

When and Where Do Youths Have Sex? The Potential Role of Adult Supervision

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ABSTRACT. *Objective.* Interventions to reduce high-risk behaviors such as sex and substance use among youths have focused mainly on promoting abstinence, refusal skills, and negotiation skills, yet the frequency of high-risk behaviors among youths may also be influenced by opportunity, particularly the amount of time during which they are not supervised by adults. In this study, we examined when and where youths have sex and whether there is a relationship between unsupervised time and sex, sexually transmitted diseases (STDs), and substance use.

Methods. A cross-sectional survey was conducted in 6 public high schools in an urban school district. Participants were 1065 boys and 969 girls from a school-based STD screening program. Ninety-eight percent of students were black, and 79% were in the free or reduced lunch program. Most students reported living with 1 parent only, primarily the mother (52%); only 27% lived in 2-parent families. Sexual activity, substance use, and the prevalence of gonorrhea or chlamydia as determined by a ligase-chain reaction test on a urine sample were measured.

Results. Fifty-six percent reported being home without an adult present 4 or more hours per day after school. There was no difference in the number of unsupervised after-school hours between children in 1- and 2-parent families. Fifty-five percent of boys and 41% of girls were participating in or planned to participate in after-school activities during the school year. Boys were more likely than girls to report having had sex for the first time before age 14 (42% vs 9%) and had a greater number of lifetime sex partners (mean: 4.2 vs 2.4 partners). Among the respondents who had had intercourse, 91% said that the last time had been in a home setting, including their own home (37%), their partner's home (43%), and a friend's home (12%), usually after school. Boys were more likely than girls to report having had sex in their own homes (43% vs 28%) and less likely than girls to report having had sex in their partner's homes (30% vs 59%). Fifty-six percent of youths who had had intercourse reported that the last time was on a weekday: 18% before 3:00 PM, 17% between 3:00 and 6:00 PM, and 21% after 6:00 PM. There were no gender differences in the day of the week or time of day during which students reported having had intercourse. Youths who were unsupervised

for 30 or more hours per week were more likely to be sexually active compared with those who were unsupervised for 5 hours a week or less (80% vs 68%). In addition, for boys, the greater the amount of unsupervised time, the higher the number of lifetime sex partners. Among girls but not among boys, sexual activity was associated with nonparticipation in after-school programs; 71% of those who were not participating in an after-school activity were sexually active compared with 59% of those who were participating. Tobacco and alcohol use were associated with unsupervised time among boys but not among girls. Boys who were unsupervised >5 hours per week after school were twice as likely to have gonorrhea or chlamydia infection as boys who were unsupervised for 5 hours or less.

Conclusions. We found that substantial numbers of youths currently spend long periods of time without adult supervision and have limited opportunities to participate in after-school activities. More than half of sexually active youths reported that they had sex at home after school, and, particularly for boys, sexual-and drug-related risks increased as the amount of unsupervised time increased. As youths come of age, parents probably believe that it is appropriate to leave them increasingly on their own, and, accordingly, prevention approaches have concentrated on providing information and motivation for abstinence or safer sex. However, given the independent association between the amount of unsupervised time and sexual behaviors (with STD rates suggestive of particularly risky sexual behaviors) and substance use behaviors, it is worth considering increasing youth supervision, if not by parents, then by programs organized at school or other community settings. Parents and community members should consider increasing opportunities for supervised activities to determine whether this will reduce risk-taking among youths. *Pediatrics* 2002;110(6). URL: <http://www.pediatrics.org/cgi/content/full/110/6/e66>; sex, adult supervision, sexually transmitted diseases, high-risk behaviors.

ABBREVIATIONS. STD, sexually transmitted disease; RR, relative risk; CI, confidence interval.

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Received for publication Dec 20, 2001; accepted Aug 9, 2002.

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Interventions to reduce high-risk sexual behaviors among youths have focused mainly on promoting abstinence, safer sex, refusal skills, and negotiation skills, yet the frequency of high-risk behaviors among youths may also be influenced by opportunity. When youths spend time with each other without adult supervision, they have opportunities to engage in various high-risk behaviors. With the growing numbers of single-parent families in the United States as well as the expanding pattern of

both parents in 2-parent families working outside the home, youths may be increasingly unsupervised. The lack of supervision may counteract some of the benefits of programs that educate youths about the dangers of risky behavior.

Previous studies have found that the quality of family relationships is associated with adolescent sexuality; families with higher levels of communication, warmth, and monitoring have children who are more likely to delay their sexual debut.¹⁻³ High-risk behaviors often cluster together; early sexual behavior is associated with more lifetime sex partners and higher rates of sexually transmitted diseases (STDs), substance use, and delinquency.⁴⁻⁶ Lack of supervision of youths is likely to be a risk factor for a variety of risky behaviors. Recently, a great deal of attention has focused on the increased frequency of juvenile crime in the afternoon hours after school when youths are on their own.⁷ The classic work of Shaw and McKay⁸ on juvenile delinquency found that gangs arise from unsupervised, spontaneous play groups. Thus, supervision of teenage peer groups is considered a key preventive measure for delinquency.⁹ Supervision of youths is likely to influence other types of high-risk behaviors, in particular, sexual activity and substance use, which may lead to infection with human immunodeficiency virus or other STDs. In this study, we examined where and when youths have sex and whether there is a relationship among unsupervised time and sex, STDs, and substance use.

METHODS

Design and Sample

This study was conducted in the 2000–2001 school year as an adjunct to a school-based STD screening program that began in 1995 in 6 high schools in an urban center in a school district in the southern United States.¹⁰ Because confidentiality could be compromised if the study singled out sexually active students, all students were encouraged to participate in the STD screening program, regardless of sexual experience or STD symptoms, provided they had parental consent to participate or were older than 18 years. The study was approved by the institutional review boards of the Louisiana State University Health Sciences Center and the RAND Corporation.

Participants were 1065 boys and 969 girls, representing 32% of eligible students at the schools. Participants were similar to non-participants by race and gender, but students in grades 11 and 12 were more likely to participate than students in grades 9 and 10 (37% vs 28%).

Data Collection

Participants completed a self-administered, confidential questionnaire about their health behaviors and their activities after school. The survey asked 5 questions about sexual intercourse: "How old were you when you had sexual intercourse for the first time?" "During your life, with how many people have you had sexual intercourse?" "During the past 3 months, with how many people have you had sexual intercourse?" "Where did you have sexual intercourse the last time?" "What time of day did you last have sexual intercourse?" For the questions about number of sex partners, the choices went from "0" to "6 or more partners." Six was used as the default value for those who filled in "6 or more." Two questions asked about the number of days per week and the number of hours per day after school that students were not supervised by adults. The number of days per week unsupervised was multiplied by the number of hours unsupervised per day to obtain an estimate of the total number of hours unsupervised per week for each student. The number of days that students were

unsupervised was counted as 1.5 days when students reported being unsupervised between 1 and 2 days and 3.5 days when they were unsupervised between 3 and 4 days. Students provided a sample of urine, which was analyzed for evidence of chlamydial infection and gonorrhea using DNA amplification technology.¹⁰

Data Analysis

χ^2 was used to assess differences in categorical variables. Relative risks of having an STD, sexual activity, and substance use were calculated, and linear and logistic regression models were performed using SPSS software (SPSS Inc, Chicago, IL).

RESULTS

Ninety-eight percent of respondents were black, and most were from low-income families, indicated by 79% participating in the free or reduced lunch program. The majority of students (55%) reported living with 1 parent only, primarily the mother (52%); 27% lived in 2-parent families, and the rest did not live with their parents. Seven percent of the students had children of their own (Table 1).

Supervision

Twenty-three percent of students reported that an adult was home after school every day of the week. Fifty-six percent reported being home after school without an adult present for 4 or more hours a day, including 38% who reported 6 or more hours a day (Table 2). There was no difference in the number of unsupervised after-school hours between children in 1- and 2-parent families ($P = .41$). Students in higher grades were unsupervised more often than students in lower grades; for example, 43% of seniors were unsupervised >30 hours per week compared with 29% of freshmen ($P < .001$). Forty-eight percent of students said that they were currently participating in an after-school activity or planned to participate in one during the current school year; boys were more likely than girls to report after-school activities (55% vs 41%; $P < .001$).

Sexual Behavior

Boys were more likely than girls to report having had sexual intercourse for the first time before age 14

TABLE 1. Description of Participants

Characteristics	Boys (<i>n</i> = 1065)	Girls (<i>n</i> = 969)	Total (<i>n</i> = 2034)
Grade			
9	20.3%	25.3%	22.7%
10	25.9%	24.4%	25.2%
11	26.3%	26.9%	26.6%
12	27.5%	23.4%	25.6%
Race/ethnicity			
Black	96.8%	98.6%	97.6%
Other	3.2%	1.4%	2.4%
Family structure (lives with)			
Both parents	21.7%	24.4%	27.2%
Mother only	47.6%	56.1%	51.7%
Father only	4.9%	2.4%	3.7%
Other	17.8%	17.1%	17.0%
Free or reduced cost lunch			
Yes	76.9%	80.9%	78.5%
No	23.1%	19.1%	21.5%
Have their own children			
Yes	5.4%	8.1%	6.7%
No	94.6%	91.9%	93.3%

TABLE 2. Frequency of Supervision and Self-Reported Sexual and Substance Use Behaviors

	Boys (n = 1065)	Girls (n = 969)	Total (n = 2034)
In or plan to be in after-school activity during current school year	583 (55.2%)	400 (41.3%)	983 (48.3%)
Days per wk unsupervised after school			
0	255 (24.1%)	209 (21.7%)	464 (22.9%)
1-2	130 (12.3%)	115 (11.9%)	245 (12.1%)
3-4	131 (12.4%)	97 (10.1%)	228 (11.3%)
5	543 (51.3%)	544 (56.4%)	1087 (53.7%)
Hours per d unsupervised after school			
0	205 (19.4%)	182 (18.8%)	387 (19.1%)
1	83 (7.9%)	83 (5.5%)	136 (6.7%)
2	95 (9.0%)	88 (9.1%)	183 (9.0%)
3	101 (9.6%)	91 (9.4%)	192 (9.5%)
4	94 (8.9%)	80 (8.3%)	174 (8.6%)
5	79 (7.5%)	101 (10.4%)	180 (8.9%)
>6	399 (37.8%)	374 (38.6%)	773 (38.2%)
Smoking cigarettes (past mo)			
Never	868 (82.6%)	901 (93.9%)	1769 (88.0%)
≤1/d	65 (6.2%)	31 (3.2%)	96 (4.8%)
≥2/d	118 (11.3%)	28 (2.9%)	146 (7.2%)
Drinking alcohol (past mo)			
Sips or none	745 (70.9%)	762 (79.0%)	1507 (74.7%)
1-2 d	149 (14.2%)	135 (14.0%)	284 (14.1%)
≥3 d	158 (14.9%)	68 (7.0%)	226 (11.2%)
Using marijuana (past mo)			
None	803 (76.3%)	836 (86.8%)	1639 (81.3%)
1-2 times	95 (9.0%)	75 (7.8%)	170 (8.4%)
≥3 times	155 (14.8%)	52 (5.3%)	207 (10.3%)
Any cocaine or crack (past mo)	5 (0.5%)	2 (0.2%)	7 (0.2%)
Age of first sexual intercourse (y)			
Never	223 (21.0%)	31 (3.2%)	254 (12.5%)
<13	217 (20.5%)	55 (5.7%)	272 (13.4%)
13	172 (16.2%)	150 (15.5%)	322 (15.9%)
14	216 (20.4%)	326 (33.6%)	542 (26.7%)
15-16	35 (3.3%)	83 (8.6%)	118 (5.8%)
≥17			
Partners for sexual intercourse, lifetime			
0	198 (19.0%)	324 (33.5%)	522 (26.0%)
1	148 (14.2%)	296 (30.6%)	444 (22.1%)
2	107 (10.3%)	164 (17.0%)	271 (13.5%)
3-4	212 (20.3%)	128 (13.2%)	340 (16.9%)
≥5	378 (36.3%)	55 (5.7%)	433 (21.6%)
Partners for sexual intercourse, past 3 mo			
0	198 (19.1%)	324 (33.5%)	522 (26.1%)
1	218 (21.0%)	150 (15.5%)	368 (18.4%)
2	311 (30.0%)	433 (44.8%)	744 (37.1%)
≥3	309 (29.8%)	60 (6.2%)	369 (18.4%)

(42% vs 9%; $P < .001$), and boys had a greater number of lifetime partners for sexual intercourse than girls (mean: 4.2 vs 2.4 partners; $P < .001$; Table 2). Among the respondents who had had intercourse, 91% said that the last time had been in a home setting, including their own home (37%), their partner's home (43%), and a friend's home (12%; Table 3). Boys were more likely than girls to report having had sex in their own home (43% vs 28%; $P < .001$), and correspondingly, girls were more likely than boys to report having had sex in their partner's home (59% vs 30%; $P < .001$). Few students reported having had sex in hotels (4%), cars (1%), or other places (3%). Fifty-six percent of youths who had had intercourse reported that the last time was on a weekday: 18% before 3:00 PM, 17% between 3:00 and 6:00 PM, and 21% after 6:00 PM. There were no gender differences in the day of the week or time of day during which students reported having had intercourse (Table 3).

Association of Supervision and Sex

There was a strong relationship between the number of hours that youths were unsupervised and their sexual activity. The greater the amount of unsupervised time, the greater the percentage of youths who had ever had intercourse (and who had had it in the past 3 months; Table 4). The pattern held for both genders, although it was nonlinear for girls. Boys who were unsupervised for 5 or fewer hours per week had a mean of 3.70 lifetime sex partners; boys who were unsupervised for 6 to 29 hours had a mean of 4.20 partners; and boys who were unsupervised for 30 hours or more had a mean of 4.68 partners ($P < .001$). Girls who were unsupervised 5 or fewer hours had a mean of 2.12 lifetime partners; girls who were unsupervised 6 to 29 hours had 2.53 lifetime partners, and girls who were unsupervised for 30 or more hours per week also had a mean of 2.53 lifetime partners ($P < .001$; Fig 1). Among girls (but not

TABLE 3. Where and When Youths Report Having Had the Most Recent Episode of Sexual Intercourse

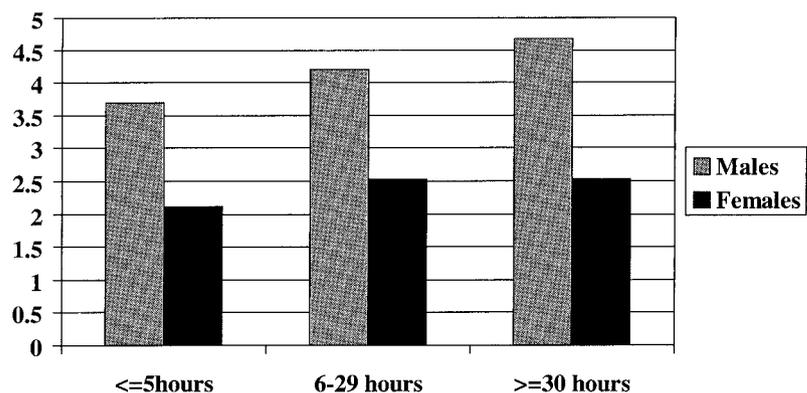
	Boys (n = 854)	Girls (n = 641)	Total (n = 1495)
Where			
Home	368 (43.1%)	179 (27.9%)	547 (36.6%)
Partner's home	260 (30.4%)	378 (59.0%)	638 (42.7%)
Friend's home (not partner)	145 (17.0%)	36 (5.6%)	181 (12.1%)
Hotel/motel	34 (6.0%)	27 (4.2%)	61 (4.1%)
Car/van	13 (1.5%)	5 (0.8%)	18 (1.3%)
Other	34 (3.9%)	16 (2.5%)	50 (3.4%)
When			
Weekday, before 3 PM	159 (18.7%)	114 (18.1%)	273 (18.4%)
Weekday, 3 PM–6 PM	155 (18.2%)	103 (16.3%)	258 (17.4%)
Weekday, ≥6 PM	168 (19.7%)	144 (22.8%)	312 (21.0%)
Weekend	288 (33.8%)	226 (35.8%)	514 (34.7%)
Other	82 (9.6%)	44 (7.0%)	126 (8.5%)

TABLE 4. STD Prevalence and Risk Behavior Versus Hours per Week of Unsupervised Time

Hours Unsupervised	≤5 Hours/Week (n = 735; 36.4%)	6–29 Hours/Week (n = 626; 31.0%)		≥30 Hours/Week (n = 658; 32.6%)	
	N (%)	N (%)	RR (95% CI)	N (%)	RR (95% CI)
Any STD					
Boys	23/407 (5.7%)	35/313 (11.2%)	1.98 (1.19–3.28)	45/332 (13.6%)	2.40 (1.48–3.88)
Girls	50/327 (15.3%)	52/312 (16.7%)	1.09 (0.76–1.56)	63/323 (19.5%)	1.28 (0.91–1.79)
Total	73/734 (9.9%)	87/625 (13.9%)	1.40 (1.04–1.87)	108/655 (16.5%)	1.66 (1.26–2.19)
Sexual intercourse*					
Boys	302/402 (75.1%)	252/306 (82.4%)	1.10 (1.02–1.18)	282/322 (87.6%)	1.17 (1.09–1.25)
Girls	193/325 (59.4%)	210/311 (67.5%)	1.14 (1.01–1.28)	235/324 (72.5%)	1.22 (1.09–1.37)
Total	495/727 (68.1%)	462/619 (74.9%)	1.10 (1.03–1.18)	517/646 (80.0%)	1.18 (1.10–1.25)
Tobacco use					
Boys	35/402 (8.7%)	37/310 (11.9%)	1.37 (0.88–2.12)	44/327 (13.5%)	1.55 (1.02–2.35)
Girls	8/324 (2.5%)	11/310 (3.5%)	1.44 (0.59–3.53)	8/321 (2.5%)	1.01 (0.38–2.66)
Total	39/630 (6.2%)	52/710 (7.3%)	1.31 (0.88–1.94)	52/648 (8.0%)	1.35 (0.92–2.00)
Alcohol use					
Boys	91/405 (22.5%)	92/308 (29.9%)	1.33 (1.04–1.71)	119/327 (36.4%)	1.62 (1.29–2.04)
Girls	60/327 (18.3%)	66/311 (21.2%)	1.16 (0.85–1.58)	77/322 (23.9%)	1.30 (0.97–1.76)
Total	151/732 (20.6%)	158/619 (25.5%)	1.24 (1.02–1.50)	196/649 (30.2%)	1.46 (1.22–1.76)
Marijuana use					
Boys	79/403 (19.6%)	83/309 (26.9%)	1.29 (0.98–1.71)	84/329 (25.5%)	1.30 (0.99–1.71)
Girls	35/328 (10.7%)	45/309 (14.6%)	1.36 (0.90–2.06)	45/320 (14.1%)	1.32 (0.87–1.99)
Total	114/731 (15.6%)	128/618 (20.7%)	1.33 (1.06–1.67)	129/649 (19.9%)	1.27 (1.01–1.60)

* The results for sexual intercourse during the past 3 months were almost identical to the results for lifetime sexual intercourse.

Fig 1. Unsupervised hours per week and number of lifetime sex partners.



among boys), participating in an after-school activity was associated with a lower probability of having had intercourse (59% vs 71%; relative risk [RR]: 1.42; 95% confidence interval: 1.19–1.69). When comparing lifetime sex partners by grade, seniors had significantly more lifetime sex partners. Compared with 9th graders, 10th graders, on average, had 0.55 more

sex partners, 11th graders had 0.85, and 12th graders had 1.46 more partners.

In linear regression models, the relationship between lack of supervision and the number of lifetime sex partners remained after controlling for gender, grade, being in the free or reduced lunch program, and participation in after-school activities. Family

structure was not significant in the model ($P = .61$). There was an interaction between gender and hours of unsupervised time, with the relationship between lack of supervision and sex partners being more than 3 times as strong for boys as for girls. On average, every 10 hours per week of unsupervised time was associated with 0.25 additional lifetime sex partners for boys and 0.07 additional partners for girls.

STDs and Supervision

Eight percent of boys had chlamydia, and 2% had gonorrhea. Among girls, 15% had chlamydia and 4% had gonorrhea. Boys who were unsupervised >5 hours per week after school were twice as likely to have chlamydia or gonorrhea as boys who were unsupervised for 5 or fewer hours (Table 4). In logistic regression models stratified by gender predicting STD infection, controlling for family structure and the free or reduced lunch program, grade, and hours unsupervised were associated with STD infection among boys but not among girls. Neither family structure nor being in the free or reduced lunch program was significant in the model ($P = .78$ and $P = .71$, respectively).

Substance Use

Twelve percent of students reported having smoked tobacco in the past month, 35% reported having drunk alcohol in the past month, and 19% reported having used marijuana in the past month. Among boys, the risks of tobacco use and alcohol use were highest among those who were unsupervised for >30 hours per week (RR: 1.55; 95% CI: 1.02–2.35 for tobacco; RR: 1.62; 95% CI: 1.292–2.04, for alcohol). Compared with marijuana use by students who were unsupervised for 5 or fewer hours per week after school, use for both boys and girls who were unsupervised for >30 hours per week was significantly higher (Table 4). Relationships between supervision and substance use were not statistically significant when examined separately for girls.

DISCUSSION

We found that substantial numbers of youths were on their own without adult supervision for many hours after school and have limited opportunities to participate in after-school activities. More than half of youths who had had sexual intercourse reported that they had intercourse at home after school, and, particularly for boys, the likelihood of intercourse, the number of partners for intercourse, and substance use increased as the amount of unsupervised time increased. The association between the lack of supervision and sexual and substance use behaviors has implications for how parents might reduce risk behaviors among youths.

Because our sample was drawn from participants in an STD screening program, participation may have been biased toward students who were more likely to have sex, especially those who were not using condoms. However, the program has been ongoing for more than 6 years, so we have been able to learn much about the students who do and do not participate in STD screening over time. Most stu-

dents who do not participate during 1 year participate at least once in subsequent years, so that after 3 years, we have been able to screen 88% of the population enrolled in the school during this time.¹² Students who delayed participation were more likely than those who immediately participated to be infected with an STD when tested.¹¹ Barriers to participation included failure to return signed parental consent and concern about possible drug testing of the urine specimens. Nonparticipation because of fear of urine drug testing may have reduced reported substance use levels below their actual level in the full school population. Although sexual activity may be under- or overreported in surveys of adolescents, the objective evidence of high STD prevalence among participants demonstrates that at least some youths were having sexual intercourse and indeed were most likely not using condoms.

Another limitation of this study was our ability to measure unsupervised time. Supervision may vary from week to week or by season, but our question captured only the students' assessments of the average number of hours unsupervised. Nevertheless, the study points consistently to the pattern that sexually active youths have sex at home when they are unsupervised. The number of lifetime sex partners increases over time, and the increase is greatest among seniors, who have the least amount of supervision. As youths come of age, parents probably believe that it is appropriate to leave them increasingly on their own, and, accordingly, prevention approaches have concentrated on providing information and motivation for abstinence or safer sex. However, given the independent association between the amount of unsupervised time and sexual behaviors (especially with STD rates suggestive of particularly risky sexual behaviors) and substance use behaviors, it is worth considering increasing youth supervision, not only by parents and other responsible family members and friends but also by programs at schools and other community settings. Given the stronger association of unsupervised time with both sex and substance use among boys than girls, the provision of alternative supervised activities may be a higher priority for boys. The greater relative contribution of supervision to boys' sexual activity compared with girls' is consistent with other studies showing that supervision is related to boys' risky behaviors, including delinquency.^{9,12}

After controlling for gender, grade, and hours unsupervised, participation in after-school activities was not protective against sexual activity. A previous study showed that girls who participate in sports have a later sexual debut than girls who are not in sports.¹³ In this sample, very few girls participated in sports. Although the majority of boys in after-school activities play sports, participation tends to be seasonal, with the most playing football in the fall. The students completed surveys and provided urine samples during the spring, when they may not actually have been involved in any after-school activity. Other after-school activities are intermittent, only providing supervision for 1 or 2 days each week for a limited number of hours.

Our study suggests that increasing supervision would reduce the opportunities for youths to engage in high-risk behaviors. The mechanisms through which supervision works is not clear but could be attributable to nurturing relationships with parents and other adults that result in reduced risk taking, rather than only reducing opportunities to engage in risk. It is also possible that there are other as-yet-undefined factors related to supervision being protective against high-risk behavior, including having youths' attention diverted to other tasks or providing youths with other outlets for self-expression. The data are not conclusive, and this issue deserves additional evaluation.

Supervised programs for high school youths, however, are limited. During the past 2 decades, there has been a noted decrease in investment in nonacademic activities, particularly in schools that serve the most disadvantaged youths.^{14,15} The National Center for Education Statistics has documented that participation in school athletics declined nationally among seniors from 52% in 1980 to 43% in 1992. Among low-income students, the decline between 1980 and 1992 was from 43% to 34%. Declines in participation in all extracurricular activities were most marked during this period in the southern region of the United States.¹⁶

Special efforts to increase supervision of youths, such as the 21st Century Community Learning Centers, a large federally funded program to support after-school activities, have been targeted primarily at elementary and middle school students.¹⁶ Even among young children for whom supervision is required by law, gaps in available programs are large.¹⁷ However, given the serious consequences of risky behavior among adolescents, communities should assess opportunities and address gaps in supervision for older adolescent group. Clinicians should discuss with parents the implications of their children's after-school plans and think about ways to increase supervision. Future studies should include carefully controlled intervention trials to test the effect of organized supervised activities for youths on risk behaviors, including sexual activity and substance use.

ACKNOWLEDGMENTS

This study was supported in part by the Louisiana Office of Public Health and the Centers for Disease Control and Prevention under U48/CCU915773, Mark Schuster, PI.

Marc N. Elliott, PhD, and Greg Ridgeway, PhD, provided thoughtful comments on the manuscript.

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