

Reproductive Health Risk and Protective Factors Among Unmarried Youth in Ghana

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CONTEXT: In Ghana, as in many other Sub-Saharan African countries, the behaviors of the current cohort of adolescents will strongly influence the course of the HIV/AIDS epidemic. This study sought to identify factors associated with elevated risks of pregnancy and sexually transmitted infection among unmarried Ghanaian youth.

METHODS: A nationally representative sample of 3,739 unmarried 12–24-year-olds were surveyed. Various regression techniques were used to assess the effects of individual and contextual factors on sexual behavior and condom use.

RESULTS: Forty-one percent of female and 36% of male youth reported being sexually experienced. On average, sexually experienced youth had had fewer than two partners; only 4% of these females and 11% of males had had more than one sexual partner in the three months before the survey. Although Ghanaian youth are knowledgeable about condoms, only 24% of sexually experienced males and 20% of females reported consistent condom use with their current or most recent partner. A sizable number of contextual factors and attributes of youth themselves were associated with sexual behaviors, while individual characteristics were stronger predictors of condom use.

CONCLUSIONS: The findings provide further justification for interventions targeting key contextual factors that influence youth behaviors in addition to providing youth with necessary communication, negotiation and other life skills.

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Although the HIV/AIDS epidemic has had less impact in Ghana than in many other countries in Sub-Saharan Africa, available data indicate that HIV prevalence is increasing in the general population of Ghana, and the potential for much wider spread of the disease exists. The number of confirmed cases of AIDS rose from 42 in 1986 to 15,980 in 1995.¹ Estimates from a 1990 population-based seroprevalence survey conducted among 2,410 residents of four communities of southern Ghana indicated that nearly 2% of females and about 1% of males were infected with HIV type one or two.² A more recent report indicated prevalence of roughly 3% in the general population.³ A seroprevalence survey undertaken in 1997 among sex workers in Accra revealed that 73% were infected,⁴ indicating a substantial reservoir of infection that could make its way into the general population. As in most African countries, heterosexual transmission is the primary mode of spread of HIV in Ghana.⁵

Because adolescents tend to have multiple sexual partners (sequentially, if not concurrently), not use condoms consistently and be vulnerable to coercion, the behaviors of adolescents and young adults will play a crucial role in the course of the HIV epidemic in Ghana. Sexual risk-taking behaviors among Ghanaian youth and the extent to which these may be changing over time have been the focus of a substantial amount of research since the early 1990s.⁶ However, the available data provide limited information for devising effective AIDS prevention strategies targeted at Ghanaian adolescents. Much of the existing research has been directed to documenting young people's patterns of sexual and

contraceptive behaviors, knowledge of reproductive health risks and means of avoiding them, attitudes toward contraceptive and condom use, and access to contraceptives and reproductive health services. These factors are, however, only a small subset of those that influence adolescent risk-taking and health-seeking behaviors. A review of the literature has identified 13 clusters of factors at the individual, family, community and societal levels that are associated with risky behaviors or adverse reproductive health outcomes among U.S. adolescents; furthermore, the findings suggest that individually, these key antecedents tend to have only small or modest effects.⁷ Studies of more limited sets of antecedents have been conducted in Sub-Saharan Africa.⁸

This article describes the results of the most comprehensive assessment conducted to date of factors underlying sexual risk-taking among unmarried Ghanaian youth. Our focus is on eight categories of risk-related factors: demographic characteristics, household economic status, communication with and support from family members and friends concerning sex and contraception, community "connectedness," peer behaviors and influence, gender role perceptions, self-efficacy, and partner communication concerning reproductive health risks and contraception.

METHODS

Data

The data derive from a nationally representative survey of 5,632 youth 12–24 years of age conducted between April and July 1998 to provide baseline information for the design

of public-sector adolescent health interventions. A total of 3,739 men and women who reported never having been married (legally or consensually) are included in the analyses.

The country's 18,628 electoral unit areas were used as primary sampling units. Of these, 250 were chosen for the survey through a systematic random selection procedure with probability proportional to size; the number of persons aged 18 and older was used as the measure of size for sample selection purposes. All households in selected primary sampling units were listed, and a sample of households was chosen randomly at a fixed rate, yielding an average of 10 households per primary sampling unit. In each sample household, all 12–24-year-old residents were interviewed, and one adult (older than 24, usually the head of household) was chosen to complete a household questionnaire. Field-workers from the 1993 Ghana Demographic and Health Survey conducted the interviews, using a structured questionnaire. Respondents were interviewed by a field staff member of the same gender. Participation in the survey was voluntary, and parental consent was obtained for interviewing youth younger than 15.

Variables

We studied six behavioral or reproductive outcomes and their associations with eight categories of risk-related factors.

- **Outcomes.** The outcomes considered were whether respondents had ever had sex, their lifetime number of sexual partners, whether they had had more than one sexual partner in the three months prior to the survey, whether they had used condoms at first and at last sex, and their consistency of condom use with their last or current sexual partner.

- **Demographic characteristics.** We included demographic background factors both to identify characteristics that might be criteria for direct intervention (e.g., being out of school or from low-income families) and to provide control variables when considering the effects of other factors. The factors included were age, gender, highest level of education completed, current school attendance, religious affiliation, ethnicity, place of residence (city, large town, small town or village) and living arrangement (with both biological parents, with one parent or in another arrangement).

- **Household economic status.** Prior literature highlights the association of household or family economic status with a range of risky behaviors and adverse reproductive health outcomes.⁹ We included two indicators of household economic status: an index of nine household assets and the number of rooms in the household. The index measured whether the household had an in-home water tap, a finished floor, a flush toilet, electricity, a functioning radio, a functioning television, a functioning video deck and a functioning refrigerator, and whether any member of the household owned a motorcycle. The scale ranged from zero to nine, with a higher score indicating higher household economic status (Cronbach's $\alpha=0.79$).^{*} A larger number of rooms in the household was assumed to reflect greater wealth.

- **Communication with family members and friends.** Most

studies of U.S. adolescents have shown that communication with parents and other family members concerning sex and reproduction is protective against sexual risk-taking behaviors.¹⁰ However, some have found that such communications are a risk factor, and others have revealed no association with behaviors.¹¹ Far less research on this issue has been conducted in developing countries.¹² Parental influence on adolescent sexual risk-taking behaviors may be supplemented by the influence of young people's best friends.¹³

We used four indices to measure communication with family members (specifically, mother or female guardian, father or male guardian, aunt, uncle and sibling) regarding sexual issues; two of the indices also measured communication with a best friend. The first index assessed whether in the past year, respondents had talked with each specified family member and their best friend about avoiding or delaying sex; possible scores, indicating the number of affirmative responses, ranged from zero to six ($\alpha=0.86$). The second index used a three-point scale to measure respondents' perceptions of family members' and friends' approval of their avoiding or delaying sex (0=disapprove, 1=do not know, 2=approve); possible scores were 0–12 ($\alpha=0.95$). The third index indicated whether in the past year, respondents had talked with each family member about the use of modern contraceptives to avoid unintended pregnancy; scores ranged from zero to five ($\alpha=0.86$). The fourth index measured respondents' perceptions of each family member's approval of their using a modern contraceptive to avoid unintended pregnancy; scores ranged from zero to 10 ($\alpha=0.97$). For all indices, higher scores indicated greater communication.

- **Community connectedness.** Being "connected" with the community (as well as family and school) has beneficial effects across a range of health and social outcomes.¹⁴ We included whether respondents had moved more than once since age 10 and number of friends as indicators of community connectedness, the assumption being that youth who had moved often were relatively unlikely to feel socially connected to their community. We hypothesized that the more friends youth had, the greater their connection to the community.

- **Peer behaviors and influence.** Adolescents are susceptible to influence by peers, and reviews of the research indicate that peer behaviors can have both positive and negative influences.¹⁵ However, these reviews have yielded some surprising observations—for example, that normative youth behaviors tend to be more influential than the behaviors of either the "leading crowd" or close friends.¹⁶ Further research is needed to better understand the relative importance of peer behaviors vis-à-vis other determinants.

The survey included 12 questions measuring peer in-

^{*}Cronbach's alpha coefficient provides a measure of the consistency or reliability of a scale or index. It is defined as the square of the correlation between the scale or index and the included variables. Alpha values of 0.70 or higher are usually desirable for acceptable reliability. For further details, see: Nunnally J and Bernstein I, *Psychometric Theory*, third ed., New York: McGraw-Hill, 1994.

TABLE 1. Means, percentage distributions and percentages indicating selected contextual characteristics of unmarried Ghanaian youth, by type of characteristic, according to gender, 1998

Characteristic	Total (N=3,739)	Males (N=2,294)	Females (N=1,445)
DEMOGRAPHIC			
Mean			
Age (yrs.)	17.4	17.5	17.3
% distributions			
Age-group			
12–14	23.0	24.1	21.3
15–19	47.6	44.5	52.5
20–24	29.4	31.4	26.2
Education completed			
None	10.8	10.3	11.5
Primary	15.9	15.9	15.9
Middle	48.4	47.9	49.1
Secondary	23.4	24.2	22.0
Higher	1.7	1.7	1.5
Religion			
Catholic	22.1	22.1	21.9
Protestant	30.1	28.7	32.2
Charismatic	25.5	24.5	27.1
Muslim	14.7	16.2	12.4
None	2.4	3.1	1.3
Other	5.3	5.4	5.1
Ethnic group			
Akan	51.6	51.8	51.2
Ga adang	9.3	9.8	8.4
Ewe	17.5	16.0	19.9
Northern tribe	16.3	16.4	16.3
Dagomba/other	5.4	6.1	4.2
Residence			
City	11.8	11.9	11.6
Large town	9.9	9.9	9.8
Small town	26.4	26.0	26.9
Village	52.0	52.1	51.8
Living arrangement			
Both parents	50.4	52.9	46.5
Mother	19.3	17.5	22.1
Father	8.7	8.5	9.1
Other	21.6	21.1	22.4
Total	100.0	100.0	100.0
Percentage			
Attend school			
All	56.1	55.9	56.5
12–14 yrs.	83.4	81.9	86.0
15–19 yrs.	63.1	63.9	62.1
20–24 yrs.	23.5	24.7	21.1
HOUSEHOLD			
Percentages			
Have tap water in residence	22.6	23.1	21.7
Have finished floor	56.2	57.8	53.6
Have flush toilet	9.0	9.2	8.6
Have electricity	45.5	45.4	45.7
Have radio	64.1	65.6	61.6
Have television	31.2	31.1	31.2
Have video	9.4	9.0	9.9
Have refrigerator	20.3	19.3	21.8
Have motorcycle	8.2	8.1	8.4
Means			
Household assets index (range, 0–9)†	3.0	3.0	3.0
No. of rooms	3.7	3.7	3.7

†See text, page 15, for definition.

fluence. Exploratory factor analysis suggested that 10 of these reflected two distinct dimensions of peer influence, for which we created separate indices: One index measured whether respondents perceived that other youth of the same age had had sex; whether they perceived that their unmarried friends had ever had sex; whether they thought that pregnancy was common among teenage girls; whether they had unmarried female friends who had gotten pregnant; whether they perceived abortion to be common among teenage girls; and whether they thought that any of their friends had ever had an abortion. The scale ranged from zero to six, with higher scores indicating greater perceptions of sexual experience among peers ($\alpha=0.77$).

The second index relating to peer influence assessed whether respondents assigned importance to what friends thought of them; thought that friends would laugh at them for not having sex; assigned importance to what friends thought about youth who did not have sex; and thought that most youth of their age considered having sex acceptable. Possible scores were 0–4; higher scores indicated that respondents placed greater importance on what friends think ($\alpha=0.42$). (Questions about whether any of the respondents' siblings had been involved in a pregnancy before getting married were not correlated with the peer influence indices or with each other, and they were used as independent measures of peer influence in the analysis.)

• *Perceived gender roles.* A number of studies have reported a relationship between stereotypical, male-dominant gender role perceptions and risk-taking behaviors.¹⁷ Gender role perceptions are important in the Ghanaian context; research in many Sub-Saharan African settings has revealed substantial gender inequities in power within sexual relationships.¹⁸ A number of observers have called for priority to be given to influencing male attitudes and behaviors in adolescent health interventions in the region.¹⁹

Gender role perceptions were assessed through an index measuring whether respondents agreed with each of the following statements: Males and females should have equal rights; it is okay for boys to do household chores; in a relationship, a boy and a girl should have equal say in important decisions; boys should be asked to spend the same amount of time as girls in household chores; when a family's money is scarce, only boys should be sent to school; women should have the same opportunity as men to hold leadership positions in their town or village; it is okay for a boy to beat a girl to show who is in control; a boyfriend who does not beat his girlfriend does not love her; and a girlfriend should not expect her boyfriend to be faithful. Possible scores ranged from zero to nine ($\alpha=0.60$), with lower scores indicating gender-discriminating attitudes.

• *Self-efficacy.* Self-efficacy, which refers to one's confidence in being able to carry out a specific behavior (e.g., resist sexual advances, negotiate condom use with a partner), is associated with a number of health behaviors, including actions to prevent HIV transmission,²⁰ and is a key concept in Social Learning Theory.²¹ We constructed three indices measuring self-efficacy regarding sex and condom use, in

TABLE 2. Means and percentages measuring selected risk-related characteristics of unmarried Ghanaian youth, by type of characteristic, according to age-group and gender

Measure	Total		12–14		15–19		20–24	
	Males (N=2,294)	Females (N=1,445)	Males (N=553)	Females (N=308)	Males (N=1,021)	Females (N=758)	Males (N=720)	Females (N=739)
Communication with family members and friends								
Family members and friends approve of avoiding sex (range, 0–12)	8.5	9.0	8.0	8.5	8.5	9.1	9.0	9.2
Family members approve of using contraceptives (range, 0–10)	6.3	6.0	5.5	4.9	6.3	6.0	6.7	6.8
Communicate with family members and friends about avoiding sex (range, 0–6)	0.7	1.3	0.3	1.0	0.8	1.3	1.0	1.3
Communicate with family members about contraceptives (range, 0–5)	0.3	0.4	0.1	0.2	0.3	0.4	0.4	0.6
Peer behaviors and influence								
Perceive that friends are sexually experienced (range, 0–6)	2.1	2.5	1.1	1.7	2.1	2.5	2.8	3.1
Importance of friends' opinions (range, 0–4)	2.5	2.2	2.1	1.9	2.5	2.2	2.8	2.4
Brother was involved in a pregnancy before marriage (%)	10.5	18.8	5.1	14.0	10.9	16.6	14.1	27.2
Sister was pregnant before marriage (%)	11.5	17.8	8.9	10.7	11.4	16.6	13.6	25.9
Community connection								
Moved more than once since age 10 (%)	35.7	39.0	14.6	20.8	32.1	39.1	56.9	53.6
No. of friends	4.4	3.4	3.7	3.2	4.3	3.4	5.1	3.6
Gender role perceptions								
Egalitarian (range, 0–9)	5.8	6.2	5.7	6.1	5.8	6.2	6.0	6.3
Perceived self-efficacy								
In sexual relationships (range, 0–36)	24.6	26.3	24.3	27.0	25.0	26.5	24.4	25.3
In condom use (range, 0–36)	15.8	14.5	12.3	11.5	15.4	14.3	18.4	16.8
In partner communication (range, 0–8)	6.1	5.5	4.3	4.9	5.9	5.4	6.3	5.6
Communication with sexual partners								
Communicated with last partner about STI/ pregnancy (range, 0–4)	2.2	2.2	1.3	1.3	2.0	2.2	2.4	2.4

Notes: For definitions of measures and scales, see text, pages 15–18. All measures not specified as percentages are index means.

which higher scores indicated greater self-efficacy.

The self-efficacy in sexual relationships index included nine items. Six were based on answers to a question asking how confident respondents were that if they did not want to have intercourse, they would be able to refuse it with a person they had known for only a few days; they had known for three months; who offered them gifts; whom they cared about deeply; who paid for their school or training; and who had power over them (e.g., a teacher or an employer). The other three items pertained to how confident respondents were that they could have a sexual relationship with one person for six months, choose whom to have sex with and avoid sex if they wanted to. Responses for all nine questions were on a five-point Likert-type scale; choices, coded 0–4, were “definitely could not,” “probably could not,” “don’t know,” “probably could” and “definitely could.” Scores ranged from zero to 36 (alpha=0.88).

The second index measured condom use self-efficacy and included seven items: how confident respondents were that they could use a condom correctly, use a condom every time they had sex, use a condom after they had been drinking, insist on using a condom with a reluctant partner, refuse sex if a partner did not want to use a condom, get money to buy condoms any time and buy a condom from a store. The responses were five-point Likert-type items, and the

resulting scale ranged from zero to 36 (alpha=0.83).

The third index, measuring self-efficacy in partner communication, comprised two items: how confident respondents felt about convincing their last or current partner to use a condom and about asking that partner about other sexual partners. The response options were similar to those of the previous two indices, and the scale ranged from zero to eight (alpha=0.71).

• *Communication with sexual partners.* Partner communication, which in some ways is related to self-efficacy, pertains to the practice of discussing reproductive health risks—e.g., pregnancy and sexually transmitted infections (STIs)—and negotiating sex and contraceptive or condom use with sexual partners. In the United States, programs that have emphasized specific skills, such as partner communication or negotiation skills, have tended to be more effective than programs that stress general knowledge.²² However, although such skills are receiving increasing attention in sexuality education and life-skills training efforts in much of the world, relatively few studies have documented the impact of partner communication on sexual and contraceptive behaviors.

Partner communication was measured using a scale indicating whether respondents had ever talked with their last or current partner about avoiding or delaying sex, avoiding pregnancy, using condoms to avoid HIV/AIDS and using

TABLE 3. Percentage of unmarried youth who were sexually experienced and, among these, mean lifetime number of partners and percentage who had recently had multiple partners, by age-group and gender

Measure	Total		12–14		15–19		20–24	
	Male (N= 2,292)	Female (N= 1,441)	Male (N= 552)	Female (N= 306)	Male (N= 1,020)	Female (N= 756)	Male (N= 720)	Female (N= 379)
% sexually experienced	36.1	41.1	3.6	10.1	28.3	35.2	72.1	77.8
Mean no. of lifetime partners†	1.8	1.4	1.8	1.5	1.7	1.3	1.9	1.5
% who had >1 partner during last 3 mos.†	11.4	4.1	15.8	6.5	11.5	3.1	11.1	4.8

†Based on sexually experienced respondents.

condoms to avoid other STIs. The scale ranged from zero to four ($\alpha=0.83$).

Analyses

We conducted multivariate analyses, stratified by gender, to assess the net effects of each risk-related factor when the effects of all other factors were controlled statistically. Analyses were undertaken using the software package STATA and its robust variance estimation commands, adjusting for stratification and cluster survey design effects. Logistic regression was used to assess the predictors of the four binary outcomes (whether respondents had ever had sexual intercourse, had had more than one partner in the previous three months, had used a condom at first sex and had done so at last sex). Ordinary least-squares regression was used to determine the predictors of the lifetime number of partners. Consistency of condom use with the last or current partner was treated as an ordinal variable with three categories (never/once/twice, sometimes, always), and ordered logistic regression (i.e., cumulative odds analysis) was used to identify its predictors.²³

In view of the large number of independent variables, we examined correlation matrices of all risk-related factors to check for collinearity problems before running the multivariate models. We found little evidence of collinearity: Using a correlation coefficient of 0.3 as a cutoff point, we excluded from the analyses only religion, which was correlated with ethnicity.

Two limitations of the study should be noted. First, the study is based on self-reported behaviors, and the data are thus subject to reporting errors of unknown direction and magnitude. Second, because the data are cross-sectional, the direction of causal relationships between variables cannot always be determined. Further longitudinal panel studies are needed to disentangle causal relationships between certain variables.

RESULTS

Descriptive Data

On average, respondents were 17.4 years old (Table 1, page 16). Slightly more than half (56%), including the majority of those younger than 20, were currently attending school.

The majority identified themselves as Catholic, Protestant or charismatic. Roughly half were of Akan ethnicity, resided in rural villages and lived with both parents. The mean household assets index was three out of a maximum of nine.

The descriptive data on the risk-related factors (Table 2, page 17) suggest several patterns. First, although these youth generally perceived that they had family members' and their best friends' approval and support for avoiding sex and for using contraceptives when they were sexually active, the level of communication with family and friends on these topics was quite low. Communication with sexual partners also was limited.

Second, most youth knew someone of their age and gender who had had sex (not shown) and perceived that at least some of their friends were sexually experienced. Roughly one in 10 males and one in five females had a sibling who had been involved in a pregnancy before marriage; small, but nontrivial, proportions of youth had friends who had had an abortion (not shown).

Third, the importance of how youth are perceived in the eyes of their friends with regard to having had or not having had sex is evident in the data: Seventy percent of respondents assigned importance to what friends thought about not having sex (not shown), and overall scores on the scale for this measure were moderate.

Finally, respondents were on the whole fairly confident of their control within sexual relationships and in communicating with partners, and levels of self-efficacy did not differ significantly by gender. The level of self-efficacy with regard to negotiation of condom use was, however, somewhat lower.

Sexual Behavior

Some 36% of males and 41% of females reported ever having had sex; the proportion was higher among females than among males in each age-group (Table 3). The median age at first intercourse was 17 years for youth of both genders (not shown). Sexually initiated males reported an average of 1.8 lifetime partners, whereas females reported 1.4. Eleven percent of sexually experienced males and 4% of females reported having had more than one sexual partner during the three months prior to the survey.

Results of the multivariate analysis (Table 4) show that a sizable number of factors are significant independent predictors of each sexual behavior outcome. Among the demographic factors, older age was, not surprisingly, associated with a higher likelihood of having had sex and a higher lifetime number of partners for both males and females.

Increased educational attainment was associated with an elevated likelihood of being sexually experienced and with having had a greater number of partners, but the effects varied by gender: For females, having a primary education was the key factor, whereas for males, only having a higher education resulted in a significant association. Among males, the associations might indicate an effect of socioeconomic status: Prior research in Sub-Saharan Africa indicates that males' ability to provide financial support or

TABLE 4. Odds ratios and coefficients from regression analyses indicating the effects of selected measures on unmarried youths' sexual behavior

Measure	Ever had sex (OR)		Lifetime no. of partners (coeff.)		Had >1 partner in last 3 mos. (OR)	
	Male (N=1,821)	Female (N=1,113)	Male (N=672)	Female (N=495)	Male (N=685)	Female (N=497)
Demographic characteristics						
Age	1.42***	1.37***	0.03*	0.03*	0.95	1.00
Education completed						
None	ref	ref	ref	ref	ref	ref
Primary	1.28	2.68*	0.32	0.29*	1.07	3.72
>primary	1.85*	1.32	0.48**	0.12	4.07	4.81
Currently attending school	0.60***	0.41***	-0.21	-0.02	0.55	0.90
Ethnic group						
Akan	ref	ref	ref	ref	ref	ref
Ewe	1.42	1.51	0.11	0.02	3.63***	1.54
Northern tribe	0.84	1.43	0.01	0.10	1.39	2.08
Other†	0.96	1.37	-0.29	-0.17	0.69	6.03*
Residence						
City/large town	ref	ref	ref	ref	ref	ref
Small town	1.60	0.76	-0.20	-0.07	1.26	7.42*
Village	1.96*	1.26	-0.31	-0.07	0.51	4.62
Living arrangement						
Both parents	ref	ref	ref	ref	ref	ref
Single parent	0.85	1.38	-0.15	-0.04	0.55	0.47
Other	0.82	2.08***	-0.09	0.01	0.69	0.65
Household characteristics						
Household assets index	0.99	0.94	0.02	-0.02	0.89	1.07
No. of rooms in household	1.07**	0.97	0.00	0.02*	1.10**	1.17***
Communication with family members and friends						
Family members approve of avoiding sex	0.97	1.03	0.01	-0.02	0.94	0.96
Family members approve of using contraceptives	1.08*	1.02	0.05**	0.01	1.07	0.98
Communicate with family members about avoiding sex	0.87*	0.91	0.04	-0.01	0.85	0.84
Communicate with family members about contraceptives	1.25*	1.23*	0.01	-0.02	1.02	0.96
Peer behaviors and influence						
Perceive friends are sexually experienced	2.29***	3.05***	0.03	0.04	1.27	2.73*
Importance of friends' opinions	1.55***	1.01	0.09	0.03	1.18	0.90
Brother got someone pregnant before getting married	1.11	1.48	-0.20*	-0.01	1.18	0.72
Sister got pregnant before getting married	1.53*	1.40	0.27*	0.04	0.57	0.50
Community connection						
Moved more than once since age 10	1.43*	1.17	0.14	0.17***	1.76*	3.87*
No. of friends	1.10***	0.96	-0.01	0.00	1.04	0.91
Gender role perceptions						
Egalitarian index	1.00	1.12	-0.10	-0.04	0.79**	0.80
Perceived self-efficacy						
In sexual relationships	0.99	0.94***	-0.03*	-0.01*	0.98	0.89**
In condom use	na	na	0.00	0.00	0.97	1.10*
In partner communication	na	na	0.04	-0.02	1.06	0.99
Communication with sexual partners						
Communicated with last partner about STI/pregnancy	na	na	-0.09*	-0.06*	0.92	0.56**
Constant	na	na	1.58	1.34**	na	na
Log likelihood	-639.32	-432.96	na	na	-219.73	-68.05
Pseudo R ²	0.47	0.44	0.14‡	0.13‡	0.13	0.27

*p<.05. **p<.01. ***p<.001. †Includes Ga adang. ‡R². Notes: ref= reference group. na=not applicable.

inducements to female partners is an important factor in sexual relationships.²⁴ The explanation in the case of females is unclear, but it may include young women's need to obtain money to pay school fees.

In contrast, youth who were currently attending school were less likely than others to have ever had sex, and the effect was considerably larger for females than for males. This finding is also consistent with prior research on adolescents.²⁵

The only differences in sexual behavior by ethnicity are

that male Ewe youth and female youth in the "other" category had elevated odds of having had more than one partner in the previous three months. Residence in a rural setting was associated with an increased likelihood of being sexually initiated among males, and females residing in small towns were substantially more likely than their counterparts residing in cities or large towns to have had multiple recent partners. Female respondents living with neither parent were more likely than those living in two-parent

TABLE 5. Percentage of sexually experienced unmarried youth, by condom-use behaviors, according to age-group and gender

Behavior	Total		12–14		15–19		20–24	
	Male (N= 828)	Female (N= 592)	Male (N= 20)	Female (N= 31)	Male (N= 289)	Female (N= 266)	Male (N= 519)	Female (N= 295)
Used at first sex	17.6	26.5	0.0	6.5	14.9	24.4	19.8	30.5
Used at last sex	42.9	37.0	22.2	20.0	35.6	33.5	47.9	42.1
Condom use frequency†								
Never‡	26.0	30.6	55.6	48.4	34.5	33.9	20.3	25.9
Sometimes	49.8	49.6	27.8	41.9	46.8	46.7	52.2	52.9
Always	24.2	19.8	16.7	9.7	18.7	19.5	27.6	21.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

†Refers to use with current or most recent partner. ‡Includes those who said they had used condoms once or twice. Note: Ns shown represent number of all sexually experienced youth; Ns for individual cells may vary somewhat from the total.

households to be sexually experienced, but no other effects of living arrangements were observed.

No associations emerged between sexual behaviors and the household assets index. However, having more rooms in the household was a risk factor for being sexually experienced (males only), for having had multiple lifetime sexual partners (females only) and for having had multiple partners during the three months preceding the survey (both genders). Further investigation indicated that the number of rooms in the household, which may be a reflection of extended family structure, was only weakly correlated with the household assets index, a measure of socioeconomic status. Thus, these findings may have more to do with extended family structure than with socioeconomic status.

Communication with family members about avoiding sex was associated with a lower probability of ever having had sex among male youth. Interestingly, communication with family members regarding contraceptive use was associated with a higher likelihood of being sexually experienced among youth of both genders. One possible explanation for this result is that while Ghanaian families appear to encourage male youth to avoid early sexual initiation, they also encourage contraceptive use once adolescents begin having sex.

As in prior research, peer behaviors and influence emerged as strong predictors of sexual behavior. Youth who perceived that their friends were sexually active were more likely to be sexually experienced than were youth who thought that their friends had not yet initiated intercourse; the effect was larger for females than for males. Females who perceived that their friends were sexually experienced also had elevated odds of having had multiple partners in the past three months. Having a sister who had become pregnant premaritally was associated with an increased likelihood of being sexually initiated and with a greater number of lifetime sexual partners among males. Importance of friends' opinions was associated only with the likelihood of having initiated intercourse and only among males. By contrast, U.S. evidence suggests that females are more sus-

ceptible to peer influences than males.²⁶

Both indicators of community connectedness were associated with sexual behaviors. Youth who had moved more than once since age 10 were at risk for all three sexual behavior outcomes, although not all associations were significant for both genders. These findings may indicate that transient youth in Ghana use sex as a means of establishing themselves socially in new communities. Males' likelihood of being sexually experienced increased as their reported number of friends rose, perhaps reflecting effects of larger social networks for male Ghanaian youth.

Egalitarian gender role perceptions were largely non-predictive of sexual behaviors. The exception was that males with more egalitarian attitudes were less likely to have had multiple recent sexual partners than male youth with less-egalitarian outlooks.

Consistent with prior literature, higher perceived self-efficacy in sexual relationships was a protective factor with respect to all three behavioral outcomes among females. However, self-efficacy with respect to condom use was a risk factor for having recently had multiple partners, possibly suggesting that control over whether to have sex is an entirely different matter than control over using a condom. Likewise, self-efficacy in partner communication was not independently associated with sexual behavior. Perhaps any effects of this factor are subsumed by the more general self-efficacy in sexual relationships index or by actual communication with the last partner regarding pregnancy or STIs, which is associated with both fewer lifetime and fewer recent partners.

Condom Use

Only a minority of sexually experienced respondents reported having used a condom during their first sexual encounter—18% of males and 27% of females (Table 5). While reported levels of condom use at last sex were higher (43% and 37%, respectively), condoms do not appear to be used consistently: Only 24% of males and 20% of females reported that they always used a condom with their last or current sexual partner.

Results of the multivariate analyses of factors associated with condom use (Table 6) reveal multiple influences, although background and contextual factors have less-marked effects than they did on sexual activity. Among the demographic and household socioeconomic factors, only two were associated with one or more condom use behaviors: For males, increasing age was predictive of a higher likelihood of both condom use at first sex and consistent use with the last partner. For females, having a higher education was associated with substantially elevated odds of use at first sexual encounter.

Communication with family members concerning sex and contraception was weakly associated with condom use. Family members' approval of avoiding sex was associated with an elevated likelihood of using a condom during first sex for females, while communication about avoiding sex was associated with an elevated likelihood of consistent

TABLE 6. Odds ratios from regression analyses indicating the effects of selected measures on unmarried youths' condom use

Measure	Use during first sex		Use during last sex		Consistent use with last partner†	
	Male (N=689)	Female (N=499)	Male (N=645)	Female (N=474)	Male (N=678)	Female (N=495)
Demographic characteristics						
Age	1.11*	1.05	1.02	1.05	1.08*	1.01
Education completed						
None	ref	ref	ref	ref	ref	ref
Primary	1.82	1.92	0.55	0.69	1.17	0.51
>primary	2.61	4.20*	0.73	1.34	0.85	1.10
Currently attending school	1.03	0.69	0.80	0.86	1.11	0.66
Ethnic group						
Akan	ref	ref	ref	ref	ref	ref
Ewe	1.11	0.97	0.82	1.66	1.00	1.21
Northern tribe	1.68	0.83	1.48	0.91	1.06	0.83
Other‡	0.51	1.07	0.99	0.99	1.18	0.75
Residence						
City/large town	ref	ref	ref	ref	ref	ref
Small town	1.49	1.03	1.53	0.90	1.24	1.29
Village	1.29	0.93	0.65	0.81	0.57	0.88
Living arrangement						
Both parents	ref	ref	ref	ref	ref	ref
Single parent	1.39	1.09	1.15	1.21	1.45	1.08
Other	1.15	0.55	1.08	1.38	1.21	0.94
Household characteristics						
Household assets index	1.06	0.99	1.02	0.92	1.05	1.00
No. of rooms in household	0.96	1.03	0.94	1.02	1.00	1.00
Communication with family members and friends						
Family members approve of avoiding sex	0.99	1.14*	1.05	0.91	0.95	0.99
Family members approve of using contraceptives	1.03	1.02	1.03	1.00	0.97	0.99
Communicate with family members about avoiding sex	1.00	1.03	1.20	1.09	1.27**	1.03
Communicate with family members about contraceptives	0.87**	0.98	0.93	1.00	1.05	0.93
Peer behaviors and influence						
Perceive friends are sexually experienced	0.77	0.97	0.81	0.99	1.04	0.92
Importance of friends' opinions	0.97	0.84	0.87	0.96	0.83	0.92
Brother got someone pregnant before getting married	1.79	1.28	0.99	0.93	0.92	0.92
Sister got pregnant before getting married	0.89	1.22	0.84	1.14	0.77	1.36
Community connection						
Moved more than once since age 10	0.87	1.36	1.04	1.38	0.88	1.41
No. of friends	1.00	0.99	1.02	1.00	1.02	0.98
Gender role perceptions						
Egalitarian index	1.19*	1.16	1.27**	1.05	1.14*	1.22**
Perceived self-efficacy						
In sexual relationships	0.97	0.97	0.98	0.98	0.97*	0.99
In condom use	1.10***	1.02	1.13***	1.07***	1.16***	1.12***
In partner communication	0.95	1.08	1.15**	1.25***	1.21***	1.21***
Communication with sexual partners						
Communicated with last partner about STI/pregnancy	1.37**	1.32**	1.60***	1.63***	1.56***	1.65***
Log likelihood	-262.87	-251.21	-324.83	-248.43	-555.01	-416.21
Pseudo R ²	0.16	0.13	0.26	0.21	0.24	0.20

*p<.05. **p<.01. ***p<.001. †Common odds ratio between never vs. sometimes and sometimes vs. always. ‡Includes Gaadang. Note: ref=reference group.

condom use with the last partner among males. However, communication about contraceptive use was associated with a reduced likelihood of condom use at first sex among males, a finding for which no explanation suggests itself.

In contrast to sexual activity, condom use was not associated with peer behaviors or community connectedness. A higher score on the egalitarian index, however, had protective effects on all three measures of condom use among males and on consistent condom use among females.

Perceived self-efficacy in sexual relationships was not

strongly associated with condom use. However, increasing levels of self-efficacy with regard to condom use and partner communication were strongly associated with condom use during last sex and with consistent use among youth of both genders; greater levels of self-efficacy in condom use also predicted an increased likelihood of condom use at first sex among males. Actual communication with the last partner concerning pregnancy and STI risk was strongly protective on all three condom use indicators for youth of both genders.

DISCUSSION

Our findings suggest that the sexual and contraceptive behaviors of Ghanaian youth are influenced in important ways by myriad factors operating at the individual, family, community and societal levels. We found significant associations with sexual risk-taking for at least one factor in each of the eight categories of risk-related factors we considered. Contextual factors (school attendance, peer behaviors, community connections) appear to have a stronger influence on initiation of sex and, to a lesser extent, numbers of partners than on condom use. Condom use appears to be more strongly influenced by young people's personal characteristics, such as gender role perceptions, condom use self-efficacy, and communication with partners concerning pregnancy and STI risks.

The findings are largely supportive of many adolescent reproductive health intervention strategies that have been and are being used in Sub-Saharan Africa and elsewhere in terms of the risk-related or protective factors targeted. For example, many life-skills education programs emphasize specific skills or behaviors, such as negotiation skills and assertiveness, as means of promoting self-efficacy within sexual relationships. Our findings provide further confirmation of the theoretical basis for such interventions, particularly with regard to condom use.

As in many prior studies, including two in Ghana,²⁷ some of the strongest predictors of sexual behaviors were social normative factors and the behaviors of peers. We cannot determine from the cross-sectional data available for this study whether Ghanaian youth are influenced by other youth or self-select into networks of youth who engage in certain behaviors; nevertheless, the findings lend strong support for adolescent reproductive health programs' including a peer component, in which youth provide information or advice, serve as positive role models or model change with regard to risky behaviors.

The findings on self-efficacy are also noteworthy. We had anticipated that self-efficacy would influence protective behaviors, and the analyses confirmed this association; but we were surprised to see that the effects were similar among male and female adolescents. In Zambia, by contrast, we found self-efficacy to be strongly associated with sexual behavior and condom use only among males.²⁸ The most plausible explanation for the findings from Zambia is that power differences in relationships that favor males there intervene in the relationship between perceived self-efficacy and behaviors. If this interpretation is accurate, our findings might indicate that gender differences in power within sexual relationships are weaker in Ghana than in Zambia. The observation of similar gender role perceptions among male and female Ghanaian youth supports this interpretation.

Our results regarding family influences were not anticipated. A number of prior studies, including a recent one in Cameroon,²⁹ have shown that living with both parents was protective against initiating sexual risk-taking behaviors. However, our study, along with recent research in Zambia,³⁰ failed to produce evidence of strong effects of living arrangement on sexual and contraceptive behavior. One possible

explanation is that in the Sub-Saharan African context, where extended families and "fostering" are common, family members other than biological parents play the greatest role in supervision and mentoring in matters related to sexual relations and contraception.³¹

Communication with parents and family members about avoiding sex and contraception had only nominal effects among the youth in our sample. This result is not entirely unexpected, as previous research has not made clear whether communication specifically concerning sex and contraception or more general communication (e.g., concerning norms, values, goals and aspirations) is more important. Furthermore, family communication may be merely a manifestation of a higher level of family connectedness, which has a demonstrated protective effect across a range of health and social outcomes among youth.³² More research is needed to better delineate the roles that families play in influencing sexual and contraceptive behaviors among youth in Ghana, and elsewhere in Sub-Saharan Africa, where traditional family structures have come under considerable pressure associated with economic development. Further research also should assess how emerging family structures and child mentoring relationships might be more effectively used in connection with adolescent pregnancy and STI prevention strategies.

More in-depth research is needed in Ghana and other Sub-Saharan African countries to deepen our understanding of the relative importance of the plethora of factors that appear to influence adolescent risk-taking. Given a multitude of antecedents of risk-taking behaviors, it is not likely that a "magic bullet" will be found to substantially change adolescent behaviors;³³ nevertheless, additional research is likely to provide valuable information for programs to use in designing effective interventions.

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RESUMEN

Contexto: En Ghana, al igual que en muchos otros países del África Subsahariana, la conducta de la actual generación de adolescentes tendrá una gran influencia en la propagación de la epidemia del VIH-SIDA. Este estudio procuró identificar los factores relacionados con los elevados riesgos de embarazo y de infecciones transmitidas sexualmente entre los jóvenes no casados de ese país.

Métodos: Se realizó una encuesta a nivel nacional con una muestra de 3.739 jóvenes no casados de 12–24 años de edad. Se utilizaron varias técnicas de análisis de regresión para evaluar los efectos de los factores individuales y de contexto con respecto a las conductas sexuales y el uso del condón.

Resultados: El 41% de las mujeres y el 36% de los hombres indicaron que tenían experiencia sexual. En promedio, los que tenían experiencia sexual habían tenido relaciones con menos de dos parejas; solamente el 4% de estas mujeres y el 11% de dichos hombres habían tenido más de una pareja sexual durante los tres meses previos a la encuesta. Si bien los jóvenes de Ghana tienen conocimiento del condón, solamente el 24% de los hombres con experiencia sexual y el 20% de las mujeres con experiencia indicaron que habían utilizado el condón en cada acto sexual con su pareja actual o con su pareja más reciente. Un importante número de factores de contexto y de atributos de los propios jóvenes estuvieron relacionados con la conducta sexual, en tanto que las características individuales resultaron sólidas variables predictivas del uso del condón.

Conclusiones: Los resultados indican que se justifica centrar la atención en actividades dirigidas a intervenir en factores de contexto claves que influyen en la conducta de los jóvenes, además de ofrecerles entrenamiento en las áreas de comunicación, negociación y las herramientas necesarias para la vida.

RÉSUMÉ

Contexte: Au Ghana, comme dans de nombreux autres pays

d'Afrique subsaharienne, les comportements de la cohorte d'adolescents d'aujourd'hui influenceront largement le cours de l'épidémie du VIH/SIDA. Cette étude cherche à identifier les facteurs associés aux risques élevés de grossesse et d'infection sexuellement transmissible chez les jeunes Ghanéens célibataires.

Méthodes: Un échantillon nationalement représentatif de 3.739 célibataires de 12 à 24 ans a été soumis à l'enquête. Les effets des facteurs individuels et contextuels sur le comportement sexuel et l'usage du préservatif ont été évalués par différentes techniques de régression.

Résultats: Quarante et un pour cent des jeunes femmes et 36% des jeunes hommes ont déclaré être sexuellement expérimentés. En moyenne, ces jeunes avaient eu moins de deux partenaires; 4% seulement des filles et 11% des garçons avaient eu plus d'un(e) partenaire sexuel(le) durant les trois mois précédant l'enquête. Malgré la connaissance qu'ont les jeunes Ghanéens du préservatif, 24% seulement des garçons sexuellement expérimentés et 20% des filles ont déclaré un usage régulier de la méthode avec leur partenaire actuel(le) ou le (la) plus récent(e). Un nombre considérable de facteurs contextuels et attributs des jeunes eux-mêmes a été associé aux comportements sexuels, tandis que les caractéristiques individuelles se révélaient de plus forts prédicteurs d'usage du préservatif.

Conclusions: Les conclusions de l'étude renforcent la justification d'interventions ciblées sur les facteurs contextuels clés d'influence des comportements des jeunes, en plus de l'apport aux jeunes des compétences nécessaires de communication, négociation et autres aspects de savoir-être.

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