

The Sexual Practices of Adolescent Virgins: Genital Sexual Activities of High School Students Who Have Never Had Vaginal Intercourse

ABSTRACT

Objectives. The purpose of this study was to determine whether high school-aged virgins engage in sexual practices that can transmit sexually transmitted diseases, including the human immunodeficiency virus (HIV).

Methods. Data were collected from an anonymous self-administered survey of 2026 urban students in 9th through 12th grades.

Results. Forty-seven percent of adolescents were virgins (42% of male adolescents and 53% of female adolescents). Of those who were virgins, 29% and 31% reported that, during the prior year, they had engaged in heterosexual masturbation of a partner and masturbation by a partner, respectively. The corresponding rates for heterosexual fellatio with ejaculation, cunnilingus, and anal intercourse were 9%, 10%, and 1%. Homosexual sexual activities were rare. Condom use for fellatio was also rare. Level of risk of virgins' sexual activities was associated with illicit substance use and other non-sexual risk behaviors, even after demographic variables had been controlled.

Conclusions. Few high school-aged virgins engaged in anal intercourse, but many engaged in other genital sexual activities. Some of these activities can transmit disease, and all can indicate a need for counseling about sexual decision making, risk, and prevention. (*Am J Public Health*. 1996;86:1570-1576)

Mark A. Schuster, MD, PhD, Robert M. Bell, PhD, and David E. Kanouse, PhD

Introduction

Public health officials, health educators, and clinicians have had a long-standing interest in adolescent sexual behavior and risk prevention because of high rates of unintended pregnancies and sexually transmitted diseases among adolescents. This interest has grown over the past decade with the spread of the human immunodeficiency virus (HIV). Unfortunately, despite many important studies,¹⁻³ scientific understanding of adolescent sexuality is still quite limited. Research on adolescent sexual behavior has concentrated on vaginal intercourse, in part because pregnancy prevention was long the major impetus for such research.⁴ An indication of this focus on vaginal intercourse is that researchers generally follow a convention of classifying people as "sexually active" based on whether they have ever had vaginal intercourse.⁵ Virgins are thus classified as not sexually active and are generally omitted from discussions and research about sexual risk.

Although remaining a virgin all but eliminates the possibility of becoming pregnant, activities such as fellatio, cunnilingus, and anal intercourse can spread sexually transmitted diseases. Some activities, such as masturbation with a partner, rarely transmit disease; however, like all forms of sexual interaction, they can introduce adolescents to social situations and emotional reactions for which they may be ill prepared. These activities may also lead to riskier sexual behaviors. It is therefore important, from both a public health perspective and a clinical perspective, to know whether adolescents who have not had vaginal intercourse are participating in other sexual activities.

General population studies of adolescent sexuality have usually been limited in

scope, asking at most a few questions about vaginal intercourse and nothing about other sexual activities. Studies have thus documented well the percentage of adolescents who have had vaginal intercourse.¹⁻³ However, much less is known about adolescent experience with other sexual practices. While some information has come from national and local population-based samples,^{3,6} most data on the sexual practices (other than vaginal intercourse) of adolescents of high school age have come from convenience samples⁷⁻¹⁵ and extrapolations from older populations.¹⁶⁻¹⁹ Even when studies collect information on multiple sexual activities, they almost never look at the sexual practices of high school-aged virgins as a distinct group.

An exception is a recent study that described both virgins and nonvirgins among African-American youth 9 through 15 years old attending public housing recreation centers.^{14,15} A few studies on data collected in the pre-AIDS era also assessed some of the sexual activities of virgins.^{20,21} However, we could find no study in the past decade that looked at the sexual practices of a population-based sample of high school-aged virgins.

To fill this gap in our understanding of adolescent sexual risk, we analyzed data from a survey of an urban high school

The authors are with RAND, Santa Monica, Calif. Mark A. Schuster is also with the Department of Pediatrics, University of California, Los Angeles.

Requests for reprints should be sent to Mark A. Schuster, MD, PhD, RAND, 1700 Main St, PO Box 2138, Santa Monica, CA 90407-2138.

This paper was accepted June 10, 1996.

Note. The views expressed here are the authors' and not necessarily those of their institutions or funding agencies.

See related editorial by Ehrhardt (p 1523) in this issue.

population that covered detailed information about diverse sexual experiences with partners of both genders: masturbation with a partner, fellatio with ejaculation, cunnilingus, vaginal intercourse, and anal intercourse. In this article, we report on the genital sexual activities of adolescents who had never engaged in vaginal intercourse and on how these activities varied among demographic groups and in relation to nonsexual risk behaviors.

Methods

Sample

We conducted a survey of sexual risk of students in 9th through 12th grades in a socioeconomically diverse Los Angeles County school district in April 1992. The district has two public high schools: a general school with about 2500 students and an alternative school with about 125 students transferred from the general school because they were considered at high risk for dropping out. Students in English-as-a-second-language classes and in intensive special education classes at the general school did not take the survey.

About 12% of students were absent from classes in which the survey was conducted at the general high school; the absentee rate at the alternative school was not available but is typically about 35%. Of 2066 students present in appropriate classes on the day of the survey, 2026 (98%) turned in usable surveys, 5 turned in unusable surveys, and 35 did not take the survey.

Survey Content and Administration

The survey covered demographics, sexual behaviors, condom use, and nonsexual risk behaviors. Male and female versions were identical except for pronouns and sexual behaviors.

To minimize confusion about types of sexual behaviors, we used precise technical language and anatomic descriptors, and we avoided euphemistic language. For example, the male version asked, "How old were you the first time you had vaginal intercourse (put your penis in a girl's vagina)?" We adapted the anatomic descriptors from an unpublished Centers for Disease Control and Prevention survey (Adolescent/Young Adult Instrument, Sentinel Evaluation Projects for the Prevention of HIV Transmission within the Adolescent Hemophilia Community) and from the *Surgeon General's Report on Acquired Immune Deficiency Syndrome*.²² All terms and

TABLE 1—Percentage of a Sample of Urban High School Students in Each Descriptive Group Who Were Virgins, Overall and by Gender

Descriptive Group	No. ^a	Virgins, %		
		Total	Males	Females
Grade				
9th	429	63	59	68
10th	479	53	50	58
11th	479	39	35	43
12th	413	34***	27***	42***
Race/ethnicity				
African American	166	28	22	35
Asian and Pacific Islander	153	73	76	70
Latino	470	43	32	54
White	846	50	49	52
Other/mixed	111	48***	35***	61***
Parental education				
No college graduate	856	42	35	50
At least one college graduate	926	53***	50***	56
Educational expectations				
Not college graduate	339	32	25	43
College graduate	587	42	37	47
Attend graduate/professional school	874	58***	55***	60***
Primary language spoken at home				
English	1287	44	41	48
Not English	467	58***	51**	66***
Household composition				
Lives with two parents	920	57	53	62
Does not live with two parents	893	37***	31***	44***
Type of school				
Alternative high school	69	4	2	7
General high school	1744	49***	44***	55***
Total	1813	47	42	53

^aNumber of all adolescents in each category for whom virginity status was known. Fifty-three percent of the total of 1813 students were male.

*Descriptive groups differed significantly by chi-squared tests ($P < .05$); ** $P < .01$; *** $P < .001$.

concepts were part of the district's ninth-grade health curriculum.

Respondents completed the anonymous self-administered survey during a regular class period and sealed it in an opaque envelope. Survey administrators unaffiliated with the district proctored the classes. RAND's Human Subjects Protection Committee approved consent and administration procedures.

The school district notified parents about the survey and gave them the opportunity to sign a form denying permission for their children to participate. Students could also decline the survey, and names of respondents taking the survey were not recorded. Respondents were instructed to skip questions they preferred not to answer. In addition, the section covering respondents' own sexual and nonsexual risk behaviors began with an instruction informing respondents what page to turn to if they preferred to skip the entire section.

Response Rates

Items covering demographics had an average nonresponse rate of 2%. Ten percent of respondents skipped the entire section on their own sexual and nonsexual risk behaviors; additional respondents left individual items blank, so the average nonresponse rate for this section was 16%. Respondents who skipped the entire section did not differ significantly (at the .05 level by chi-square test) from the rest of the respondents in terms of gender, grade, parental education, or educational expectations. However, the percentage of students who skipped the section varied by race/ethnicity: African American, 5%; Asian and Pacific Islander, 17%; Latino, 11%; White, 6%; and other/mixed, 6% ($P < .001$).

Data Quality and Derived Variables

In multiple items about the same sexual behaviors, inconsistencies were

TABLE 2—Percentage of High School Virgins in Each Demographic Group Who Engaged in Each Heterosexual Genital Sexual Activity during the Prior Year

Demographic Group	No. ^a	Activity, %				
		Masturbation of Partner	Masturbation by Partner	Fellatio with Ejaculation	Cunnilingus	Anal Intercourse
Gender						
Male	385–387	30	31	11	9	1
Female	432–434	29	31	8	12	<0.5
Grade						
9th	255–260	25	27	7	7	1
10th	242–244	33	36	12	11	1
11th	176–178	30	30	8	10	0
12th	135–136	31	33	10	15	1
Race/ethnicity						
African American	45–46	30	33	2	11	0
Asian and Pacific Islander	104–106	16	16	4	10	0
Latino	190–192	24	24	7	7	1
White	403–407	36	39	13	12	1
Other/mixed	52	29***	37***	10**	13	2
Total	817–821	29	31	9	10	1

^aCovers the range of virgins in each demographic group who responded to each item.

*Demographic groups differed significantly by chi-squared test ($P < .05$); ** $P < .01$; *** $P < .001$.

rare. For example, among adolescents who indicated that they had engaged in vaginal intercourse one or more times during the prior year, only 1.1% had previously reported that they had never had vaginal intercourse (more than 10 items earlier).

We used the previously described item on age at first vaginal intercourse to create an indicator variable for virginity by distinguishing between adolescents who responded "I've never had vaginal intercourse" and those who responded with an age. Almost all adolescents were consistent in their answers to this item and four related items. If a respondent had one inconsistent answer, we classified virginity status according to the other four answers; if a respondent had more than one inconsistent answer, we classified virginity status as missing. This affected the classification of virginity status for less than 1% of the adolescents who answered the age of first vaginal intercourse item (2 were classified as nonvirgin and 12 as missing); we classified another 32 adolescents who left this question blank as either virgins (15) or nonvirgins (17) based on their answers to the subsequent questions.

To compare nonsexual risk behaviors among adolescents with differing sexual experiences, we divided adolescents into two categories, nonvirgins and virgins. We then divided virgins into three subcategories based on the level of risk of their

heterosexual genital sexual activities during the prior year. In order of increasing risk, the subcategories in this hierarchy were (1) the no sexual activity category, which includes virgins who did not report engaging in heterosexual masturbation with a partner or oral sex during the prior year; (2) the masturbation with partner category, which includes virgins who reported engaging in heterosexual masturbation with a partner but not heterosexual oral sex during the prior year; and (3) the oral sex category, which includes virgins who reported engaging in heterosexual fellatio with ejaculation or cunnilingus regardless of whether or not they had also engaged in heterosexual masturbation with a partner during the prior year. Ninety-eight percent of virgins who had had heterosexual oral sex had also engaged in heterosexual masturbation with a partner during the prior year. Despite variations in risk among insertive and receptive fellatio and insertive and receptive cunnilingus, these activities are generally riskier than masturbation with a partner and less risky than vaginal intercourse (which can lead to pregnancy as well as sexually transmitted diseases), so we combined all types of oral sex into a single category for analytic purposes. We did not incorporate heterosexual anal intercourse or homosexual sexual activities into the classification because too few virgins reported these activities.

Analysis Methods

We report cross tabulations with significance tests based on Pearson's chi-square statistics. We used logistic regression to compare various pairs of categories of the sexual risk hierarchy described earlier.

Semantics

The term "virgin" has several definitions, ranging from a person who has never had vaginal intercourse to one who is innocent, chaste, and moral. We intend the term to convey only the former and not to suggest a moral judgment. Virgin is the standard term used in the scientific literature^{14,15,19,20} and is less cumbersome than phrases like "a person who has never had vaginal intercourse."

Results

Fifty-two percent of respondents were male; 24% were in 9th grade, 26% were in 10th grade, 26% were in 11th grade, and 23% were in 12th grade. Nine percent described themselves as African American (not Latino); 10%, Asian and Pacific Islander; 28%, Latino; 47%, White (not Latino); and 6%, other/mixed. Fifty-one percent had at least one parent who was a college graduate. We did not ask about income; however, the district covers households with a wide range of income levels, and about 20% of students in the district

TABLE 3—Percentage of High School Students Who Used Illicit Substances and Engaged in Other Problem Behaviors during the Prior Year, by Category of Sexual Experience

	Virgins			All Students	
	No Sexual Activity ^a (n = 496–502)	Masturbation with Partner ^a (n = 167–169)	Oral Sex ^a (n = 110–113)	Virgins (n = 805–815)	Nonvirgins (n = 856–874)
Illicit substances					
Drank beer, wine, liquor, or other alcoholic beverages (not counting religious ceremonies)	56	77	87***	64	88***
Smoked cigarettes	24	41	56***	32	59***
Used marijuana (pot, grass)	10	30	45***	19	57***
Used any other type of illegal drug such as cocaine, ecstasy, speed, ice, heroin, or pills not prescribed by a doctor	4	9	19***	7	24***
Other problem behaviors					
Skipped class or school without a good excuse	48	67	80***	56	78***
Stayed out late at night without your parents' permission	35	58	63***	44	58***
Took something not belonging to you worth more than 50 dollars	8	17	27***	13	31***
Ran away from home for overnight or longer	3	8	9*	5	17***

Note. The sample sizes reported in parentheses cover the range of respondents for each item in the left-hand column. The values for the three virgin categories do not add up to the values for all virgins because the response rate for the individual sexual acts was lower than for virginity.

^aThe No Sexual Activity category includes virgins who did not report engaging in heterosexual masturbation with a partner or oral sex during the prior year.

The Masturbation with Partner category includes virgins who reported engaging in heterosexual masturbation with a partner but not heterosexual oral sex during the prior year. The Oral Sex category includes virgins who reported engaging in heterosexual fellatio with ejaculation or cunnilingus regardless of whether or not they had also engaged in heterosexual masturbation with a partner during the prior year.

*Sexual experience groups differed significantly by chi-squared test ($P < .05$); ** $P < .01$; *** $P < .001$.

participate in the means-tested National School Lunch Program.

Table 1 shows that 47% of the students were virgins, and virginity declined with grade (from 63% for 9th grade to 34% for 12th grade). Racial/ethnic variations were substantial, with Asians and Pacific Islanders most likely to be virgins (73%) and African Americans least likely (28%). Virginity was more prevalent among those whose parents had higher education levels and who had higher educational expectations themselves. It was also more common among adolescents living with two parents and adolescents who reported that English was not the language most often spoken at home.

Genital Sexual Experiences of Virgins

During the prior year, 35% of virgins had engaged in one or more of the genital sexual activities covered in this study. Specifically, as shown in Table 2, 29% of virgins had engaged in masturbation of a partner of the opposite gender, and 31% had been masturbated by a partner of the

opposite gender. Nine percent had engaged in heterosexual fellatio with ejaculation, 10% had engaged in heterosexual cunnilingus, and 1% had engaged in heterosexual anal intercourse. Few virgins reported homosexual genital sexual activities (data not shown in Table 2): 2% of male virgins had engaged in male–male masturbation of or by a partner, 1% had engaged in male–male fellatio with ejaculation, and 1% had engaged in male–male anal intercourse; 1% of female virgins had engaged in female–female masturbation of or by a partner, and none reported female–female cunnilingus.

The prevalence of genital sexual activities engaged in by virgins did not uniformly increase by grade. Of note, the denominator for prevalence (i.e., the number of adolescents who remained virgins) decreased by grade, so a comparison of virgins' activities across different grades is not a comparison of like groups.

Among virgins who had engaged in fellatio with ejaculation during the prior year, only 6% had used a condom every

time and 86% had never used one. Too few virgins reported anal intercourse or male–male fellatio with ejaculation to provide meaningful condom use data.

Categories of Sexual Risk

To compare nonsexual risk behaviors among adolescents with differing sexual experiences, we categorized adolescents by the level of risk of their heterosexual genital sexual activities during the prior year. Sixty-five percent of virgins were in the no sexual activity category. Twenty-one percent of virgins were in the masturbation with partner category (virgins who had engaged in masturbation with a partner but not in oral sex), and 14% were in the oral sex category (virgins who had engaged in oral sex, whether or not they had also engaged in masturbation with a partner); thus, 35% of virgins had engaged in at least one heterosexual genital sexual activity. When heterosexual anal intercourse and homosexual sexual activities were included, the percentage of virgins who had engaged in at least one genital sexual activity remained 35%.

TABLE 4—Odds Ratios (ORs) and 95% Confidence Intervals (CIs) from Logistic Regressions Comparing High School Students across Categories of Sexual Experience

Predictor Variable ^a	Virgins (0) vs Nonvirgins (1)		No Sexual Activity (0) vs Masturbation with Partner (1) ^b		No Sexual Activity (0) vs Oral Sex (1) ^b	
	OR	95% CI	OR	95% CI	OR	95% CI
Female	0.68**	0.53, 0.87	1.02	0.68, 1.53	1.05	0.63, 1.76
Grade in school	1.47***	1.32, 1.65	1.00	0.83, 1.20	1.16	0.92, 1.46
Race/ethnicity dummy variables (White is omitted variable)						
African American	2.90***	1.86, 4.54	1.71	0.78, 3.76	0.93	0.30, 2.85
Asian and Pacific Islander	0.66	0.40, 1.09	0.44*	0.21, 0.95	0.45	0.19, 1.08
Latino	1.29	0.89, 1.88	1.07	0.56, 2.05	0.46*	0.21, 1.00
Other/mixed	1.06	0.64, 1.75	1.24	0.56, 2.72	0.58	0.21, 1.62
Lives with mother and father	0.56***	0.44, 0.72	1.07	0.70, 1.62	1.06	0.63, 1.80
Primary language spoken at home is English	1.30	0.93, 1.82	1.54	0.89, 2.68	1.30	0.66, 2.58
Higher report card grades	0.88**	0.80, 0.96	1.08	0.92, 1.27	1.12	0.92, 1.37
At least one parent is a college graduate	0.96	0.72, 1.28	0.99	0.60, 1.63	0.62	0.34, 1.13
Higher educational expectations	0.87	0.72, 1.06	1.03	0.74, 1.44	1.12	0.74, 1.70
Drank alcohol during prior year	1.81***	1.31, 2.51	1.80*	1.13, 2.88	3.10**	1.54, 6.25
Smoked cigarettes during prior year	1.20	0.89, 1.62	0.99	0.59, 1.66	1.24	0.67, 2.29
Used marijuana during prior year	2.91***	2.10, 4.04	2.40**	1.30, 4.43	2.99***	1.56, 5.73
Used other recreational drugs during prior year	1.41	0.94, 2.10	0.98	0.40, 2.40	1.88	0.79, 4.47
Other problem behaviors, no.	1.17*	1.04, 1.33	1.51***	1.22, 1.87	1.79***	1.37, 2.35
χ^2 (df)	462 (16)		78 (16)		127 (16)	
n	1502		627		575	

Note. An odds ratio above 1.0 indicates that high values of the predictor variable were associated with riskier sexual activity.

^aFor variables with yes/no responses, no = 0 and yes = 1. Scaled variables had the following range of answers: grade in school, 9–12; report card grades, 1–8 (1 = mostly below D, 8 = mostly A's); educational expectations, 1–3; and number of other problem behaviors, 0–4. Number of other problem behaviors provides a count of behaviors (unexcused school absence, staying out late without permission, stealing, running away from home) the adolescent reported for the prior year.

^bThe No Sexual Activity category includes virgins who did not report engaging in heterosexual masturbation with a partner or oral sex during the prior year. The Masturbation with Partner category includes virgins who reported engaging in heterosexual masturbation with a partner but not heterosexual oral sex during the prior year. The Oral Sex category includes virgins who reported engaging in heterosexual fellatio with ejaculation or cunnilingus regardless of whether or not they had also engaged in heterosexual masturbation with a partner during the prior year.

*Odds ratio differs significantly from 1.0 ($P < .05$); ** $P < .01$; *** $P < .001$.

Illicit Substance Use and Other Problem Behaviors

Table 3 shows that virgins who had engaged in higher risk sexual activities were more likely to have used cigarettes, alcohol, marijuana, and other drugs during the prior year. These behaviors were also more common among nonvirgins than virgins. Similarly, greater sexual risk was associated with four other problem behaviors: unexcused school absence, staying out late without permission, stealing, and running away from home.

Multiple Predictors of Sexual Experience

Table 4 shows the results of a logistic regression using virgin vs nonvirgin as the dependent variable and demographic variables, academic variables, illicit substance use, and other problem behaviors as the independent variables. Nonvirginity was associated with being male, being in a

higher grade, not living with both parents, having lower report card grades, drinking alcohol, using marijuana, and having a higher number of other problem behaviors. African Americans were more likely than members of each of the other racial/ethnic groups to be nonvirgins, and Latinos were more likely than Asians and Pacific Islanders to be nonvirgins.

Table 4 also shows the results of logistic regressions comparing subcategories of virgins: no sexual activity vs masturbation with partner and no sexual activity vs oral sex. In both regressions, use of alcohol, use of marijuana, and a higher number of other problem behaviors predicted sexual activity. In addition, Asian and Pacific Islander virgins were less likely than members of each of the other racial/ethnic groups to be in the masturbation with a partner category, and Latinos were less likely than Whites to be in the oral sex category.

Discussion

Adolescent virgins are not all sexually inactive. They have diverse sexual experiences involving varying degrees of intimacy and health risk. More than one third of virgin respondents had engaged in some form of heterosexual genital sexual activity in the past year, primarily masturbation with a partner but also fellatio with ejaculation and cunnilingus. However, virtually none reported having engaged in heterosexual or homosexual anal intercourse (the riskiest activities about which we asked) or in other homosexual sexual activities. These findings held across demographic groups.

This study was conducted in an urban school district with a population-based sample. Because students in the two public high schools were thought to differ in ways related to their sexual behavior, data from both schools were

combined for analytic purposes to minimize bias in representing the district's public high school population. Of course, local factors and demographic mix may affect sexual practices, so caution is needed in generalizing to other school districts. Caution is also needed in interpreting racial/ethnic differences, especially given that the number of African-American virgins was low. Nevertheless, the prevalence of virginity in our study is quite close to national prevalence rates for never having had sexual intercourse from the 1990 Youth Risk Behavior Survey of high school students (male students, 42% in our study vs 39% nationally; female students, 53% in our study vs. 52% nationally).¹

Adolescence is typically a period of sexual development and discovery. Previous research has shown that, in addition to age, gender, and race/ethnicity, there are many other predictors of whether adolescents are virgins or nonvirgins. For example, nonvirgins are more likely to live in single-parent or unstable households, have parents with lower educational achievement, have poorer academic performance and lower educational aspirations, use more illicit substances, and engage in delinquent behaviors.^{4,5,23-25} Comparison of virgins and nonvirgins in our study replicates these findings. Comparisons among virgins, however, show that nonsexual risk behaviors are the main predictors of the level of risk of their sexual activity (i.e., whether they have engaged in oral sex, masturbation with a partner, or neither). Our data do not allow us to determine whether this relationship is causal, whether it reflects the influence of an unmeasured variable (such as parental monitoring), or whether it is evidence of a maturation process in which these behaviors unfold at the same time. Longitudinal research would help in exploring this relationship further.

Previous research has shown that adolescents do not initiate various sexual activities in the same order.²¹ Although it is possible that many adolescents progress in order through the sexual risk hierarchy described in our study, we cannot determine what percentage initiate various sexual activities in a different order or how rapidly they progress to higher levels of risk. Some, for example, may stay at a low risk level (e.g., masturbation with a partner) for years without initiating sexual activities that carry greater risk. Questions about milestones and sequencing for initiation of various sexual activities could

be addressed by longitudinal research or retrospective studies.

Our data probably provide lower bounds for prevalence of sexual acts among virgins in our study population. We specified fellatio with ejaculation, so we cannot determine how many adolescents had engaged only in fellatio without ejaculation. Furthermore, we asked about participation in sexual activities other than vaginal intercourse only over the prior year, yet some virgins may have engaged in them before but not during the prior year. Some virgins may have engaged in sexual activities not covered in this study.

A limitation of this or any similar study is the inability to validate the accuracy of responses. Adolescents may overreport socially desirable activities and underreport socially undesirable ones; however, the extent of bias is difficult to estimate.²⁶

Our data allow us to explore what information is lost in studies that ask fewer or less precise questions. Although questions that use imprecise terms like "sexual intercourse" may be ambiguous for virgins who have engaged in anal intercourse, our data suggest that few adolescents are in this group. Studies that seek to identify adolescents who are sexually active from questions that cover only vaginal intercourse will subsume virtually all adolescents who have had anal intercourse but will miss many virgins who have engaged in oral sex or masturbation with a partner.

Although public health campaigns have focused on vaginal and anal intercourse when informing people of all ages about risk, it is important to keep in mind that fellatio (especially with ejaculation) and cunnilingus can also transmit disease. Virgins (and nonvirgins) need to know how to reduce risks associated with these practices, such as not engaging in them or using a condom or dental dam. Most adolescents in this study who were engaging in fellatio with ejaculation were not regularly using condoms; it is likely that dental dams were used even less.

Although the focus of this article is on risk, it is important to place sexual behavior in a larger context when advising adolescents. Discussions limited to topics such as HIV, other sexually transmitted diseases, and unintended pregnancy may be misinterpreted by adolescents as indicating that risk should be the only factor considered in making sexual decisions.

Parents, clinicians, teachers, and others responsible for the well-being of

adolescents should keep in mind that the initiation of interpersonal sexual experience is not marked by a single act but involves a range of activities with varying degrees of risk. Clinicians in particular should not rely on an inquiry about virginity as their only screening question when deciding whether to include sexually transmitted diseases in their differential diagnoses. Moreover, it is important for all who provide advice about sexual risk to be precise. For example, it may not be clear whether a recommendation of abstinence means abstinence from vaginal intercourse, abstinence from anal and oral intercourse as well, or abstinence from all types of sexual activity. Similar ambiguities may arise with the phrase "having sex." If we do not recognize the range of patterns that exist, we may easily find ourselves saying one thing and being understood to say another by the adolescents whose health we seek to promote.

More generally, this study shows that we must avoid the tendency to think of adolescents as sexually active or not sexually active based on their virginity status alone. Rather, we can use knowledge about the diversity of virginal experience to provide more focused and useful guidance to all adolescents. □

Acknowledgments

This study was supported by a dissertation grant (HS08055-1) from the Agency for Health Care Policy and Research, by a grant from the American Foundation for AIDS Research, and by the Robert Wood Johnson Clinical Scholars Program.

We are indebted to the students, parents, school and district personnel, and school board members who contributed to this study and to Martin Anderson, Sandra H. Berry, Robert H. Brook, Phyllis L. Ellickson, Neal Halfon, Arleen Leibowitz, Linda G. Martin, Justin Richardson, and our anonymous reviewers for their comments on drafts of this article.

References

1. Centers for Disease Control. Sexual behavior among high school students—United States, 1990. *MMWR Morb Mortal Wkly Rep.* 1992;40:885-888.
2. Forrest JD, Singh S. The sexual and reproductive behavior of American women, 1982-1988. *Fam Plann Perspect.* 1990;22:206-214.
3. Ku L, Sonenstein FL, Pleck JH. Young men's risk behaviors for HIV infection and sexually transmitted diseases, 1988 through 1991. *Am J Public Health.* 1993;83:1609-1615.
4. Irwin CE Jr, Shafer MA. Adolescent sexuality: negative outcomes of a normative behavior. In: Rogers DE, Ginzberg E, eds. *Adolescents at Risk: Medical and Social Perspectives.* Boulder, Colo: Westview Press; 1992:35-79.

5. Zabin LS, Hayward SC. *Adolescent Sexual Behavior and Childbearing*. Newbury Park, Calif: Sage Publications Inc; 1993.
6. Keller SE, Bartlett JA, Schleifer SJ, Johnson RL, Pinner E, Delaney B. HIV-relevant sexual behavior among a healthy inner-city heterosexual adolescent population in an endemic area of HIV. *J Adolesc Health*. 1991;12:44-48.
7. Biglan A, Metzler CW, Wirt R, et al. Social and behavioral factors associated with high-risk sexual behavior among adolescents. *J Behav Med*. 1990;13:245-261.
8. Goodman E, Cohall AT. Acquired immunodeficiency syndrome and adolescents: knowledge, attitudes, beliefs, and behaviors in a New York City adolescent minority population. *Pediatrics*. 1989;84:36-42.
9. Jaffe LR, Seehaus M, Wagner C, Leadbeater BJ. Anal intercourse and knowledge of acquired immunodeficiency syndrome among minority-group female adolescents. *J Pediatr*. 1988;112:1005-1007.
10. Jemmott JB III, Jemmott LS, Fong GT. Reductions in HIV risk-associated sexual behaviors among Black male adolescents: effects of an AIDS prevention intervention. *Am J Public Health*. 1992;82:372-377.
11. Moscicki A, Millstein SG, Broering J, Irwin CE Jr. Risks of human immunodeficiency virus infection among adolescents attending three diverse clinics. *J Pediatr*. 1993;122:813-820.
12. Remafedi G. Predictors of unprotected intercourse among gay and bisexual youth: knowledge, beliefs, and behavior. *Pediatrics*. 1994;94:163-168.
13. Rotheram-Borus MJ, Reid H, Rosario M. Factors mediating changes in sexual HIV risk behaviors among gay and bisexual male adolescents. *Am J Public Health*. 1994;84:1938-1946.
14. Stanton B, Li X, Black M, et al. Sexual practices and intentions among preadolescent and early adolescent low-income urban African-Americans. *Pediatrics*. 1994;93:966-973.
15. Stanton B, Li X, Black MM, Ricardo I, Galbraith J. Anal intercourse among preadolescent and early adolescent low-income urban African-Americans. *Arch Pediatr Adolesc Med*. 1994;148:1201-1204.
16. Baldwin JD, Whiteley S, Baldwin JI. The effect of ethnic group on sexual activities related to contraception and STDs. *J Sex Res*. 1992;29:189-205.
17. DeBuono BA, Zinner SH, Daamen M, McCormack WM. Sexual behavior of college women in 1975, 1986, and 1989. *N Engl J Med*. 1990;322:821-825.
18. Hale RW, Char DFB, Nagy K, Stockert N. Seventeen-year review of sexual and contraceptive behavior on a college campus. *Am J Obstet Gynecol*. 1993;168:1833-1838.
19. Reinisch JM, Sanders SA, Hill CA, Ziemba-Davis M. High-risk sexual behavior among heterosexual undergraduates at a midwestern university. *Fam Plann Perspect*. 1992;24:116-121, 145.
20. Newcomer SF, Udry JR. Oral sex in an adolescent population. *Arch Sex Behav*. 1985;14:41-46.
21. Smith EA, Udry JR. Coital and non-coital sexual behaviors of White and Black adolescents. *Am J Public Health*. 1985;75:1200-1203.
22. Koop CE. *Surgeon General's Report on Acquired Immune Deficiency Syndrome*. Washington, DC: US Dept of Health and Human Services; 1986.
23. Brooks-Gunn J, Furstenberg FF Jr. Adolescent sexual behavior. *Am Psychol*. 1989;44:249-257.
24. Hayes CD. *Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing, I*. Washington, DC: National Academy Press; 1987.
25. Udry JR. Hormonal and social determinants of adolescent sexual initiation. In: Bancroft J, Reinisch JM, eds. *Adolescence and Puberty*. New York, NY: Oxford University Press Inc; 1990:70-87.
26. Catania JA, Gibson DR, Chitwood DD, Coates TJ. Methodological problems in AIDS behavioral research: influences on measurement error and participation bias in studies of sexual behavior. *Psychological Bull*. 1990;108:339-362.