Prevalence and Correlates of Sexual Risk Behaviors Among Jamaican Adolescents

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CONTEXT: Despite high levels of sexual activity and risk behaviors among Jamaican youth, few population-based studies have examined their prevalence or correlates.

METHODS: The prevalence of three sexual risk behaviors was assessed using data from the 2008–2009 Jamaican Reproductive Health Survey on a subsample of adolescents aged 15–19 who neither were in a union nor had a child. Factors associated with the risk behaviors were examined separately for females and males, using bivariate analysis and multivariate logistic regression.

RESULTS: In the year prior to the survey, 32% of females and 54% of males had had sexual intercourse; of those, 12% and 52%, respectively, had had more than one sexual partner, and 49% and 46% had used condoms inconsistently or not at all. School enrollment was protective against females being sexually active and males having multiple partners. Females who were enrolled in an age-appropriate or higher grade had decreased odds of using condoms inconsistently or not at all, and males who were enrolled in a lower than age-appropriate grade had a decreased risk of being sexually active. Males in the lowest wealth tercile were less likely than those in the highest tercile to have been sexually active or to have had multiple partners. Weekly attendance at religious services was protective against all three risk behaviors for both genders, with the exception of inconsistent or no condom use among males.

CONCLUSIONS: Future reproductive health programs should continue to target adolescents in venues other than schools and churches, and should also address the varying needs of females and males.
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Because high levels of sexual activity and pregnancy have been found among Jamaican adolescents,[1–4] health policymakers and social scientists are interested in identifying factors associated with youth's sexual risk behaviors. During the past two decades, this interest has been further fueled by the increasing prevalence of HIV in the Caribbean region, which is the world's highest outside of Sub-Saharan Africa.[5] Numerous studies have investigated correlates of unintended pregnancy and STI risk among young Jamaican females, including early sexual debut and multiple sexual partners,[6] forced first sex[7] and having a first partner who is not a steady boyfriend.[8]

Qualitative studies from Jamaica have shown the prevalence of permissive attitudes regarding males' early sexual debut, having multiple sexual partners, lack of condom use and violence toward females.[9,10] In addition, an emphasis on masculinity and male dominance—equivalent to "machismo" in Central and South America—is deeply embedded in Jamaica's gender system, and it encourages men to demonstrate their sexual prowess from an early age by having multiple partners and children. Following procreation, men usually provide for their children and the mothers, which is another way to assert their manhood; however, for lower class men who lack the economic resources to fulfill this role, demonstration of sexual virility is more important.[11] Another widespread attitude is that females

should be economically dependent on males, and this leads economically marginalized young women to use sexual activity as a means to feed and clothe themselves or to pay for school; some even have a baby to gain stable financial support from the father.[12]

Both quantitative and qualitative studies provide useful insight into factors associated with sexual activity and unintended pregnancy among Jamaican youth, but they are usually based on small samples, generally from school-based surveys in limited geographic areas. Furthermore, there are few reliable estimates of the national prevalence of sexual risk behaviors or studies that examine the extent to which socioeconomic status, particularly poverty, is associated with such behaviors among youth.[13] For this study, we used nationally representative data from the 2008–2009 Jamaican Reproductive Health Survey (RHS), which contains detailed information on respondents' sexual partners in the 12 months prior to the survey. We estimated—separately for females and males—the percentages of youth aged 15–19 who in the last year had been sexually active, had had multiple partners, and had used condoms inconsistently or not at all; we also examined factors thought to be correlated with these behaviors, including household wealth, school enrollment, religiosity, experience of childhood violence[14,15] and agreement with traditional gender roles.[16]

BACKGROUND

Although high levels of unintended pregnancy and risk for STIs are a major concern in Jamaica, both improvements and lack of changes in some indicators of adolescent sexual activity have been documented. Among females aged 15–24, the mean age at sexual initiation rose slightly from 15.9 years in 1997 to 16.1 years in 2008–2009, while the mean age among their male counterparts increased from 13.4 years to 16.1 years over the same period.[17] Contraceptive use at first sexual intercourse increased substantially and steadily over this decade—from 56% in 1997 to 79% in 2008–2009 among females in this age-group, and from 31% to 58% among males. Reflecting these behavioral changes, age-specific fertility declined from 112 to 72 births per 1,000 adolescents aged 15–19 between 1997 and 2008–2009.

Reproductive Health Programs

Reproductive health interventions may have helped promote contraceptive use and reduce fertility among Jamaican youth. Youth.now and JA-STYLE were two such projects carried out in 2000–2004 and 2005–2009, respectively; they were funded by the U.S. Agency for International Development and led by the Ministry of Health in collaboration with other state and nongovernmental organizations. These projects were designed to improve the reproductive health of youth aged 10–19 through health care service, counseling, education, mass media campaigns and policy changes.[18] According to the 2008–2009 RHS, 22% of females and 8% of males aged 15–24 reported that they had heard, in the six months prior to the survey, a JA-STYLE radio program called "Outta Road" that was designed to address issues such as HIV and AIDS, adolescent sexual and reproductive health, and the prevention of violence and substance abuse.[17] One of the major obstacles identified in a program evaluation[18] was its conflict with the country's Child Care Protection Act; this act requires the mandatory reporting of any potential sexual ill treatment of a child. This legal requirement makes it difficult to secure confidentiality when providing contraceptives to sexually active youth, particularly those who are younger than 16, the legal age of consent for sexual relations.

The National Family Planning Board's mandate is to prepare, promote and conduct family planning programs in the country. It has supplied contraceptives to the public health system and provided information on reproductive health issues through its daily call-in, walk-in counseling service and automated hotline, as well as through limited outreach projects. The board's five-year strategic plan for 2005–2010 expanded adolescents' access to reproductive health information and services via educational materials. Its TV program—"Teen Seen," which addresses condom use and sexual and reproductive health among youth—was viewed by 47% of females and 38% of males aged 15–24 in the six months preceding the 2008–2009 survey.[17]

FIGURE 1. *Percentage of Jamaican females aged 15–24 by school enrollment, sexual and reproductive behavior, and union status, according to age*
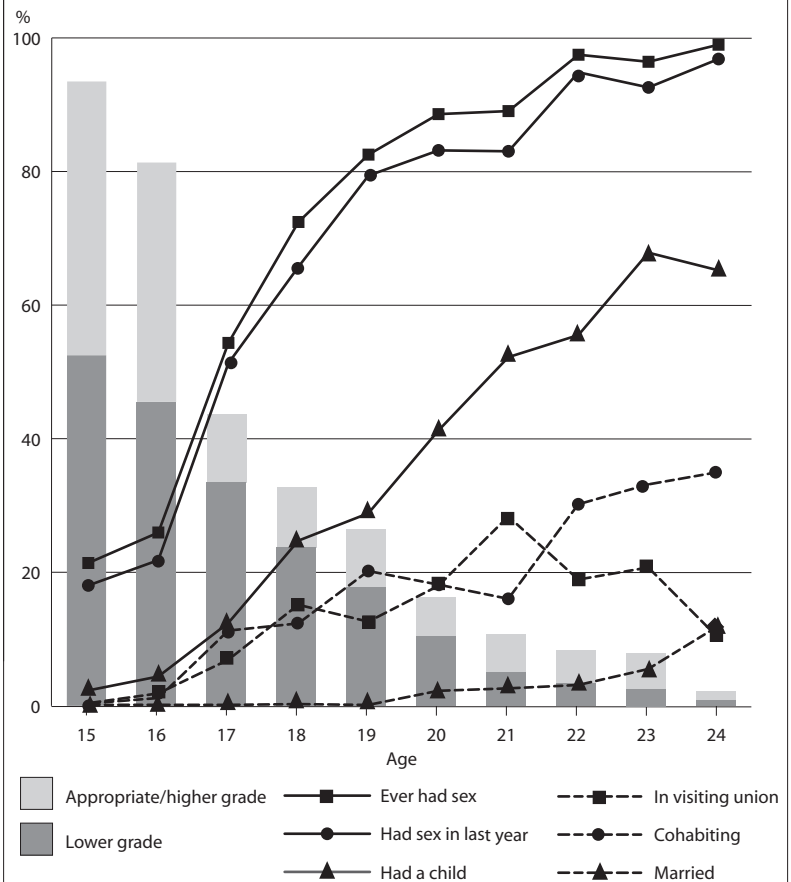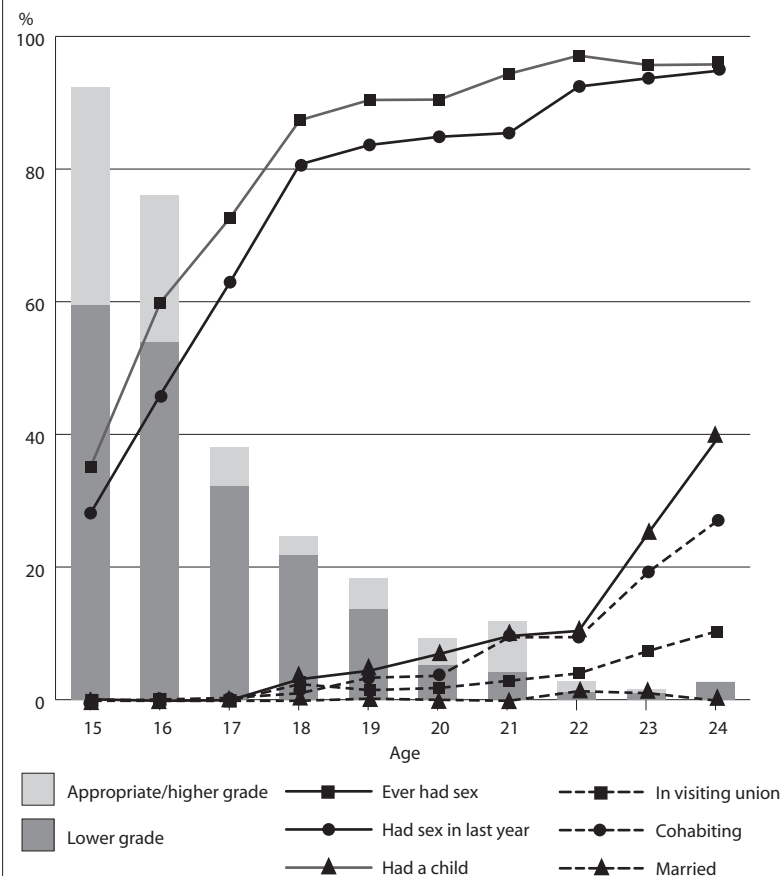
Note: Enrolled students were categorized as being in an age-appropriate or higher grade, or in a lower than age-appropriate grade.

Enrollment, Union Formation and Sexual Activity

To provide a broader framework for the sexual and reproductive health characteristics of young adults in the context of other life events, we present a brief overview of the age patterns of school enrollment, union and fertility status, and sexual activity among youth aged 15–24 (2,343 females and 2,775 males) who completed the 2008–2009 RHS.[19]

School enrollment among females and males decreased rapidly with age, particularly after age 16, when Jamaican students usually complete secondary school (Figures 1 and 2). Although the percentages enrolled at each age were similar for both genders, males were more likely than females to be at a grade level lower than expected for their age. Marriage was relatively rare: About 10% of females were married by age 24. In contrast, the percentage of females in either cohabiting or visiting unions increased steadily with age, reaching about 30% by age 19 and 50% by age 23. Males were substantially less likely than females to be in a cohabiting or visiting union, and marriage was even rarer. The percentages of females and males who had a child were similar to the overall percentages of those who were in a union, probably because most respondents entered a union following a pregnancy or childbirth. How-

FIGURE 2. Percentage of Jamaican males aged 15–24 by school enrollment, sexual and reproductive behavior, and union status, according to age

Note: Enrolled students were categorized as being in an age-appropriate or higher grade, or in a lower than age-appropriate grade.

ever, among females aged 20 or older, the percentage with a child was greater than the percentage in a union, indicating either fertility outside a union or union dissolution. Overall, because females had a child or entered unions at a younger age than males, the timing of school attendance and union and family formation was more likely to overlap for females.

At younger ages, the percentages of females who were sexually experienced were substantially lower than the percentages of males who were experienced, but this difference disappeared by age 20. The percentages of females and males who had had sex in the 12 months before the survey were only slightly lower than the percentages who had ever had sex, suggesting that once respondents first had sex, they were likely to stay sexually active. Since the percentages of sexually active males at all ages and, though less substantially, of sexually active females at age 17 or older far exceeded the percentages of those who were in a

*Visiting union refers to a common extraresidential practice that occurs in Jamaica (source: Dechesnay M, Jamaican family structure: the paradox of normalcy, *Family Process,* 1986, 25(2):293–300). In this study, it is defined as a union in which the partners live apart (the woman lives with her family), have sexual relations and have children together. The man has some financial obligations (e.g., contributions in money, gifts or goods) to his partner and his children.

union, their sexual debut and sexual activity were more likely to occur outside of a union.

METHODS
Data
The 2008–2009 RHS was implemented by the Jamaican National Family Planning Board with technical assistance from the U.S. Centers for Disease Control and Prevention (CDC). The survey employed a multistage cluster sample design based on 2002 census tracts, and collected data using a standardized questionnaire in face-to-face, household interviews conducted from June 2008 through March 2009. Further details of this survey are documented in the final report.[17] The sample was nationally representative and consisted of 8,259 females aged 15–49 and 2,775 males aged 15–24. For the present study, we restricted the sample to 1,074 females and 1,734 males aged 15–19 who neither were in a marital, cohabiting or visiting union* nor had a child. The CDC Ethics and Review Board exempts the Jamaican RHS from research review.

Dependent Variables
Three dependent variables were examined: whether respondents had had sexual intercourse in the 12 months prior to the interview, and among those who had, whether they had had more than one sexual partner in the last year, and whether they had used condoms inconsistently or not at all over this period. The last variable was based on two items: condom use at last sex with each partner, and the overall consistency of condom use ("In general, with what frequency did you use a condom with a steady/nonsteady partner(s) over the past 12 months?")

Independent Variables
Key demographic and socioeconomic variables included age as of the September (the month in which school starts) prior to the interview, current school enrollment status and household wealth tercile. Current students were classified into those who were in an age-appropriate or higher grade, and those who were in a lower than age-appropriate grade. Wealth terciles were constructed using a wealth index score: the weighted sum of the number of household appliances and amenities (e.g., TV, vehicles, toilet facilities and source of water), where the weight was derived from principal components analysis.[20]

Two dichotomous variables for childhood violence were assessed: whether the respondent had ever been slapped, kicked, shoved or hit by a parent or other adult family member; and whether they had ever seen or heard their father or stepfather slap, kick, shove or hit their mother or stepmother. Both measures referred to any time before the respondent turned age 15. For the latter measure, respondents who reported not having grown up with two parents (whether biological or not) were assigned to a third category. Since parental support, or family connectedness, has been found to be negatively associated with a wide range of youth risk behaviors, including sexual activity,[3,21–23] we

examined the potentially protective effects of having "a supportive adult at home." Respondents were categorized as having such support if they answered affirmatively at least four of the following seven questions: whether there was an adult in the home who was interested in their school work; talked with them about their problems; gave them enough attention; listened to them when they had something to say; expected them to follow the rules; always wanted them to do their best; and believed that they would be a success. Frequency of attendance at religious services was categorized into three levels: at least once a week (weekly); at least once a month but less often than once a week (monthly); and less than once a month or never. To examine the expected associations between sexual risk behaviors and beliefs regarding traditional gender roles, we measured respondents' agreement with the following three statements: "A good wife obeys her husband even if she disagrees"; "It is important for a man to show his wife or partner who is the boss"; and "It is a wife's obligation to have sex with her husband even if she doesn't feel like it."

Finally, respondents were categorized by urban or rural residence, and by residence in one of the nation's four administrative health regions: the southeast, which includes Kingston, the capital (region 1); the northeast (region 2); the northwest (region 3); and the southwest (region 4). Region 3 includes Montego Bay, known for its tourism and for high levels of HIV infection and transactional sex between tourists and Jamaicans.[24]

Analysis

We explored potential factors associated with sexual risk behaviors among single and childless females and males aged 15–19. First, we used Pearson's chi-square test to examine overall bivariate associations between each of the three risk behaviors and each independent variable. We then conducted multivariate logistic regression analyses for each behavior using the same set of independent variables. For the multiple partners and condom use variables, the analytic samples were restricted to respondents who had had sexual intercourse in the past 12 months, because these variables were conditional on being sexually active. Since results of an auxiliary analysis indicated that the effect of the variables did not differ significantly by age, the final model did not include age interactions. Our estimates of the distribution of characteristics in the sample, as well as the multivariate results, reflect adjustments for unequal probabilities of selection for survey participation.

RESULTS
Sample Characteristics
The distribution of adolescents by age was similar for both genders; 57% of females were aged 15–16, as were 51% of males (Table 1). Twenty-eight percent of females were enrolled in an age-appropriate or higher grade, 43% were in a lower grade and 29% were not in school; the corresponding figures for males were 17%, 41% and 42%. Over-

TABLE 1. Percentage distribution of females and males aged 15–19 who neither were in a union nor had a child, by selected characteristics, Jamaican Reproductive Health Survey, 2008–2009

Variable	Females (N=1,074)	Males (N=1,734)
Age		
15	35.9	32.2
16	21.0	19.0
17	16.8	17.6
18	15.2	17.6
19	11.2	13.6
Student†		
Appropriate/higher grade	28.1	17.1
Lower grade	42.9	40.8
No	29.0	42.1
Household wealth tercile		
Lowest	27.0	34.9
Middle	35.0	36.7
Highest	38.0	28.4
Victim of childhood violence		
Yes	69.3	66.9
No	30.7	33.1
Witnessed parental violence		
Yes	9.9	11.9
No	84.0	80.8
Didn't grow up with both parents	6.0	7.4
Had supportive adult in home		
Yes	85.9	83.4
No	14.1	16.6
Attended religious services		
Weekly	45.4	24.8
Monthly	18.0	15.5
<monthly/never	36.7	59.8
No. of traditional gender role statements endorsed		
0	25.1	24.3
1–2	58.1	53.0
3	16.8	22.7
Health region		
1	45.9	35.1
2	13.9	14.5
3	20.9	23.7
4	19.3	26.8
Residence		
Urban	52.9	46.7
Rural	47.1	53.4
Total	100.0	100.0

†Enrolled students were categorized as being in an age-appropriate or higher grade, or in a lower than age-appropriate grade. *Note:* Percentages are weighted.

all, female respondents were more likely than males to be in the highest tercile of household wealth (38% vs. 28%).

Among females, 69% had been victims of childhood violence and 10% had witnessed parental violence; for males, those figures were 67% and 12%. Most females and males were categorized as having had a supportive adult in their home (86% and 83%, respectively). Some 45% of females and 25% of males reported attending religious services weekly. Agreement with statements endorsing traditional gender roles was similar among males and females:

TABLE 2. Among respondents aged 15–19 who neither were in a union nor had a child, percentage who reported sexual risk behaviors in the 12 months preceding interviews, by selected variables, according to gender

Variable	Females			Males		
	Sexually active	Multiple partners	Inconsistent condom use/no use	Sexually active	Multiple partners	Inconsistent condom use/no use
All	**32.3**	**11.6**	**49.1**	**54.1**	**52.4**	**46.3**
Age						
15	16.9***	8.2	56.9**	28.1***	37.5**	39.3*
16	19.0	6.5	49.9	45.9	44.7	49.4
17	39.7	11.2	54.0	62.8	52.1	52.7
18	53.9	15.4	25.9	79.8	55.3	36.1
19	66.1	13.4	63.4	82.7	67.3	56.0
Student†						
Appropriate/higher grade	16.5***	7.4	35.1	38.5***	44.4**	49.5
Lower grade	20.8	12.5	45.7	40.3	42.6	39.4
No	64.6	12.2	54.2	73.8	59.4	49.3
Household wealth tercile						
Lowest	39.3*	16.6	53.1	50.5	48.2	48.6
Middle	33.4	10.5	51.8	54.0	49.4	50.7
Highest	26.3	8.1	41.7	58.6	60.6	38.6
Victim of childhood violence						
Yes	35.0*	10.8	50.9	52.8	53.7	49.1
No	26.1	14.2	43.4	56.6	50.2	41.1
Witnessed parental violence						
Yes	38.8	10.7	53.5	54.3*	51.5	53.3
No	31.6	12.4	48.5	52.5	51.4	43.9
Didn't grow up with both parents	30.6	2.6	47.9	64.7	58.5	58.2
Had supportive adult in home						
Yes	28.1***	12.0	41.0***	50.3***	48.9**	44.3
No	57.9	10.4	72.9	73.2	64.7	53.1
Attended religious services						
Weekly	15.5***	10.2	33.8	40.0***	49.7	43.9*
Monthly	37.7	5.6	52.7	53.4	56.5	32.2
<monthly/never	50.4	14.4	53.6	60.1	52.3	50.2
No. of traditional gender role statements endorsed						
0	30.6	8.9	30.2*	51.4**	51.3	45.3
1–2	33.2	13.4	53.4	51.2	51.3	43.4
3	31.8	9.2	60.6	63.8	55.6	42.5
Health region						
1	31.4	12.2	49.3	59.9***	50.2**	41.9*
2	30.6	4.3	45.0	57.1	46.2	39.5
3	28.4	11.0	51.9	42.7	44.4	44.3
4	39.8	15.1	48.8	55.0	64.6	57.7
Residence						
Urban	30.3	15.3	48.3	58.5*	52.0	46.1
Rural	34.5	8.0	49.9	50.2	52.9	46.5

*p<.05.**p<.01.***p<.001.†Enrolled students were categorized as being in an age-appropriate or higher grade, or in a lower than age-appropriate grade. *Notes:* For multiple partners and condom use measures, the analytic sample was restricted to those who were sexually active. Pearson's chi-square test was used to identify an overall association between each risk behavior and each independent variable.

A quarter of respondents disagreed with all three statements (25% and 24%), more than half agreed with one or two (58% and 53%), and about one in five agreed with all three (17% and 23%). Finally, the adolescent population of each health region was divided almost equally between females and males, and about half of each gender lived in urban areas (53% and 47%, respectively).

Bivariate Results

In the 12 months preceding the interviews, 32% of females and 54% of males aged 15–19 who neither were in a union nor had a child had had sexual intercourse. Of these respondents, 12% of females and 52% of males had had more than one sexual partner in the last year, and 49% and 46%, respectively, had used condoms inconsistently or not at all (Table 2).

The percentage of respondents who had been sexually active in the past 12 months increased with age for both females (from 17% for those aged 15 to 66% for those aged 19) and males (from 28% to 83% for these age-groups), whereas the risk of having had multiple sexual partners in this period rose with age for males only (from 38% to 67%). The risk of using condoms inconsistently or not at all in the past year was associated with age for both females and males; however, the associations were not linear. Respondents who were students were less likely to be sexually active (17–21% vs. 65% among females, and 39–40% vs. 74% among males), and males who were not enrolled were more likely than those who were to report having had multiple partners in the last year (59% vs. 43–44%). Females in the middle and lowest wealth terciles were more likely to report having been sexually active (33–39% vs. 26%), but not significantly more likely to report having engaged in the other two risk behaviors.

Having been a victim of violence during childhood was associated only with females being sexually active (35% vs. 26%). Both females and males who had not had a supportive adult in their home were more likely than others to report sexual activity in the previous year (58% vs. 28% among females, and 73% vs. 50% among males); in addition, sexually active females who had not had a supportive adult were more likely to report no or inconsistent condom use (73% vs. 41%), and males without this support were more likely to report having had multiple partners (65% vs. 49%). Among both females and males, frequency of attendance at religious services was linearly and negatively associated with having been sexually active (from 16% to 50% among females who participated weekly vs. less than monthly or never, and from 40% to 60% among corresponding males); however, it was nonlinearly associated with inconsistent or no condom use among males. The percentage of females who had used condoms inconsistently or not at all increased with the number of traditional gender roles endorsed (from 30% of those who endorsed none to 61% of those who endorsed three), as did the percentage of males who had been sexually active (from 51% to 64%). Among male respondents, living in health region 3 was associated with a decreased likelihood of being sexually active, and living in region 4 was associated with having multiple partners and using condoms inconsistently or not at all; living in an urban rather than rural area was also associated with males being sexually active (59% vs. 50%). Among females, none of the residential factors was associated with any sexual risk behavior.

TABLE 3. Odds ratios (and 95% confidence intervals) from multivariate logistic regression analyses identifying associations between selected variables and sexual risk behaviors in the previous 12 months, as reported by females and males aged 15–19 who neither were in a union nor had a child

Variable	Females			Males		
	Sexually active	Multiple partners	Inconsistent condom use/no use	Sexually active	Multiple partners	Inconsistent condom use/no use
Age						
15	0.21 (0.10–0.46)***	0.29 (0.05–1.73)	1.27 (0.45–3.58)	0.14 (0.07–0.25)***	0.16 (0.09–0.29)***	0.60 (0.31–1.18)
16	0.21 (0.10–0.43)***	0.24 (0.05–1.18)	0.92 (0.34–2.47)	0.30 (0.16–0.55)***	0.39 (0.23–0.66)***	0.86 (0.47–1.59)
17	0.42 (0.21–0.86)*	0.71 (0.21–2.36)	0.87 (0.39–1.97)	0.46 (0.26–0.83)*	0.53 (0.32–0.86)*	0.99 (0.56–1.76)
18	0.73 (0.36–1.50)	1.18 (0.31–4.43)	0.25 (0.10–0.63)**	1.02 (0.57–1.83)	0.74 (0.46–1.20)	0.49 (0.30–0.81)**
19 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Student†						
Appropriate/higher grade	0.23 (0.13–0.42)***	0.34 (0.07–1.77)	0.38 (0.15–0.99)*	0.61 (0.36–1.02)	0.56 (0.33–0.96)*	1.36 (0.66–2.81)
Lower grade	0.24 (0.15–0.41)***	0.66 (0.14–3.07)	0.55 (0.26–1.16)	0.52 (0.36–0.76)***	0.47 (0.31–0.69)***	0.82 (0.50–1.33)
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Household wealth tercile						
Lowest	1.27 (0.71–2.29)	0.63 (0.17–2.32)	0.99 (0.45–2.16)	0.64 (0.46–0.91)*	0.43 (0.29–0.64)***	1.30 (0.79–2.14)
Middle	1.19 (0.70–2.03)	0.77 (0.21–2.83)	1.31 (0.60–2.82)	0.71 (0.49–1.02)	0.54 (0.36–0.80)**	1.71 (1.08–2.70)*
Highest (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Victim of childhood violence						
Yes	1.67 (1.08–2.60)*	0.97 (0.34–2.73)	1.14 (0.61–2.14)	0.92 (0.69–1.23)	1.13 (0.80–1.59)	1.25 (0.82–1.88)
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Witnessed parental violence						
Yes	1.24 (0.68–2.23)	1.03 (0.37–2.89)	0.80 (0.34–1.91)	1.67 (1.06–2.64)*	1.92 (1.12–3.29)*	1.58 (0.84–2.97)
Didn't grow up with both parents	0.80 (0.41–1.55)	0.17 (0.02–1.36)	0.87 (0.32–2.41)	0.95 (0.55–1.62)	0.84 (0.50–1.40)	1.58 (0.78–3.19)
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Had supportive adult in home						
Yes	0.53 (0.30–0.93)*	0.97 (0.36–2.59)	0.34 (0.16–0.72)**	0.88 (0.56–1.38)	0.71 (0.49–1.04)	0.93 (0.58–1.52)
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Attended religious services						
Weekly	0.20 (0.12–0.32)***	0.23 (0.08–0.66)**	0.44 (0.20–0.99)*	0.46 (0.32–0.66)***	0.59 (0.40–0.88)**	0.87 (0.51–1.48)
Monthly	0.55 (0.31–0.99)*	0.24 (0.09–0.68)**	1.10 (0.52–2.33)	1.02 (0.67–1.56)	1.41 (0.88–2.27)	0.48 (0.29–0.80)**
<monthly/never (ref)	1.00	1.00	1.00	1.00	1.00	1.00
No. of traditional gender role statements endorsed						
0 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
1–2	0.82 (0.52–1.31)	1.50 (0.37–6.17)	2.17 (1.08–4.35)*	0.99 (0.71–1.39)	0.97 (0.68–1.40)	0.92 (0.60–1.42)
3	0.98 (0.54–1.79)	1.14 (0.17–7.47)	3.47 (1.47–8.16)**	1.56 (1.01–2.42)*	1.35 (0.84–2.15)	1.40 (0.82–2.38)
Health region						
1 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
2	0.82 (0.44–1.51)	0.47 (0.09–2.30)	0.99 (0.40–2.43)	0.92 (0.58–1.46)	0.86 (0.52–1.41)	0.99 (0.55–1.77)
3	0.52 (0.29–0.92)*	1.04 (0.23–4.61)	1.23 (0.55–2.77)	0.44 (0.28–0.68)***	0.52 (0.31–0.89)*	1.08 (0.59–1.98)
4	0.96 (0.56–1.65)	2.12 (0.73–6.14)	0.66 (0.29–1.50)	0.92 (0.62–1.36)	1.58 (1.00–2.48)*	2.32 (1.32–4.09)**
Residence						
Urban	0.95 (0.60–1.51)	1.73 (0.80–3.76)	1.16 (0.58–2.32)	1.17 (0.86–1.60)	0.98 (0.66–1.44)	1.06 (0.67–1.68)
Rural (ref)	1.00	1.00	1.00	1.00	1.00	1.00

*p<.05. **p<.01. ***p<.001. †Enrolled students were categorized as being in an age-appropriate or higher grade, or in a lower than age-appropriate grade. *Notes:* For multiple partners and condom use measures, the analytic sample was restricted to those who were sexually active. ref=reference group.

Multivariate Results

Compared with 19-year-olds, 15–17-year-olds were less likely to have been sexually active in the last year (odds ratios, 0.2–0.4 for females and 0.1–0.5 for males in the same age-group), and males younger than 18 were less likely to have had multiple sexual partners during that period (0.2–0.5–Table 3). Among females, being enrolled in school—regardless of grade level—was protective against being sexually active (0.2), but only enrollment in an age-appropriate or higher grade lowered the risk of using condoms inconsistently or not at all (0.4). Among males, any school enrollment was protective against having multiple partners (0.5–0.6); however, only enrollment in a grade lower than appropriate for their age was protective against being sexually active (0.5). Males who were in the lowest wealth tercile were less likely than those in the highest tercile to be sexually active or to have had multiple partners (0.6 and 0.4, respectively), whereas household wealth was not a significant factor for females' sexual risk behaviors.

Females who had been victims of childhood violence had increased odds of being sexually active (odds ratio, 1.7), while males who had witnessed parental violence

were at elevated risk of being sexually active (1.7) or having had multiple sexual partners (1.9). Having had a supportive adult in the home was protective against being sexually active (0.5) and using condoms inconsistently or not at all (0.3) among females, but not among males. Weekly attendance at religious services was one of the most consistently protective factors: Among females, it was associated with lower odds of having engaged in each of the three risk behaviors (0.2–0.4), and among males, with lower odds of being sexually active and of having had multiple partners (0.5–0.6); monthly attendance was protective against no or inconsistent condom use among males (0.5). Females' agreement with any statement endorsing traditional gender roles was associated with an increased risk of using condoms inconsistently or not at all (2.2–3.5), while males' agreement with all three statements was associated with elevated odds of being sexually active (1.6).

Despite high exposure to international tourism and a high prevalence of HIV in health region 3, females and males who resided in the region were less likely than those living in region 1 to have been sexually active in the previous 12 months (odds ratios, 0.5 and 0.4, respectively). Among sexually active males, the risk of having had multiple partners was decreased in region 3 (0.5) and increased in region 4 (1.6), whereas the risk of having used condoms inconsistently or not at all was elevated in region 4 (2.3).

DISCUSSION

This population-based study documented the high prevalence of sexual activity among Jamaican adolescents who neither were in a union nor had a child: One-third of these 15–19-year-old females and half of the males had been sexually active in the last year, and more than half of sexually active males had had multiple sexual partners during this period. Nearly half of all sexually active adolescents had used condoms inconsistently or not at all, exposing them to a high risk of STIs and unintended pregnancy. Improvement of condom supplies and educational programs about condom use are still critically needed in Jamaica.

We found both similarities and differences in the correlates between females and males, as well as across the three sexual risk behaviors. As in other studies,[25,26] the most important protective factors for both genders were school enrollment and frequent attendance at religious services. These factors appeared to influence not only whether adolescents were sexually active, but also the risks of having multiple sexual partners and using condoms inconsistently or not at all among sexually active adolescents. These findings suggest that surveys of sexual risk behaviors based on samples of students underestimate the prevalence of these behaviors among Jamaican adolescents.

Strong evidence for associations between a reduced risk of engaging in sexual risk behaviors and school enrollment (particularly among females) or frequent attendance

at religious services suggests that future reproductive health programs should continue to target adolescents in venues other than schools and churches. However, this study could not determine whether an increase in the percentage of youth who were students (from 35% to 40% among females aged 15–24, and from 29% to 38% among their male counterparts, between 1997 and 2008–2009) contributed to the decrease in adolescent fertility in the past decade,[17] or whether increasing access to education in the future might help reduce the levels of adolescent sexual behavior. For males, enrollment in a grade lower than appropriate for their age—rather than in an age-appropriate or higher grade—was more strongly and negatively associated with being sexually active and having multiple partners, whereas enrollment in an age-appropriate or higher grade was more strongly and negatively associated with females being sexually active and using condoms inconsistently or never. This gender difference might exist because a male's desirability as a sexual partner is associated with his future socioeconomic status, for which age-appropriate enrollment may be considered an indicator. In addition, males in the highest wealth tercile were more likely than others to be sexually active or have multiple partners, whereas the lack of association between household wealth and risk behaviors among females suggests that these outcomes are similar in all economic strata. Therefore, expansion of access to education may have had or will have differential effects on sexual behavior according to gender.

Among females, a nonnegligible portion of the associations between school enrollment and sexual activity may be attributed to heterogeneity;[27] that is, unmeasured factors that predispose young females to stay in school may simultaneously protect them against risky sexual behaviors, regardless of their enrollment status. For example, increased knowledge, skills in acquiring information and exposure to school-based family life education may not be the factors protecting adolescents from sexual risks. Instead, students may be less likely to engage in sexual risk behaviors because they are a select group with more social capital or a stronger desire for socioeconomic advancement. Further research is needed to determine whether school attendance itself directly reduces risky behaviors, or whether unobserved characteristics related to attendance account for the negative association with school enrollment. Such research is important for assessing whether expansion of education, particularly for girls, in developing countries will help in reducing risky sexual behaviors: If the association between enrollment and being sexually active is independent, universal education is likely to reduce such levels, and consequently reduce early fertility and STI risk. However, if the association is spurious and attributable to unobserved characteristics, increased access to education may have little effect on sexual activity.

This study found adverse associations between adolescents' sexual behaviors and violence (either experienced or witnessed as a child) or a lack of supportive adults in

the home, which suggests that providing socioemotional support to youth may help reduce their risk of STIs and unintended fertility. To better identify target groups and tailor counseling services to meet individual needs, detailed information—such as the quality of relationships between youth and their parents and whether they live in the same household[28,29]—may be useful. One important factor that likely determines the quality of family relationships is family structure history, including whether youth were raised in a single-parent household for their entire lives or experienced dissolution of their parents' union or the death of a parent, as well as the timing of union dissolution or parental death[30] and the presence of a stepparent.[31] Furthermore, in the Jamaican cultural context, visiting unions and matrilineal family structures[19] need to be considered when exploring the consequences of living in a single-parent household.

Finally, the positive associations found between adolescents' endorsement of traditional gender roles and their sexual behavior suggest that endorsement of male dominance compromises females' condom use and encourages males' sexual activity. In an effort to combat permissive attitudes toward male dominance, reproductive health organizations should continue to employ gender-specific educational programs about family life to address social norms related to gender roles in sexual relationships.[13]

Limitations

This study has several limitations. First, self-reports of sexual activity may have been inaccurate, particularly among males.[32] Because of the strong emphasis on masculinity and virility, they might have over-reported their activity and number of sexual partners. Therefore, the results for male respondents should be viewed cautiously. Second, because we restricted the sample to adolescents who neither were in a union nor had a child, this may have resulted in a nonrandom sample. Since having sexual relations usually precedes union formation,[33] excluded adolescents were likely at increased risk for sexual activity prior to forming their union. To address this issue, we conducted an auxiliary analysis that applied the same multivariate logistic regression models for those who were in a union or had a child and treated them as being sexually active and not using condoms or using them inconsistently. The coefficient estimates (not shown) were substantially similar to the results in Table 3, suggesting that any bias due to nonrandomness of the analytic sample was likely to be minimal. However, robustness of the results for having multiple sexual partners cannot be assessed from the data.

Conclusions

This study highlights some gender differences in sexual risk behaviors and their correlates, and provides insight into program planning needs, but it also suggests several avenues for future research. Although we investigated a wide range of determinants of sexual risk behaviors, we did not exhaust them. Other potential factors that should

be considered in future work include peer relationships,[34] quality of education[35] and community characteristics. In particular, the lack of associations between household wealth and sexual risk behaviors among females in our multivariate analysis might be explained by potential effects of a community's socioeconomic characteristics, such as concentrated poverty, structural inequality and collective efficacy.[36–38] For a more comprehensive assessment of adolescents' risks for STIs and for unintended and early pregnancy, future studies should also examine other risk behaviors, such as forced sexual intercourse, age difference between partners and participation in transactional sex.

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RESUMEN

Contexto: *A pesar de hallazgos de muestras que indican altos niveles de actividad sexual y conductas de riesgo en la juventud jamaiquina, pocos estudios basados en la población han examinado su prevalencia o correlaciones.*

Métodos: *Se analizó la prevalencia de tres conductas sexuales de riesgo entre adolescentes solteros que no tenían hijos usando datos representativos a nivel nacional de la Encuesta Jamaiquina de Salud Reproductiva 2008–2009. Los factores asociados con las conductas de riesgo se examinaron, separando los datos de adolescentes mujeres y hombres, utilizando análisis bivariado y regresión logística multivariada.*

Resultados: *En el año anterior a la encuesta, 32% de las mujeres y 54% de los hombres habían tenido relaciones sexuales; de ellos, 12% y 52% respectivamente, habían tenido más de una pareja sexual en el último año; y 49% y 46% habían usado condones de manera inconsistente o nunca los habían usado. El asistir a la escuela fue un factor de protección contra ser activas sexualmente para las mujeres, y contra tener múltiples parejas para los hombres. Las mujeres que estaban inscritas en un grado apropiado para su edad o mayor, tuvieron menores probabilidades de usar condones de manera inconsistente o nunca; y los hombres que estaban inscritos en un grado menor que el apropiado para su edad, tuvieron un menor riesgo de ser sexualmente activos. Los hombres en el tercil más bajo de riqueza tenían menor probabilidad que aquellos en el tercil más alto de haber sido sexualmente activos y de haber tenido múltiples parejas. La asistencia semanal a servicios religiosos fue un factor de protección contra las tres conductas de riesgo para ambos géneros, con excepción del uso inconsistente o nulo del condón en los hombres.*

Conclusiones: *Los programas de salud reproductiva futuros deben continuar dirigiendo acciones a los adolescentes en lugares diferentes a las escuelas e iglesias; y deben también abordar las variadas necesidades de mujeres y hombres.*

RÉSUMÉ

Contexte: *En dépit de hauts niveaux d'activité sexuelle et de comportements à risques parmi les jeunes de la Jamaïque, peu d'études en population générale en ont examiné la prévalence ou les corrélats.*

Méthodes: *La prévalence de trois comportements sexuels à risques a été évaluée d'après les données de l'enquête de santé génésique jamaïcaine de 2008–2009 sur un sous-échantillon d'adolescents de 15 à 19 ans qui n'étaient pas en union et n'avaient pas d'enfant. Les facteurs associés aux comportements à risques ont été examinés, de manière séparée pour les filles et les garçons, par analyse bivariée et régression logistique multivariée.*

Résultats: *Durant l'année précédant l'enquête, 32% des filles et 54% des garçons avaient eu des rapports sexuels; parmi eux, 12% et 52%, respectivement, avaient eu plusieurs partenaires au cours des 12 derniers mois et 49% et 46% avaient utilisé le*

préservatif de manière irrégulière ou pas du tout. La scolarité s'est révélée un facteur de protection contre l'activité sexuelle des filles et la multiplicité des partenaires chez les garçons. Les filles inscrites à un niveau approprié pour leur âge ou supérieur présentent un moindre risque d'utiliser le préservatif de manière irrégulière ou de ne pas l'utiliser du tout, tandis que les garçons inscrits à un niveau inférieur à celui approprié pour leur âge présentent un moindre risque d'activité sexuelle. Les garçons du tercile de richesse inférieur sont moins susceptibles que ceux du tercile supérieur d'avoir été sexuellement actifs et d'avoir eu plusieurs partenaires. La fréquentation hebdomadaire de services religieux représente un facteur de protection contre les trois comportements à risques pour les deux sexes, à l'exception de l'usage irrégulier ou du non usage du préservatif chez les garçons.

Conclusions: *Les programmes de santé génésique futurs doivent continuer à cibler les adolescents, dans des milieux autres que les écoles et les églises. Ils doivent aussi considérer les besoins distincts des filles et des garçons.*