculated age- and race/ethnicity-specific changes over time in overall pregnancy risk index values. We computed standard errors and tests of statistical significance using the svy series of commands in Stata 8.2 (Stata Corp, College Station, Tex) to account for the stratified survey designs.[20] To calculate the mean and variance for the overall pregnancy risk index, we assigned sexually active teenagers a value equal to this contraceptive risk score and assigned those not sexually active a score of zero. Implicit in this index is the fact that adolescents who were not sexually active at the time of the study, even if they had previously been sexually active, did not face a current risk of pregnancy.

Finally, we decomposed the overall pregnancy risk index into its component parts to ascribe the decline in pregnancy risk from 1995 to 2002 to changes in sexual activity and changes in contraceptive use. The percentage

of the decline in pregnancy rate because of the decline in sexual activity was calculated as

$$(1)\quad \frac{\log(SA_{2002}/SA_{1995})}{\log(SA_{2002}/SA_{1995})+\log\left[\left(CRI_{2002}\right)/\left(CRI_{1995}\right)\right]}\times 100,$$

where *SA* represents the percentage of sexually active young women and *CRI* represents the contraceptive risk index. Similarly, the percentage of the decline in pregnancy rate because of improved contraceptive use was calculated as

$$(2)\quad \frac{\log\left[\left(CRI_{2002}\right)/\left(CRI_{1995}\right)\right]}{\log(SA_{2002}/SA_{1995})+\log\left[\left(CRI_{2002}\right)/\left(CRI_{1995}\right)\right]}\times 100.$$

This method produced results that were nearly identical to those obtained with an alternative approach suggested by Preston et al.[21] We used a bootstrapping procedure with 500 iterations to calculate confidence intervals (CIs) for percentage changes because of sexual activity and percentage changes because of contraceptive use.

RESULTS

Between 1995 and 2002, the number of young women aged 15 to 19 years who had ever engaged in sexual intercourse declined 10% (52% to 47%; *P*=.035; Table 1). There was a 22% decline in the 15- to 17-year-old group (*P*=.003), and there was no change among 18- and 19-year-olds (71% at both time points). The number of young Hispanic women who had ever engaged in sexual intercourse declined (*P*=.003), but there was no significant change among young non-Hispanic White (*P*=.156) or Black (*P*=.415) women.

More relevant to this analysis, rates of sexual activity (i.e., sexual intercourse during the preceding 3 months) did not decline significantly among either 15- to 19-year-olds (41% to 38%; *P*=.244) or 18- and 19-year-olds. Among 15- to 17-year-olds, the decline in sexual activity (28% to 23%) was of borderline statistical significance (*P*=.065). Hispanic 15- to 19-year-olds exhibited a decline from 46% to 35% (*P*=.032). Again, no significant change was found for non-Hispanic Whites or Blacks in that age group. In general, we found smaller changes in recent sexual intercourse than in history of ever having sexual intercourse, as a result of small, nonsignificant increases in sexual activity among sexually experienced teenagers.

Dramatic improvements in contraceptive use occurred between 1995 and 2002, including increases in the use of individual methods, increases in the use of multiple methods, and declines in nonuse (Table 2). Improvements associated with individual methods included increases in the use of condoms (36% to 53%), birth control pills (24% to 33%), injection methods (8% to 10%), and withdrawal (7% to 12%). Use of Norplant ceased after its removal from the US market. The rate of nonuse declined from 34% to 18%. Use of 2 or more methods increased from 11% to 26%. The most common combinations of contraceptive methods used in 2002 included pills and condoms, condoms and withdrawal, pills and withdrawal, and injection and condoms. Overall, the contraceptive risk index declined 34% (*P*<.001).

Improvements in contraceptive use among 15- to 17-year-olds were even larger than changes among 15- to 19-year-olds. The rate of condom use increased from 38% to 58%, whereas pill use increased from 19% to 39%. Nonuse declined from 35% to 14%. Use of 2 or more methods rose from 12% to 33%, the most common combination being use of the pill and condom simultaneously (22%). The contraceptive risk index declined 46% (*P*<.001). Although the increase in contraceptive use was not as dramatic among 18- and 19-year-olds, the decline in the contraceptive risk index (27%) was still considerable (*P*=.004), and the percentage in which 2 or more methods were used rose from 11% to 22%.

Large changes in contraceptive use were observed among non-Hispanic White women, with considerable increases in the use of individual methods and a dramatic decline in nonuse. The rate of condom use increased from 38% to 58%, and use of birth control pills increased from 29% to 40%. Use of 2 or more methods rose from 13% to 31%, and simultaneous pill and condom use rose from 9% to 17%. The contraceptive risk index declined 44% (*P*<.001). The data for non-Hispanic Blacks and Hispanics shown in Table 2 should be considered with caution given the small sample sizes for these groups in both years.

TABLE 1—Percentages of Young Women Aged 15–19 Years Engaging in Sexual Intercourse: National Survey of Family Growth, 1995 and 2002

	1995, No. (%)	2002, No. (%)	Change, 1995–2002, %	*P*
History of sexual intercourse				
Age group, y				
Overall	1396 (51.7)	1150 (46.8)	–9.5	.035
15–17	815 (38.6)	674 (30.3)	–21.5	.003
18–19	581 (71.1)	476 (70.5)	–0.8	.853
Race/ethnicity				
White non-Hispanic	842 (50.9)	613 (46.4)	–8.7	.156
Black non-Hispanic	289 (60.4)	242 (57.0)	–5.8	.415
Hispanic	210 (56.4)	231 (40.4)	–28.4	.003
Recent sexual intercourse[a]				
Age group, y				
Overall	1387 (40.5)	1149 (37.9)	–6.4	.244
15–17	808 (28.2)	673 (23.4)	–17.0	.065
18–19	579 (58.9)	476 (58.9)	0.0	.999
Race/ethnicity				
White non-Hispanic	837 (40.1)	613 (38.4)	–4.2	.543
Black non-Hispanic	288 (46.9)	241 (41.3)	–12.0	.240
Hispanic	207 (45.7)	231 (34.5)	–24.5	.032

[a]Defined as withing the past 3 months.

TABLE 2—Percentages of Sexually Active Young Women Aged 15–19 Years Who Used Selected Contraceptive Methods at Most Recent Sexual Intercourse and Contraceptive Failure Rates Risk Scores: National Survey of Family Growth, 1995 and 2002

	Contraceptive Failure Rate	15–19 Years		15–17 Years		18–19 Years		White Non-Hispanic		Black Non-Hispanic		Hispanic	
		1995	2002	1995	2002	1995	2002	1995	2002	1995	2002	1995	2002
Method, %													
Condom	13.7	35.7	53.0	38.4	58.3	33.7	50.0	38.4	58.0	37.9	52.7	19.6	30.6
Birth control pill	7.5	23.7	32.5	19.3	38.7	26.8	28.8	28.9	39.7	14.5	24.1	14.1	18.3
Injection	3.5	7.6	9.9	9.2	9.4	6.4	10.2	5.5	7.9	14.7	19.9	8.4	7.8
Norplant	3.5	2.2	0.0	1.8	0.0	2.4	0.0	1.4	0.0	3.2	0.0	4.6	0.0
Withdrawal	24.5	6.7	12.2	6.6	11.5	6.9	12.7	7.7	13.9	2.5	3.6	6.0	8.4
Rhythm	22.9	0.7	0.9	0.0	0.7	1.2	1.0	0.2	1.3	1.7	0.0	1.3	0.0
Vasectomy	0.2	0.2	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Patch	8.0[a]	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.3	0.0	1.0	0.0	0.0
Intrauterine device	3.5	0.0	0.6	0.0	0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.5
Diaphragm	13.1	0.0	0.2	0.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Spermicide	27.6	1.0	0.8	0.0	0.2	0.7	1.1	1.1	1.1	1.0	0.0	0.0	0.0
No method	85.0[a]	33.9	18.3	35.4	14.3	32.8	20.7	30.7	12.2	33.3	24.8	50.2	39.6
Sexually active, no.		560	444	228	156	332	288	327	240	135	98	89	84
Common method combinations, %													
Pill + condom	1.0	7.0	14.2	6.1	21.9	7.6	9.7	8.9	17.4	4.8	14.3	0.7	3.0
Pill + withdrawal	1.8	1.3	2.6	1.1	3.6	1.3	2.0	1.7	4.0	0.0	0.0	1.2	0.0
Withdrawal + condom	3.4	1.7	3.6	2.0	3.0	1.5	3.9	2.0	4.2	0.0	2.0	2.4	1.4
Injection + condom	0.5	0.5	3.3	1.1	2.6	0.1	3.7	0.0	2.5	2.6	8.8	0.0	0.7
Patch + condom	1.1	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.3	0.0	1.0	0.0	0.0
No. of methods used, %													
0		33.9	18.3	35.4	14.3	32.8	20.7	30.7	12.2	33.3	24.8	50.2	39.6
≥1		66.1	81.7	64.6	85.7	67.2	79.3	69.3	87.8	66.7	75.2	49.8	60.4
≥2		11.2	26.1	11.5	32.7	10.9	22.2	13.4	30.9	8.8	26.2	4.3	5.0
≥3		0.5	2.3	0.5	1.5	0.6	2.7	0.8	3.3	0.0	0.0	0.0	1.1
4		0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.6	0.0	0.0	0.0	0.0
Contraceptive risk index[b]		33.8	22.3	34.4	18.6	33.3	24.4	31.1	17.3	34.0	26.5	45.6	39.5
Change, 1995–2002, %			-34.0		-45.9		-26.8		-44.3		-22.1		-13.4
t test			4.74		4.47		2.87		5.05		1.42		0.82
P			<.001		<.001		.004		<.001		.158		.413

Note. Typical-use first-year contraceptive failure rates are from Ranjit et al.[18] unless otherwise noted.
[a]From Trussell.[19]
[b]Weighted-average contraceptive use or nonuse risk score, abbreviated as contraceptive risk index.

As described in the "Methods" section, the overall pregnancy risk index combined the impact of changes in sexual activity and contraceptive use (Table 3). Overall, pregnancy risk declined 38% (95% CI=23%, 54%), from 13.7 to 8.4. The decline was larger among 15- to 17-year-olds (55%, from 9.7 to 4.4) than among 18- and 19-year-olds (27%, from 19.6 to 14.4). The change in the overall pregnancy risk index observed among non-Hispanic Whites was significant; however, given the small numbers of non-Hispanic Blacks and Hispanics, changes were of borderline statistical significance for both groups. (Note that, in each case, the decline in actual birth and pregnancy rates fell within the confidence intervals for the change in pregnancy risk. This represents one way to validate the calculation of our overall pregnancy risk index.)

Table 4 summarizes changes between 1995 and 2002 in key components of pregnancy risk and also displays the overall percentages of change that could be attributed to changes in the 2 key components: sexual activity and contraceptive use. As Table 4 demonstrates, the largest changes in behaviors and pregnancy risks were observed among 15- to 17-year-olds. This finding is consistent with the largest changes in actual pregnancy rates occurring among younger teenagers.

We estimated that 14% of the change observed among 15- to 19-year-olds was attributable to a decrease in the percentage of sexually active young women (95% CI=−18%, 34%) and that 86% was attributable to

TABLE 3—Changes in Pregnancy Risk, by Age and Race/Ethnicity: National Survey of Family Growth, 1995 and 2002

	15–19 Years	15–17 Years	18–19 Years	White, Non-Hispanic	Black, Non-Hispanic	Hispanic
Change, 1995–2002, % (95% confidence interval)	–38.3 (–22.7, –53.9)	–55.2 (–33.1, –77.2)	–26.7 (–6.5, –46.8)	–46.7 (–27.4, –65.9)	–31.5 (–0.1, –63.0)	–34.2 (4.0, –72.4)
t test	4.81	4.90	2.60	4.74	1.97	1.75
P	<.001	<.001	.010	<.001	.05	.08
Change in birth rate, %	–23.2	–34.6	–17.0	–27.5	–29.7	–16.0
Change in pregnancy rate, %[a]	–23.5	–35.5	–17.3	. . .	. . .	. . .

[a]Data for 2002 not available; change extrapolated from trend between 1995 and 2001.

TABLE 4—Summary of Changes in Sexual Activity and Risk Index Values and Overall Changes Attributable to Sexual Activity and Contraceptive Use: National Survey of Family Growth, 1995 and 2002

	15–19 Years, Change, %	15–17 Years, Change, %	18–19 Years, Change, %	White, Non-Hispanic, Change, %	Black, Non-Hispanic, Change, %	Hispanic, Change, %
Sexual activity	–6.4	–16.9	0.0	–4.2	–12.0	–24.5
Contraceptive risk index	–34.0	–45.9	–26.8	–44.3	–22.1	–13.4
Overall pregnancy risk index	–38.3	–55.2	–26.7	–46.7	–31.5	–34.2
Overall change attributable to sexual activity (95% CI)	14 (–18, 34)	23 (–6, 45)	0 (–99, 37)	7 (–28, 26)	34 (–125, 172)	66 (–110, 236)
Overall change attributable to contraceptive use (95% CI)	86 (66, 118)	77 (55, 106)	100 (63, 199)	93 (74, 128)	66 (–72, 225)	34 (–136, 210)

Note. CI = confidence interval.

changes in contraceptive method use (95% CI=66%, 118%); the corresponding percentages among 15- to 17-year-olds were 23% (95% CI=–6%, 45%) and 77% (95% CI=55%, 106%). (Confidence intervals for attributions [and the attributions themselves] may in theory be below 0% or above 100% because one of the 2 changes may have actually been in the opposite direction of the overall change. For example, if sexual activity actually increased in one group but contraceptive use and the overall pregnancy risk declined, sexual activity would have made a "negative" contribution to the decline in pregnancy risk, and contraceptive use would have been responsible for "more than" 100% of the change.) All of the change in pregnancy risk among 18- and 19-year-olds was the result of increased contraceptive use (95% CI=63%, 199%).

Among non-Hispanic Whites, we estimated that 7% of the change was attributable to a decrease in the percentage of sexually active young women (95% CI=–28%, 26%) and that 93% was attributable to changes in contraceptive method use (95% CI=74%, 128%). As noted earlier, attributions for non-Hispanic Blacks and Hispanics (Table 4) should be interpreted with caution given the limited sample sizes and large confidence intervals.

DISCUSSION

Our data suggest that declining adolescent pregnancy rates in the United States between 1995 and 2002 were primarily attributable to improved contraceptive use. The decline in pregnancy risk among 18- and 19-year-olds was entirely attributable to increased contraceptive use. Decreased sexual activity was responsible for about one quarter (23%) of the decline among 15- to 17-year-olds, and increased contraceptive use was responsible for the remainder (77%). Improved contraceptive use included increases in the use of many individual methods, increases in the use of multiple methods, and substantial declines in nonuse.

These data suggest that the United States appears to be following patterns seen in other developed countries where increased availability and increased use of modern contraceptives have been primarily responsible for declines in adolescent pregnancy rates.[1] Our findings raise questions about current US government policies that promote abstinence from sexual activity as the primary strategy to prevent adolescent pregnancy.

Other scientific data also challenge the federal government's efforts to promote abstinence-only strategies. The limited evaluations of abstinence-only sex education programs provide no evidence that they are successful in delaying initiation of sexual intercourse.[22] Although abstinence is theoretically highly effective in preventing unintended pregnancies and sexually transmitted infections (STIs), in actual practice abstinence intentions often fail.[14,23] Abstinence programs may undermine the promotion of other prevention behaviors. For example, a longitudinal examination of the virginity pledge movement showed that pledgers did delay initiation of sexual intercourse; however, they were less likely to use contraception when they initiated sexual activity and were less likely to seek STI screenings.[24]

Identifying changes in the behaviors that result in adolescent pregnancy can provide some insight into the social forces that influence these behaviors. Increases in the use of multiple methods of contraception suggest an increased motivation to avoid pregnancy and STIs, which in turn suggest declines in the social acceptability of adolescent childbearing and increases in educational and employment opportunities. Increasing rates of condom use in the United States reflect continuing concerns about HIV infection and other STIs among adolescents.[25]

Socially disadvantaged young people and their communities may increasingly see adolescent pregnancy as a barrier to improvements in life circumstances.[26] Adolescents who are also parents have become less socially acceptable.[27] Delays in initiation of sexual activity are traceable to many factors, including broad public support for delaying initiation of sexual intercourse at least until graduation from high school.[27] Ironically, the trend toward later initiation of sexual intercourse and declines in adolescent pregnancy appears to have preceded recent intensive efforts on the part of the US government to promote abstinence-only policies.[14]

This study provides new and more comprehensive information on the factors underlying recent declines in US rates of adolescent pregnancy. Earlier studies involving NSFG data[28,29,30] focused on the years 1988 to 1995, a period in which there were relatively small changes in rates of adolescent pregnancy. Data available from the 2002 NSFG allow exploration of behavioral changes during the period 1995 through 2002, when larger declines in rates occurred.

Our previous study involving 1991 to 2001 data on high-school students showed that both increased abstinence and increased contraceptive use contributed to the decline in pregnancy rates among 15- to 17-year-olds.[16] Relative to school surveys, the NSFG includes more data on older teenagers and those who have left school and collects more detailed information about contraceptive use. In comparison with our school-based study, this analysis of the NSFG showed a larger contribution of contraceptive use to declines in adolescent pregnancy rates. We believe that these differences in attribution are the result of differences in age groups and time periods, inclusion of young people who are not in school, and more complete measurement of contraceptive use.

Limitations

Our study had several limitations. When self-reported information is used, one must always consider the potential for over- and under-reporting. Adolescents are generally reliable reporters of information on sexual health.[31] However, given increasing social pressure to delay sexual initiation and avoid pregnancy, adolescents may be more likely today than in the past to underreport sexual activity or overreport contraceptive use.

Although the overall NSFG sample size is adequate, sample sizes become problematically small in analyses of subgroups. This was particularly true for the Black and Hispanic subgroups, in which the numbers of sexually active young women fell below 100. Moreover, variance around changes in percentages or around attribution was much larger than variance around estimates for a single point in time. As such, care should be taken in interpreting our estimates for these smaller subgroups.

There appears to be a specific problem with instability in the NSFG data for Hispanic adolescents. In our analyses, the decline in sexual experience among Hispanic teenagers (from 56% to 40% in 7 years) was much larger than the changes observed in other groups. Likewise, a comparison of the 1988, 1995, and 2002 versions of the NSFG[10] revealed wide differences over time in sexual experience estimates among young Hispanic women aged 15 to 17 years (35%, 49%, and 25%, respectively). These differences seem implausible and may have resulted from the limited sample size or other problems involved in sampling an ethnic group that is heterogeneous with respect to national origin and sexual mores.

We assumed that there were no changes in whether contraceptives were used correctly or in biological fecundity. Correct use of contraception can be assessed via measuring changes in typical-use CFRs. We used the most recent available failure rates (for 1995). Ranjit et al. found no changes between 1988 and 1995 in typical-use CFRs (note that questions about contraception use at most recent intercourse did assess consistency of use).[18] No data are available to measure changes in biological fecundity among teenagers (or adults).

Implications

What policy recommendations arise from our results? Although more adolescents in the United States are delaying initiation of sexual intercourse, the impact of this change on pregnancy risk is small and confined to younger teenagers (i.e., 15- to 17-year-olds). Overall, increasing rates of contraceptive use appear to be the primary determinant of declining pregnancy rates between 1995 and 2002, and this assessment appears to be consistent with the pattern in other developed countries. Public policies and programs in the United States and elsewhere should vigorously promote provision of accurate information on contraception and on sexual behavior and relationships, support increased availability and accessibility of contraceptive services and supplies for adolescents, and promote the value of responsible and protective behaviors, including condom and contraceptive use and pregnancy planning.

Abstinence promotion is a worthwhile goal, particularly among younger teenagers; however, the scientific evidence shows that, in itself, it is insufficient to help adolescents prevent unintended pregnancies. The current emphasis of US domestic and global policies, which stress abstinence-only sex education to the exclusion of accurate information on contraception, is misguided. Similar approaches should not be adopted by other nations. ■

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Contributors

J.S. Santelli originated the study and assumed primary responsibility for the writing of the article. L. Duberstein Lindberg was the primary data analyst and was involved in the origination of the study. L.B. Finer

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Human Participant Protection

The institutional review board at Columbia University declared this study exempt from protocol approval because the data were anonymous.

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