

Does Condom Availability Make a Difference? An Evaluation of Philadelphia's Health Resource Centers

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In 1992, nine Philadelphia high schools opened drop-in centers where students could receive reproductive health information, condoms and general health referrals. Analyses of survey data collected in 1991 and 1993 suggest that the presence of the condom availability program did not increase the level of sexual activity among students in these schools and may have contributed to safer sex practices. The proportion of students who had used a condom at last intercourse increased from 52% to 58%; although the change was not statistically significant, it exceeded the increase in a group of comparison schools. Changes in the proportions of students who had ever had intercourse, who had had sex in the previous four weeks, who had used a condom at last intercourse and who had recently had unprotected sex were greatest in schools with higher levels of program usage; however, only the decline in recent unprotected intercourse among students in high-use schools (from 14% to 6%) approached statistical significance.

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Public concern about teenage sexuality, pregnancy and childbearing has been persistently high for at least two decades.¹ The teenage birthrate rose in the 1980s, but has dropped somewhat during this decade. Nonetheless, pregnancy rates remain high, owing to the large proportion of young people having intercourse and their erratic contraceptive practice. High rates of sexually transmitted diseases (STDs) and increasing levels of infection with the human immunodeficiency virus (HIV), particularly among young adults in minority and low-income populations, have raised a new set of concerns about the risks of unprotected intercourse.²

A growing number of school systems are attempting to blend messages encouraging abstinence from and postponement of sexual activity among younger teenagers, while simultaneously preparing older adolescents for the responsibility of sexual decision-making and expanding access to contraception, especially condoms.³ School-based condom distribution programs have emerged mainly in urban schools with a large percentage of low-income and minority youths, who are disproportionately at risk

for STDs and HIV.⁴ Though programs vary somewhat in their specific goals, most share the same premise: Expanded condom availability will increase the proportion of protected sexual encounters, particularly when it is accompanied by education and information about safer sex. Opponents have responded that distributing condoms in a school will legitimate and thus increase the prevalence of sexual intercourse among students there.⁵

To date, only two studies have directly evaluated the impact of condom distribution on rates of protected and unprotected intercourse among teenagers in schools with such services.⁶ Our study is one of the first to examine whether condom access programs increase the incidence of protected sex, as proponents claim, and whether providing condoms in schools promotes sexual activity among students, as critics argue.

Answering these questions poses a series of methodological challenges. Ideally, a program evaluation should employ an experimental design that randomly assigns programs to schools or individuals to programs. These approaches are difficult to implement for both ethical and organizational reasons. A more practical, if not wholly desirable, alternative involves comparing changes in behavior over time in schools where programs have been initiated and in similar schools without programs. This approach requires time-series or, better, longitudinal data on youths in both types of schools. To our knowledge,

no prior evaluation of a condom access program has used such an approach.*

The Philadelphia Teen Survey employed time-series and longitudinal data to assess the effects of a condom availability program started in the Philadelphia public school system in late 1991. These data permit us to consider how successfully the program was implemented, teenagers' utilization of and satisfaction with its services and the effects of the program on youths' sexual behavior and contraceptive practices.

Program Description

In 1991, the Board of Education for the School District of Philadelphia adopted Policy 123, a package of initiatives to reduce rates of teenage pregnancy, STDs and HIV infection. The policy had three strategies: It directed schools to develop instruction that promotes "healthy habits and moral values regarding human sexuality" and to convey that "abstinence is the most effective way of preventing pregnancy, sexually transmitted diseases and HIV infection"; it authorized staff education, outreach to parents and partnerships with neighborhood health care providers; and it recommended the district's involvement in citywide efforts to maximize access to condoms and to establish a phased-in pilot program of condom availability in schools with classes in grades 9-12. The board allocated no funding for condom distribution; instead, it looked to outside sources of funding and staffing to implement the program.

Following the adoption of Policy 123, school district personnel joined with the Family Planning Council of Southeastern Pennsylvania, its affiliated adolescent family planning health providers and the Philadelphia Department of Public Health to establish health resource centers (HRCs) in nine public high schools. The nine schools were selected because they were

*Researchers evaluating New York City's condom availability program have conducted a thorough assessment of factors influencing program use. However, because the program provides condoms in all high schools, no comparison schools are available. (See: A. Radosh et al., "Condom Availability in High Schools: Facilitating Factors and Role of Implementation Level," Academy for Educational Development, New York, 1996.)

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Table 1. Selected characteristics of participants in the Philadelphia Teen Survey, by year, according to whether their school had a health resource center (HRC)

Characteristic	1991		1993*	
	No HRC (N=319)	HRC (N=171)	No HRC (N=597)	HRC (N=348)
% white	28.0	19.3	23.9	17.6
% black	57.0	69.6	64.5	73.2
% male	24.3	24.6	44.9	46.6
Mean age (yrs.)	16.0	16.1	16.0	15.9

*Reinterviewed cases were excluded; data were weighted according to proportional representation of schools.

receptive to the services offered and already had or were willing to forge an association with a local health facility. Although more schools were interested in the program, available resources limited the number of schools that could open HRCs.

Students can drop in to the HRC for reproductive health information, condoms and general health referrals. (Educational materials and condoms are provided by the public health department.) All students are counseled on the importance of abstinence in preventing pregnancy and STDs. The centers do not offer medical services, but are linked to nearby health facilities, to which they refer teenagers for such care. More important, schools implementing the program have a high level of administrative and staff support for its objectives.

Each school tailors the program to suit its student body and available resources. For example, some centers are open only during lunch periods on certain days of the week, while others are open during specific hours throughout the school day. Programs in two schools are housed in comprehensive health clinics,* while the others use available classroom or office space.

The HRCs are staffed by a variety of health professionals, including health educators, nurses, psychologists and graduate interns; all staff are employed by the linked health care providers. The Family Planning Council has collaborated with the cooper-

*Condom distribution through the two school-based health clinics was less successful than through the HRCs.

†In addition, all 14–18-year-old males residing in households in which at least one female was interviewed were eligible.

‡A total of 407 youths who had been interviewed in 1991 were reinterviewed in 1993; the longitudinal analyses were based on the 218 of these youths who attended public schools. To avoid double-counting in the time-series comparisons, however, these youths are included only for 1991.

§We drew a larger sample from schools with HRCs in 1993 than in 1991; as a result, the probability of being selected increased for students in program schools in the later wave. Because schools with greater proportions of at-risk youths were more likely than others to establish HRCs, rates of sexual activity were higher in the 1993 sample.

ating health providers to train staff, establish counseling procedures, collect utilization data and develop counseling standards. The Council also holds monthly meetings at which program staff share information, problems, strategies for educating faculty and students, and tactics for distributing and encouraging the use of con-

doms among students who are sexually active or are about to initiate intercourse. Initially, the Council directly funded five of the HRCs; currently, it funds all nine.

Like the majority of school-based condom availability programs nationwide,⁷ Philadelphia's program requires "passive parental consent." Parents have the option of preventing their child from receiving condoms through the center by returning a letter sent by the school principal. Parental consent is not required for a student to receive counseling or referrals through the center.

Policy 123 encouraged outcome evaluation efforts to assess the impact of the program. This study, although independently sponsored and conducted, was designed with the cooperation of the school district and the Family Planning Council to serve that purpose.

Methodology

The Survey

In its evaluation of the HRC program, the Philadelphia Teen Survey builds upon a previous study of the effect of expanded family planning services for school-aged teenagers in Philadelphia.⁸ Data collected in 1991 (before the implementation of Policy 123) provide baseline measures of sexual behavior and contraceptive use among 14–18-year-olds attending schools included in the HRC evaluation. A wave of data collected in 1993 provides measures of behavior after the program had been operating for at least one full year.

For the 1991 wave, we attempted to interview all eligible teenagers living in randomly drawn block groups within randomly selected census tracts of designated catchment areas that included the program and comparison schools. All households with at least one 14–18-year-old female and one in 10 of those with at least one 14–18-year-old male were eligible (the one in 10 were selected randomly, based on the last digit of the phone number).[†] Of those eligible, up to two randomly se-

lected teenagers were interviewed in each household. If more than two were present and eligible, two were randomly selected for the telephone interviews.

The 1993 study was based on a slightly different sampling frame. Eligible youths were randomly drawn from a database of residents of tracts surrounding the program and comparison schools. The sample also included a reinterviewed group of respondents from the 1991 wave who were still in the eligible age range. Males and females had an equal probability of being selected, but females were overrepresented among reinterviewed youths and, therefore, in the 1993 sample as a whole. In addition, both the 1991 and the 1993 samples were supplemented by a random sample from the entire city.

In all, 1,181 youths were interviewed in 1991 and 2,080 in 1993. Our analyses, however, are based only on students who attended public schools—490 in 1991 and 945 in 1993.[‡]

Interview completion rates, based on the number of eligible individuals, were 77% in 1991 and 75% in 1993. The slight decrease in the completion rate can be attributed in large part to the longitudinal portion of the sample, from which many households were difficult to locate. In both studies, fewer than 5% of the teenagers who were contacted refused to participate.

Both interviews collected detailed information about teenagers' need for and use of various services designed to reduce pregnancy, STDs and HIV; information about teenagers' sexual knowledge, attitudes and practices; and basic demographic information about the respondents and their families. The 1993 interview included additional questions about school-based services and asked students in schools with an HRC whether they knew about, used and were satisfied with the center.

Data Analysis

To take account of the schools' different demographic compositions and thereby minimize the potential bias stemming from the nonrandom assignment of programs to schools and the dissimilar demographic distributions in the two survey waves,[§] we estimated weighted individual-level logistic regressions to predict behavior. Without such adjustments, comparisons over time would be misleading, as changes in sample composition would not be distinguishable from program effects.

In the aggregate, program and comparison schools differed slightly in their demographic composition (Table 1). In

both years, schools with an HRC had a lower proportion of white students (18–19%) than comparison schools (24–28%) and a higher proportion of black students (70–73% vs. 57–65%). The proportion of students who were male was 24–25% in both groups of schools in 1991 and 45–47% in 1993. Students' age varied little by type of school or year.

The analyses controlled for potentially confounding demographic and social correlates of sexual behavior and contraceptive practice, including the teenager's race, gender and age, and whether the young person had ever failed a grade. The regressions also included weights to adjust for each school's proportional representation in the 1991 and 1993 samples. The coefficients obtained from these analyses were multiplied by the population distribution in each category, summed and exponentiated, generating the adjusted proportion of the sample that engaged in each outcome.*

Both survey waves were designed to oversample areas surrounding schools serving low-income populations; this strategy produced an adequate number of students for a cross-sectional comparison of those attending schools with and without HRCs. However, the number of students within each school in the study was insufficient to allow us to compare them as separate units of analysis.

Results

Students' Awareness and Use of HRCs

Students' awareness of the program was fairly high. In all, 75% of students in schools with an HRC knew about the center (Table 2); almost no teenagers in schools without a center thought their school had one (not shown). The proportion of students in schools with an HRC who were aware of the program varied considerably, however—from 60% to 93%. Level of awareness was not correlated with the length of time a program had been operating, but was correlated with participation level ($r=.56$).

Table 2. Percentage of students at schools with an HRC, by students' knowledge about, use of and experiences with the HRC; and range of average percentages among schools and median percentage

Measure	All students	School range	School median
Know about HRC	74.8	60.3–92.7	74.0
Ever used HRC	32.2	15.8–56.8	34.8
Uncomfortable at first visit	17.8	0.0–28.6	17.6
Uncomfortable at last visit	4.4	0.0–20.0	0.0
Received needed information	93.8	88.2–100.0	95.2
Would use HRC again	86.8	76.5–100.0	85.7
Would recommend HRC to friends	93.0	85.7–100.0	94.1
Received condom at HRC	23.5	0.0–46.2	22.7

Among students whose school had an HRC, 32% had used the center at least once; at the school level, the proportion ranged from 16% to 57% (Table 2). This substantial variation at the school level suggests that the program impact should vary by the level of program utilization.

As anticipated, levels of use of the centers were above average among sexually experienced students. However, in all schools with HRCs combined, only 39% of students who reported having had intercourse availed themselves of the program services; among schools, the range was 13–80% (not shown).

In all, 53% of students reporting visits to the HRCs were male; the proportion ranged from 18% to 76%. The age of those who said they had used the centers was fairly evenly distributed, with nearly equal numbers of 15-, 16- and 17-year-olds, and slightly fewer 14- and 18-year-olds.

Students who had used the program generally viewed the services they received favorably (Table 2). Few students said they had been uncomfortable at the first visit (18%), and most had received information that they needed (94%). Furthermore, the vast majority indicated that they would use the program again (87%) and would recommend it to friends (93%). Variation between schools in the level of satisfaction among HRC users was minimal.

According to the Family Planning Council, which monitored the number and type of visits to the centers, 62% of student visits in 1992–1993 involved the provision of condoms;⁹ our survey found that 24% of students who accessed services at the HRC received condoms as part of these services. However, these two figures use different units of analysis and likely

record different types of visits. The official Family Planning Council reports record only those visits that included one-on-one counseling or consultation with the health provider, thus often excluding students who stopped in with friends or participated in scheduled group activities.

Table 3. Percentage of students, by various measures of sexual behavior and contraceptive use, according to presence of HRC and year

Measure	No HRC		HRC	
	1991 (N=319)	1993 (N=597)	1991 (N=171)	1993 (N=348)
Ever had sex	55.7	58.8	64.0	57.6
Had sex in last four weeks	24.0	25.6	32.0	28.6
Used condom at last intercourse*	61.9	64.6	52.2	58.0
Had sex without condom in last four weeks	4.8	5.4	7.5	5.6

*Among those who had ever had intercourse. Notes: Percentages are adjusted for teenager's race, gender, age and previous grade retention, and are weighted by each school's proportional representation in the 1991 and 1993 samples. The percentage-point change for non-program schools was not significantly different from that for schools with an HRC; p-values for the difference ranged from .14 to .72.

Program Impact

To gauge the HRCs' influence on levels of sexual activity and contraceptive behavior, we compared the students attending program schools with those in nonprogram schools on four key outcomes: whether they had ever had intercourse; whether they had had intercourse in the past four weeks; whether they had used a condom the last time that they had had sex; and whether they had ever engaged in unprotected sex in the past four weeks.

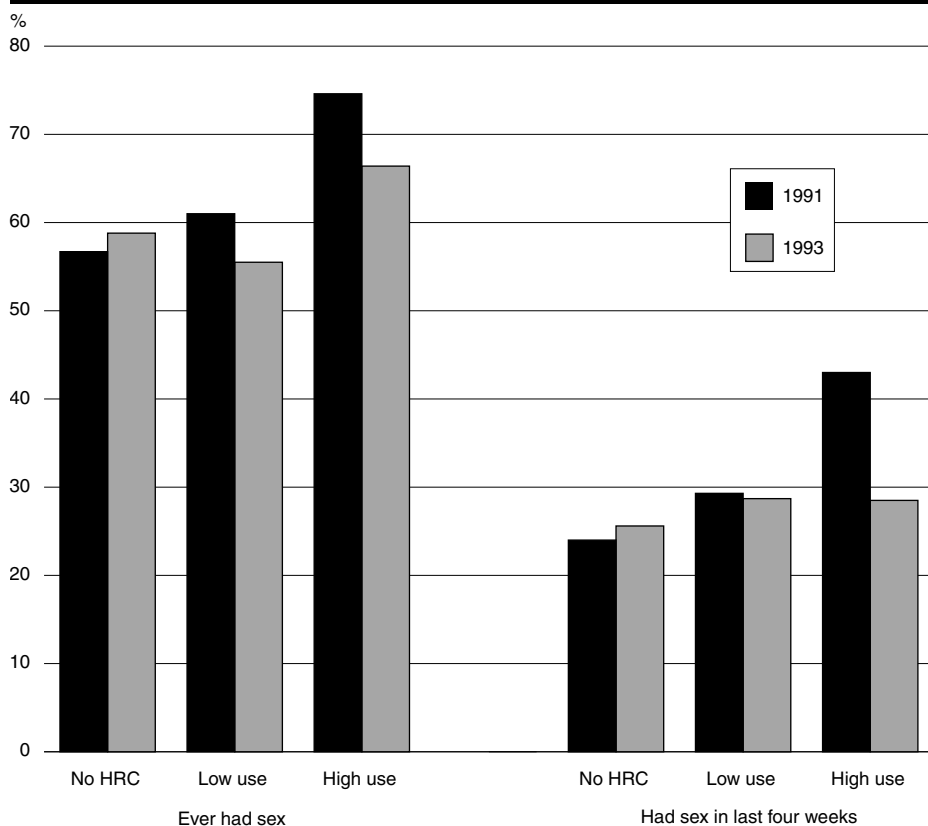
We did not expect the program to have much impact on the timing of sexual initiation, as many adolescents initiate sex before entering high school. Nevertheless, while the proportion who had ever had sex increased from 56% to 59% between 1991 and 1993 in schools with no HRC, it dropped from 64% to 58% in schools with a program (Table 3). Similarly, the proportion of students who had had sex in the previous four weeks increased from 24% to 26% in schools without a program and declined from 32% to 29% in those with an HRC.

Use of a condom at last intercourse is the simplest and most direct measure of whether programs achieved their intended goals. Condom use at last intercourse increased for the entire sample, but the change was greater in schools with HRCs (from 52% to 58% of sexually active students) than in those without a program (62–65%).

The measure of risky sex in the past four weeks examines whether or not students had sex in that period and, if they did,

*To generate the weighted adjusted proportions, we estimated a logistic regression equation of the following form: $\ln(p/1-p) = \chi\beta$, where p is the probability of a particular outcome and $\chi\beta$ is estimated controlling for race, age, gender, grade retention, wave of survey, level of HRC use (high, low or none), and an interaction of survey wave by level of HRC usage and the weight for proportional representation. We then computed the standardized proportion by inserting sample means for race, age, gender and grade retention and setting the appropriate indicator variables for survey wave and HRC usage for each outcome.

Figure 1. Percentage of students who ever had sex and percentage who had sex in the last four weeks, according to their school's level of HRC use and year



Notes: In Figures 1 and 2, the level of HRC use was designated as low if the proportion of all students who had visited the center was less than 50% (six schools) and high if the proportion was 50% or more. The percentage-point change for nonprogram schools was not significantly different from that for schools with an HRC. P-values for the difference ranged from .23 to .89 in schools with low use and from .16 to .49 in schools with high use.

whether or not they always used condoms; the measure thus combines abstainers and those who always use condoms in the group who do not take sexual risks. A modest downturn in the proportion of students engaging in unprotected sex occurred in schools with HRCs (from 8% to 6%), while the proportion in schools without centers was relatively unchanged (about 5% in each).

The differences in these trends are modest and not statistically significant, perhaps because of the relatively small size of the baseline sample.* Nevertheless, the direction of the effects suggests that the presence of HRCs is not promoting sexual activity but is encouraging safer sex practices among students who are sexually active.

We can gain some leverage in interpreting the findings by looking at whether

*Our sample size was too small to capture small or even moderate effects when we looked at levels of use. Power tests calculated for the changes observed in condom use at last intercourse revealed that a 25-point increase in condom use at last intercourse among youths in high-use programs would have been needed in order for us to attain reasonable significance levels.

effects are greater when HRCs are more widely used. Three schools with HRCs stood out as having particularly high levels of utilization: Some 53–57% of students in each reported they had visited the center, compared with 16–35% in the other six program schools. By examining schools by level of use, we can determine not only whether students' behavior changes more in program than in nonprogram schools, but also whether program effects were stronger where the level of use was higher. If so, we have reason to be more confident that the program had positive effects.

Between 1991 and 1993, the proportion of students who had ever had intercourse dropped more sharply in the three schools with high HRC use (from 75% to 66%—see Figure 1) than in the other program schools (from 61% to 56%), and it rose in nonprogram schools (from 56% to 59%). Likewise, whereas the proportion of students who had had sex in the previous four weeks dropped markedly in the high-use schools (from 43% to 29%), it declined negligibly in the low-use schools and increased in the schools without HRCs.

None of these differences were statistically significant, however.

The results for contraceptive use also suggest a greater effect of HRCs that are more widely used. While the proportion of students reporting they had used a condom at last intercourse rose in all schools (see Figure 2), the increase was more striking in high-use schools (from 37% to 50%) than in those where students were less likely to use the program (57% vs. 61%) and in non-program schools (62% vs. 65%). Similarly, the decline in risky sex that occurred in schools with an HRC was almost entirely confined to those with a high level of use (from 14% to 6%); the difference between high-use schools and nonprogram schools was marginally significant ($p=.08$).

Discussion

Although we evaluated the program at an early stage, in schools with HRCs, knowledge of the program was widespread, use was generally moderate or high, and satisfaction with services was great. The time-series data provide strong evidence that the presence of an HRC in a school did not increase students' level of sexual activity. Sexual behavior decreased, though not significantly, among students in the program schools; this change is consistent with the objectives of the HRC to increase teenagers' awareness of the risks of HIV and STDs and to support abstinence.

Results of the longitudinal analysis also reveal no increase in sexual behavior. However, important differences between students in program and comparison schools (e.g., two-thirds of the former but only one-third of the latter in 1991 had had intercourse) and the small size of the panel make it difficult to draw strong conclusions.

The increase in the proportion of students using condoms was higher in the schools with HRCs, but the difference was not statistically significant. The change was greater in the three schools with programs that reached a larger proportion of students than in the other schools with HRCs. Virtually all of the difference between the program and comparison schools can be attributed to the schools that had higher levels of utilization. While none of the findings are strong enough to unequivocally indicate that the presence of the HRCs was responsible for increasing the level of protected intercourse, the trends support this premise.

When the interviews for this evaluation were conducted, all of the centers had been in operation for less than two years. Our findings drew on a relatively small sample of students in each school and an

even smaller sample who were followed over time. The analysis was based on an aggregation of students from program and comparison schools; however, the sample was still too small to detect significance in differences of modest magnitude. A larger sample interviewed after programs have had longer to establish themselves may yield stronger results. A larger study now under way examining the impact of the centers will determine the robustness of our findings.

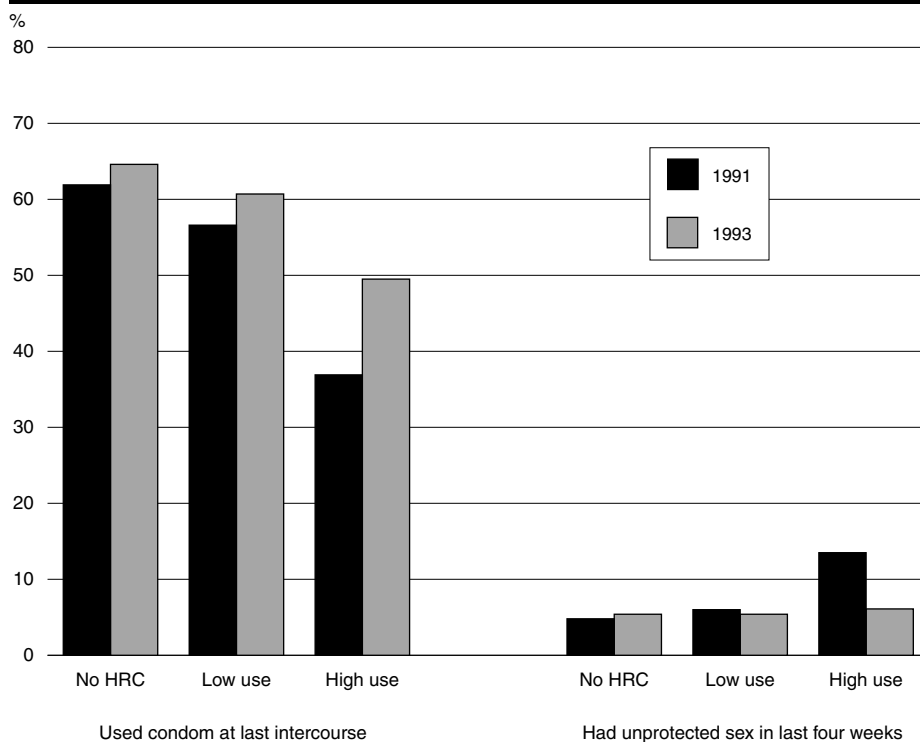
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Figure 2. Percentage of students who used a condom at last intercourse and percentage who had unprotected sex in the last four weeks, according to their school's level of HRC use and year



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