JOURNAL OF ADOLESCENT HEALTH 1999;24:63–72

INTERNATIONAL ARTICLE

Determinants of Condom Use to Prevent HIV Infection Among Youth in Ghana

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Purpose: **To identify the psychosocial and behavioral factors that influence condom use to reduce the risk of human immunodeficiency virus (HIV) infection among young men in Ghana.**

Methods: **This study used a cross-sectional design in which data on a community-based sample of 601 young men, 15–24 years of age, were collected by a household survey instrument. For a conceptual framework, the study used constructs from the Health Belief Model (HBM) and Social Learning Theory (SLT) in the Ghanaian context.**

Results: **While 65% of the sexually active male respondents had used condoms at least once, only 25% had used condoms at last intercourse. Findings from multiple logistic regression analysis indicate that perceived susceptibility to HIV infection, perceived self-efficacy to use condoms, perceived barriers to condom use, and perceived social support were significant predictors of condom use. The most important finding, however, is that perceived barriers significantly interacted with perceived susceptibility and self-efficacy. Subjects who perceived a high level of susceptibility to HIV infection and a low level of barriers to condom use were almost six times as likely to have used condoms at last intercourse, compared to others. Similarly, young men who perceived a high level of self-efficacy to use condoms and a low level of barriers to condom use were nearly three times more likely to have used condoms at last intercourse when compared to others.**

Conclusion: **These results suggest that HIV prevention programs for youth should emphasize personal vulnerability to acquired immunodeficiency syndrome, instill in youth the self-belief that they can use condoms any time, and address how to overcome barriers to condom use. ©** ***Society for Adolescent Medicine, 1998***

KEY WORDS:
HIV
AIDS
Young men
Condom use
Ghana

Recent data indicate that acquired immunodeficiency syndrome (AIDS) is a growing public health problem in Ghana. By June 1995, a total of 15,980 confirmed cases of AIDS had been reported in Ghana (1). In 1986, the year the first AIDS case was identified, there were only 42 cases in the country (2). By the beginning of 1991, the number of new cases had increased to 2148, and by 1993 over 5000 new cases had been recorded (1,3). These data indicate that not only the disease, but also the rate of infection has been rising dramatically over the past 8 years. Although AIDS cases have been identified in all age groups, the age group most afflicted is 20–39 years, constituting 70% of the total number of cases (3), most of whom are likely to have contracted the human immunodeficiency virus (HIV) in adolescence.

By far, the most frequent means of transmission of HIV in Ghana is heterosexual contact (4). It is estimated that 70–80% of all those infected with HIV in Africa contracted it through sexual intercourse with an infected person (5). For sexually active adolescents, consistent use of condoms during sexual intercourse is the most effective behavioral measure to prevent HIV infection. Although 82% of young peo-

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Manuscript accepted 27 December 1997.

Published by Elsevier Science Inc., 655 Avenue of the Americas, New York, NY 10010
1054-139X/99/$–see front matter
PII S1054-139X(98)00062-7

ple aged 15–30 years in Ghana are sexually active (6), the prevalence of condom use in this age group is only 15% (7).

The identification of the determinants of adolescents condom use is important in developing effective HIV preventive interventions (8). Despite findings from studies in developed countries indicating associations between psychosocial factors, adolescent risk and problem behaviors, and condom use, there have been no studies in Ghana and few in Africa that have examined these relationships. The few studies in Africa mainly address AIDS knowledge and condom access. For the Ghanaian AIDS prevention programs to be successful, it is important to identify psychosocial factors that motivate condom use. This study addresses psychosocial and behavioral factors that influence condom use among young Ghanaian males.

Studies have demonstrated that AIDS knowledge is associated with condom use. Low level of knowledge about the transmission and prevention of AIDS among adolescents was a predictor of nonuse of condoms (9–11). However, many studies have indicated that despite the increasing levels of AIDS knowledge, adolescents do not use condoms consistently (12–15).

Researchers have also identified several perceptions as important determinants of condom use among adolescents. These include perceived susceptibility to AIDS, perceived benefits and barriers of condom use, perceived self-efficacy to use or have a partner use a condom, and perceived social support for condom use. Perceived susceptibility to AIDS has been found to be significantly related to intention to use condoms among adolescents (16,17). In addition, some studies have demonstrated that the belief by adolescents that condoms effectively prevent HIV transmission was predictive of consistent condom use (18–21). Other studies have shown that barriers to condom use (barriers that reflect physical, emotional, or accessibility concerns with condom use) were strongly predictive of lack of condom use (19,22). Studies in Zimbabwe (21), South Africa (23), Kenya (24), and Nigeria (25) reported that the main reasons cited by adolescents for nonuse of condoms included difficulty in obtaining them, lack of sexual pleasure, and prohibitive price. Greater self-confidence in the use of condoms and insistence on condom use predicted condom use (26,27). Furthermore, recent studies have demonstrated that adolescents who perceived peer norms as supporting condom use were more likely to report consistent condom use (20,28,29). Additional studies have evaluated adolescent risk and problem behaviors and have shown that those with multiple partners, and those who used tobacco, alcohol, and illicit drugs most often were least likely to use condoms (9,28). Age has also been found to be associated with condom use; in general, older teenagers had more sex partners, had intercourse more frequently, and used condoms less consistently than younger teenagers (28,29).

A combination of two theories—the Health Belief Model (HBM) and Social Learning Theory (SLT)—informs the conceptual framework for this study (Figure 1). The model attempts to predict who among the sexually active young men of Ghana are likely to use condoms to prevent HIV infection. HBM is composed of four dimensions of health beliefs, each expected to relate to health behavior: (a) perceived susceptibility to the disease, (b) perceived severity of the disease, (c) perceived benefits of the behavior change, and (d) perceived barriers to the behavior change (30). According to the HBM, individuals would be more likely to adopt health behaviors if they perceived themselves to be susceptible to illness, and if they thought that the consequences of infection were serious, that an effective solution existed, and that they could surmount barriers entailed in adopting the effective behavior (21). HBM has been widely used to predict a wide range of health behaviors (31,32). Self-efficacy is the most important prerequisite for behavior change in Bandura's SLT (27). Self-efficacy, which refers to one's confidence to carry out a specific behavior, has been found to be related to a number of health behaviors, including behaviors to prevent HIV transmission (17).

Methods

Subjects

An adaptation of the World Health Organization's (WHO's) simplified cluster sampling methodology (33) was used to enroll 601 sexually active young men, aged 15–24 years, in the study. First, a list of the 66 enumeration areas (EAs) that comprise the Yilo-Krobo district, a predominantly rural area, was obtained from the Ghana Statistical Service. The enumeration areas constituted the primary sampling units (PSUs), each PSU comprising one, two, or three adjoining villages or a part of a town. Second, 31 EAs were systematically selected with probability proportional to size (where size is the number of households after a random start generated by a calculator).

In each selected EA, the interviewer went to some centrally located landmark (e.g., church, school, marketplace, chief or village head's residence) and randomly selected a direction by throwing a pen or pencil in the air and seeing how it landed. The interviewer then picked out a household in that direction as the starting household. All eligible respondents in this household, ascertained with a screening questionnaire, were interviewed. Eligibility requirements included male gender, being between 15 and 24 years of age, and responding "yes" to the question, "Have you ever had sex?" Selection and interviewing of respondents continued to the next nearest household until a total of 19 individuals were obtained in each EA. In a few instances, a little over 19 respondents per EA were interviewed. This was in keeping with the WHO recommendation of interviewing all eligible subjects in the last household even if it means including more than the required minimum number. Nineteen subjects were interviewed in 24 EAs, 20 subjects in 2 EAs, 22 subjects in one EA, 23 subjects in one EA, and 18 subjects one EA, respectively.

Procedures

The questionnaire was administered by trained local interviewers in Krobo, the vernacular of the area. No individual refused participation.

Measures

There were two dependent variables in this study: (a) lifetime condom use, and (b) condom use at last sexual intercourse. Lifetime use of condom, as a dichotomous variable, was derived from respondents' response to the question, "Have you ever used a condom?" with "yes" or "no" response options. Similarly, condom use at last intercourse was derived from respondents' response to the question, "The last time you had sexual intercourse, did you use a condom?" with "yes" or "no" response options. The independent variables measured in this study included age, education, marital status, AIDS knowledge, psychosocial factors such as susceptibility to AIDS, benefits from condom use, barriers to condom use, self-efficacy to use condom, social support to use condom, and risk and problem behaviors (e.g., drinking, partying). Scales were created for the AIDS knowledge, psychosocial, and risk-taking variables by summing up all items to derive a scale score. Internal consistency reliability coefficients (Cronbach's alpha), ranges of scores, and means were computed for each scale.

AIDS knowledge variables. Items adapted from a WHO Knowledge Attitude Behavior and Practice (KABP) questionnaire used in Ghana in 1991 (7), and a Ghana Demographic and Health Survey (GDHS) instrument (34) assessed the overall knowledge on AIDS. Some of the eight items used were whether a healthy carrier can transmit HIV to others and whether one can get AIDS by touching the body of an AIDS patient. Response options were "yes" or "no." The total AIDS knowledge score was computed from the correct responses to the knowledge questions; scores for the scale ranged from 0 to 16, with higher scores indicating higher AIDS knowledge. Cronbach's alpha for the AIDS knowledge scale was .68.

Perceived susceptibility to AIDS variables. Four questions adapted from the WHO AIDS KABP questionnaire (7) and an instrument used in a study by Petosa and Wessinger (35) assessed perceived susceptibility to HIV infection. Examples included whether one is worried that one might get AIDS, and whether one could get AIDS by having sex with someone without using a condom. The response options were "yes" or "no." The perceived susceptibility scale, reflecting fear and worry of contracting AIDS, had scores that ranged from 4 to 8; higher scores indicated higher perceived susceptibility to HIV infection. Cronbach's alpha for the Perceived Susceptibility to AIDS scale was .65.

Perceived benefits from condom use variables. Perceived benefits from condom use variables included statements such as "condoms are effective in protecting against AIDS," "Condoms are effective against sexually transmitted diseases (STDs)," "Condoms are effective in preventing unwanted pregnancy and in spacing births," and "Condoms are effective in preventing AIDS, STDs, and unwanted pregnancy." The four statements comprising this scale were endorsed with a 4-point Likert-type scale ranging from "strongly agree" to "strongly disagree." The items comprising the scale were adapted from questionnaires used in the WHO AIDS KABP survey (7). The benefit scale ranged from 5 to 20, with 20 reflecting the greatest perceived benefits from condom use. The Cronbach's alpha coefficient for this scale was .87.

Perceived barriers to condom use variables. Perceived barriers to condom use were assessed by seven items

adapted from instruments used in the WHO AIDS KABP survey (7) and a study by DiClemente et al. (19). The items included the statements, "Condoms reduce sexual pleasure," "Condoms are unreliable because they can break," and "The price of condom is too high to use regularly," with a 4-point Likert-type response scale ranging from "strongly agree" to "strongly disagree." The barrier measure had a Cronbach's alpha of .74 and a range of 7–28. Higher scores indicated greater perceived barriers.

Perceived self-efficacy to use condom variables. The four perceived self-efficacy variables were adapted from a scale developed by Basen-Engquist and Parcel (20) and included confidence to use condoms every time and confidence to stop in order to put on a condom during hectic foreplay and before sexual intercourse. These statements were endorsed by subjects with Likert-type responses ranging from "very sure" to "very unsure." The Self-efficacy scale has a Cronbach's alpha of .73, with scores ranging from 4 to 16. Higher scores reflected higher perceived self-efficacy to use condoms.

Perceived social support to use condom variables. Six variables measured perceived social support for condom use. The item included the statements, "My friends think condoms should be used during sex," and "my girlfriend [partner] thinks condoms should be used during sex." These statements were endorsed with a 4-point Likert-type response scale ranging from "strongly agree" to "strongly disagree." These variables derived from the instrument used in a study to determine psychosocial predictors of condom use among Zimbabwean adolescents (21). The range for the social support measure was 6–24, with 24 indicating the highest perceived social support. Cronbach's alpha for the scale was .82.

Risk and problem behavior variables. Risk and problem behaviors assessed included such variables as age at first experience with sex and number of different sexual partners in last 3 months and last year. In addition, four variables on substance use (beer, gin/akpeteshi [locally brewed alcoholic beverage], cigarettes), and attendance at social events (parties) were measured. These questions were answered with a 4-point Likert-type response scale ranging from "often" to "never." The variables that measured risk and problem behaviors were adapted from a questionnaire used in a survey in Kenya by Kiragu (36) and also from a scale developed by the National Survey of Adolescent Males (NSAM) and used by Ku et al. (28). Cronbach's alpha for the scale was inadequate (.43). Therefore, individual items rather than a scale score were used in further statistical analyses.

Table 1. Demographic and Behavioral Characteristics of the Sample

Variable	*n*	%
Age (yr)		
Mean	20.8	
SD	2.7	
Marital status		
Married	127	21.1
Not married	474	78.9
Education		
None	51	8.5
Elementary	287	47.8
Secondary or above	263	43.8
Ever used condom	390	64.9
Frequency of condom use		
Always	81	20.8
Most of the time	61	15.6
Sometimes	161	41.3
Not very often	87	22.3
Used condom at last intercourse	149	24.8

Data Analysis

Descriptive univariate analyses were performed to inspect the frequency distributions of the various factors. Bivariate analysis was employed to examine the associations of individual factors with condom use. Student's *t* tests were used to assess the differences in means of continuous variables. The chi-square statistic with its corresponding probability level, odds ratio (OR), and 95% confidence interval (CI) were computed to examine the magnitude and significance of the bivariate associations between pairs of dichotomous variables. Factors identified as significantly associated with condom use in the bivariate analysis were entered into a multivariate logistic regression analysis to assess the independent contribution of each factor in predicting condom use.

Results

The demographic and behavioral characteristics of the sample are described in Table 1. Respondents ranged in age from 15 to 24 years, with a mean age of 20.8 years [standard deviation (SD) ± 2.7]. Most of the respondents were educated, with 47.8% and 43.8% receiving elementary, and secondary and higher education, respectively. Twenty-one percent of respondents were married.

Table 2. Bivariate Relationships of Demographic and Risk and Problem Behavior Variables (Categorical Variables) and Condom Use

	Condom Ever Used (Total n = 601)					Used Condoms at Last Sex (Total n = 390)				
Variable	(%)	% Reporting Ever Used Condom	OR	95% CI	p Value	(%)	% Reporting Used Condom at Last Sex	OR	95% CI	p Value
Age (yr)										
15–19	32.11	52.85	2.4	1.50–3.05	0.000	26.15	37.25	1.06	0.66–1.68	0.818
20–24	67.89	70.59				73.85	38.54			
Marital status										
Married	21.13	74.80	1.80	1.16–2.80	0.008	24.36	41.05	1.17	0.73–1.88	0.511
Not married	78.87	62.24				75.64	37.29			
Respondent's education										
Secondary and above	43.76	65.78	1.00	Ref. group		44.36	44.51	1.62	1.07–2.44	0.022
Elementary school	47.75	64.11	0.93	0.65–1.32	0.682	47.75	33.18			
None	8.89	64.71	0.95	0.52–1.25	0.883					
No. of partners in last 3 mo	(n = 509)					(n = 341)				
1	63.35	66.57	0.96	0.65–1.41	0.835	63.34	38.89	1.40	0.88–2.24	0.154
2	36.35	67.57				36.66	31.20			
No. of partners in the year	(n = 568)					(n = 374)				
1	38.28	63.59	0.86	0.60–1.21	0.746	36.90	47.10	1.95	1.23–3.01	0.002
≥2	61.80	67.24				63.10	31.36			
How often do you drink beer?										
Rarely–never	42.10	60.47	0.72	0.51–1.01	0.053	39.23	36.60	0.89	0.59–1.36	0.600
Often–sometimes	57.90	68.10				60.77	39.24			
How often do you drink gin?										
Rarely–never	43.09	64.48	0.97	0.69–1.36	0.854	42.82	45.51	1.72	1.14–2.60	0.010
Often–sometimes	56.91	65.20				57.18	32.74			
How often do you smoke cigarettes?										
Rarely–never	90.85	64.48	0.97	0.54–1.74	0.927	90.77	38.98	1.45	0.69–3.05	0.321
Often–sometimes	9.15	65.45				9.23	30.56			
How often do you go to parties?										
Rarely–never	75.04	62.75	0.68	0.45–1.01	0.056	72.56	37.46	0.89	0.57–1.41	0.620
Often–sometimes	24.96	71.33				27.44	40.19			

Sixty-five percent of the sample have used condoms at least once since becoming sexually active. A quarter had used condoms at last sexual intercourse. Frequency of condom use was low; only 21% reported always using condoms during sexual intercourse. Of those who used condoms at last intercourse, 63% and 21% had done so with regular and casual partners, respectively.

In bivariate analyses, a number of the independent variables were individually significantly associated with ever-use of condom or condom use at last intercourse (Tables 2 and 3). The variables that were associated with ever having used condom were: (a) respondent's age, (b) respondent's marital status, (c) AIDS knowledge, (d) perceived susceptibility to HIV infection, (e) perceived barriers to condom use, (f) perceived self-efficacy to use condoms, (g) perceived social support to use condoms, and (h) age at first sex. The variables that were associated with condom use at last intercourse included: (a) respondent's education, (b) perceived susceptibility to HIV infection, (c) perceived barriers to condom use, (d) perceived self-efficacy to use condoms, (e) perceived social support to use condoms, (f) age at first sex, (g) number of sexual partners in the past year, and (h) consumption of gin or akpeteshi.

These variables were entered into a multiple logistic model in a forward stepwise fashion to identify the independent contribution of each variable while adjusting for the simultaneous effects of other variables in the model. For ease of interpretation of the results, the independent scale scores were divided by median splits. The independent variables were entered into the model in the order depicted in the conceptual frame work. In step 1, demographic variables that were significant in bivariate analysis were

Table 3. Bivariate Relationships Between AIDS Knowledge, Psychosocial and Risk and Problem Behavior Variables (Continuous Variables), and Condom Use

Variable	Condom Ever Used				Used Condom at Last Sex			
	Used (n = 390)	Never Used (n = 211)	t Test	p Value	Used (n = 149)	Didn't Use (n = 241)	t Test	p Value
AIDS knowledge								
Mean	13.59	13.10	2.91	0.0037	13.68	13.54	0.70	0.4861
SD	1.90	2.07			1.90	1.91		
Perceived susceptibility to HIV infection								
Mean	7.13	6.84	2.69	0.0000	7.36	6.99	3.37	0.0008
SD	2.85	1.30			0.94	1.18		
Perceived benefits from condom use								
Mean	15.19	15.04	0.68	0.4991	15.19	15.04	0.68	0.4956
SD	2.13	2.17			2.13	2.17		
Perceived barriers to condom use								
Mean	18.04	21.35	−7.57	0.0001	15.27	19.76	−8.82	0.0000
SD	5.64	4.80			5.36	5.10		
Perceived self-efficacy to use condoms								
Mean	11.34	9.43	7.89	0.0000	12.55	1059	7.40	0.0001
SD	2.85	2.79			2.30	2.90		
Perceived social support to use condom								
Mean	20.89	18.72	5.47	0.0001	21.95	20.24	4.48	0.0001
SD	4.12	4.91			2.93	4.59		
Age at first sex								
Mean	16.77	16.29	2.20	0.0300	17.20	16.51	2.26	0.0081
SD	2.61	2.53			2.31	2.76		

entered into the model. In step 2, insignificant demographic variables ($p < .05$) were removed from the model; and perceptual, and risk and problem behavior variables that were significant in bivariate analysis were included. The third step fitted a model composed of only the significant variables identified in step 2. To assess the predictive utility of HBM as a whole model—that is, examining how individuals with various combinations of health beliefs are more or less likely to engage in higher- or lower-risk AIDS preventive behaviors (37)—interactions among the variables, including self-efficacy, were explored by entering interaction terms into the model one at a time, in steps 4 and 5. The criterion for determining the best fitting model was based on the −2 log likelihood test, which assessed the statistical significance of the overall model (38). Of the eight variables found significant in bivariate tests, four were significant predictors of ever-use of condom in the regression analysis (Table 4). Older respondents were over two times more likely ever to have used a condom than their younger compatriots (OR = 2.41, 95% CI = 1.63–3.56). Respondents who perceived a low level of barriers to condom use were 2.35 times more likely ever to have used a condom than those who perceived a high level of barriers to condom use (OR = 2.35, 95% CI = 1.66–3.38). Subjects who perceived a high level of self-efficacy to use condoms were 2.54 times more likely ever to have used a condom (OR = 2.54, 95% CI = 1.66–3.90) than respondents who perceived a low level of self-efficacy to use condom. Finally, young men who reported a high level of social support were 1.67 times more likely ever to have used a condom than those who perceived limited social support (OR = 1.67, 95% CI = 1.11–2.53). Interactions among significant variables were not significant.

There were two significant interactions involving perceived barriers to condom use that predicted condom use at last intercourse. Barriers significantly interacted with perceived susceptibility to HIV infection and with perception of self-efficacy to use condoms with a partner. Subjects who perceived high susceptibility to HIV and low barriers to condom use were 5.91 times more likely to have used condoms at last intercourse compared to others (those with high susceptibility and high barriers or low susceptibility and high or low barriers). Figure 2 illustrates the distribution of condom use at last intercourse by level of interaction of susceptibility and barriers. Among respondents who used condoms at last intercourse, 52.3% were in the category of high perceived susceptibility to HIV and low perceived barriers to condom use. Similarly, respondents who perceived high self-efficacy to use condoms and low

Table 4. Multiple Logistic Regression for Ever Used Condom and Condom Used at Last Intercourse

Variable	Condom Ever Used		Used Condom at Last Sex	
	OR	95% CI	OR	95% CI
Age (yr)				
15–19	1.00	1.63–3.56**		
20–24	2.41			
Marital status				
Not married	1.00	0.88–2.23		
Married	1.40			
Education				
Elementary			1.00	0.66–1.76
Secondary and above			1.08	
AIDS knowledge				
Low	1.00	0.62–1.41		
High	0.94			
Susceptibility to HIV				
Low	1.00	0.80–1.68	1.00	0.19–1.11
High	1.16		0.52	
Barriers to condom use				
High	1.00	1.63–3.38**	1.00	0.64–2.58
Low	2.35		0.81	
Self-efficacy to use condoms				
Low	1.00	1.66–3.90**	1.00	0.98–5.18
High	2.54		2.18	
Social support to use condom				
Low	1.00	1.11–2.53*	1.00	0.60–1.67
High	1.67		1.00	
Age at first intercourse (continuous variable)	1.04	0.97–1.13	1.12	1.02–1.24*
No. of sex partners in past year				
≥2			1.00	0.46–1.24
1			0.76	
Consumption of gin				
Often–sometimes			1.00	1.21–3.15*
Rarely–never			1.96	
Susceptibility × Barrier			5.91	2.07–16.87**
Self-efficacy × Barrier			2.84	1.02–7.95*

$\chi^2 = 82.707$ with 8 *df* ($p = 0.0001$); $\chi^2 = 93.718$ with 10 *df* ($p = 0.0001$).

*$p \leq 0.05$.

**$p \leq 0.01$.

barriers to condom use were 2.84 times more likely to have used condoms at last intercourse compared to others (those with high self-efficacy and high barriers or low self-efficacy and high or low barriers).

Figure 2 illustrates the distribution of condom use at last intercourse by level of interaction of self-efficacy and barriers. The highest proportion of condom users (63.1%) were respondents who perceived a high level of self-efficacy to use condoms and low barriers to condom use. In addition, consumption of gin or akpeteshi was significantly inversely associated with condom use at last intercourse. Respondents who rarely or never drank gin or akpeteshi were 1.96 times more likely to have used condoms at last intercourse than subjects who often or sometimes drank gin or akpeteshi (OR = 1.96, 95% CI = 1.21–3.15).

Discussion

Results from this study both support and contradict findings from other researchers on adolescent condom use. In the current study, older respondents were found to be more likely ever to have used a condom. Other studies have found the reverse to be true: that younger subjects were significantly more likely to report higher frequency of condom use during intercourse (11,29). A possible explanation for this observation is that in Ghana, where contraceptive services traditionally cater to adults, younger people may find it more difficult to obtain condoms, they may not have the money to buy condoms. In addition, even if they have the means, they may feel embarrassed to go to the drugstore or family planning center to buy them.

Consistent with other studies, respondents who perceived a higher level of self-efficacy were more likely ever to have used a condom. In this study, self-efficacy was the strongest predictor of ever-use of condom. Effective self-protection action against HIV infection requires that an individual develop self-regulative skills and a sense of personal power to be able to use condoms consistently during sexual intercourse.

Perceived barriers to condom use interacted with perceived susceptibility to HIV and perceived self-efficacy to use condoms. Subjects who perceived high susceptibility to HIV infection and low barriers to condom use and those with high perceived self-efficacy and low barriers were more likely to have used a condom at last intercourse compared to others. These findings suggest that perceived susceptibility, perceived self-efficacy, and perceived barriers do not directly influence condom use at last intercourse; the relationships are complex, resulting in a synergistic effect on condom use. These results suggest that AIDS prevention programs for youth should emphasize personal susceptibility to AIDS, instill in youth the self-belief that they can use condoms any time, and address how to overcome barriers to condom use. Health education messages that use the fear of AIDS as a means of inducing condom use may be counterproductive (39). AIDS health education messages for Ghanaian youth must

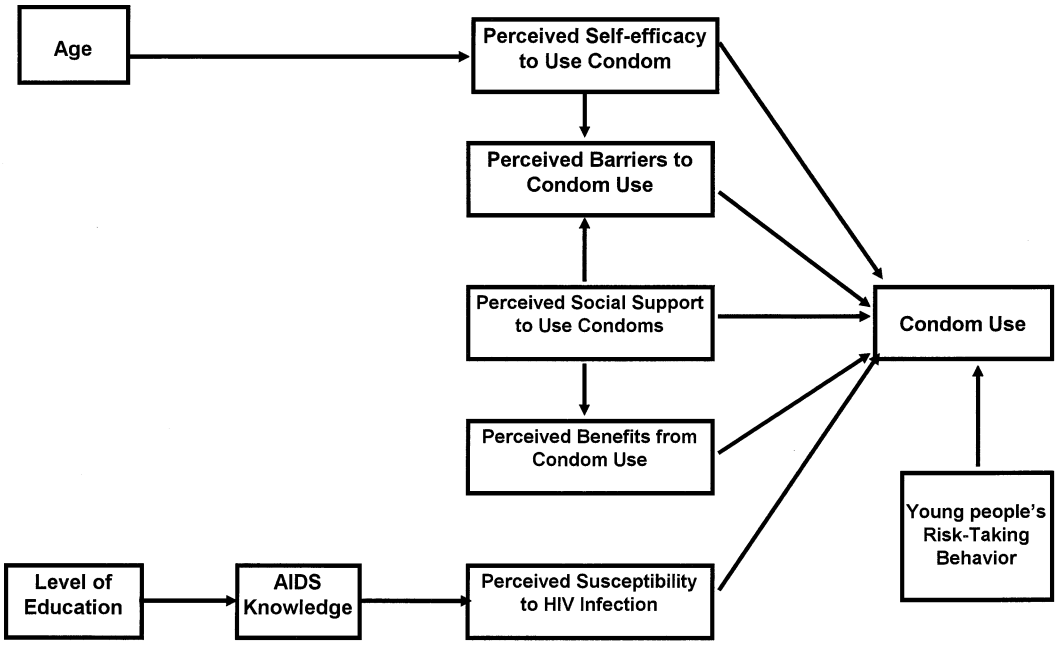

Figure 1. *Conceptual framework.*

combine threats of susceptibility to AIDS with information about effectiveness of condoms and other safer-sex practices in preventing HIV infection. AIDS patients who are willing to be publicly visible may be helpful in sensitizing youth to the potential threat of AIDS. Researchers have identified two effective ways of building self-efficacy, social modeling, and role-play (40,41).

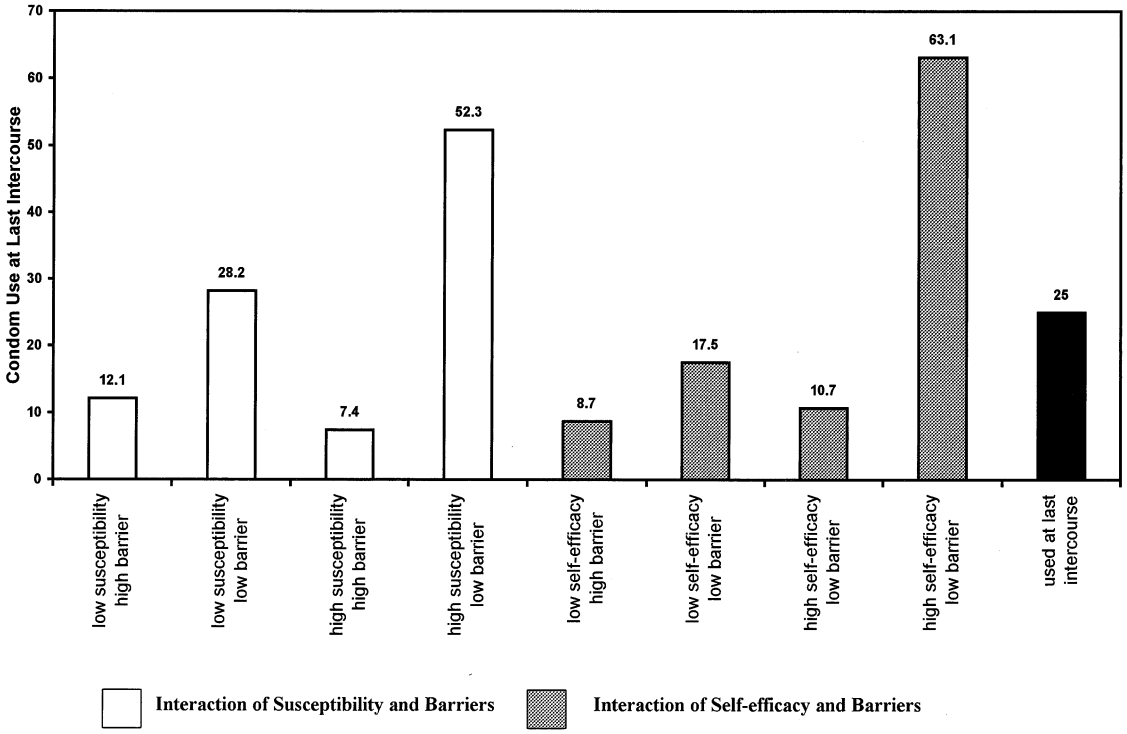

Figure 2. *Percent distribution of condom use at last intercourse, by level of interaction of barriers with susceptibility and self-efficacy.*

In addition, findings in this study suggest that AIDS prevention programs in countries such as Ghana should address ways to overcome barriers to condom use. Ways should be found to reduce the negative connotation associated with condom use. To correct the misconceptions about condoms, promotion strategies should include information on how to use condoms correctly, including not using expired condoms so as to prevent breaks or tears. It must also be emphasized that with practice, condoms become easier and more fun to use. Condoms can become a regular and pleasurable part of a romantic relationship. The government should consider subsidizing condoms to bring condoms of optimal quality within the financial reach of young people. Currently, condoms that are sold at Ministry of Health facilities are cheaper than in commercial outlets such as drugstores. Condoms can be obtained from family planning clinics, drugstores, hospitals, and private doctors' offices. Adolescents do not feel comfortable procuring condoms at these facilities.

In this study, young men's perception of social support for condom use enhanced HIV preventive behavior. Adolescents are likely to engage in a behavior if they believe that their peers sanction it. This finding is corroborated by studies that portray condom use as occurring within a network of social influences (12). Based on study results, AIDS educators should promote the perception that Ghanaian youth support condom use for AIDS prevention. An important educational strategy is to emphasize that using a condom is an act of social concern and responsibility, not promiscuity. While the perceptions of adults' and parents' attitudes are relevant, the perceived social support of friends and one's sexual partner bears an even closer relation to condom use. Therefore, another important strategy will be to stress peer group educational programs.

Our data indicate that respondents who initiated sexual intercourse at older ages were more likely to have used condoms at last intercourse. Adolescent development is marked by the initiation of risk behaviors, including sexual risk taking. Once sexual activity has begun, adolescents are not likely to revert to abstention from sexual intercourse to protect themselves (42). It is therefore important to initiate HIV prevention interventions early, optimally before puberty, before adolescents develop lifelong sexual habits. These programs must be implemented for in-school and out-of-school youth.

A limitation of this study is that it used a cross-sectional design; thus, causality cannot be inferred. A study using a longitudinal design would be necessary to assess the significance and stability of predictors of condom use over time. In addition, because some of the items in the questionnaire elicit self-reported information on sensitive issues such as sexual behavior and condom use, the potential that the responses provided by subjects were biased by their wish to provide socially desirable responses must be considered. It is believed, however, that this problem was minimized, since great care was taken to assure respondents of confidentiality of the information collected and privacy during the interview. Finally, we were not able to distinguish the use of condoms for family planning purposes from condom use to prevent STDs, in particular HIV infection. Multivariate analyses (Table 4) indicate that age rather than marital status was predictive of lifetime condom use. This finding suggests that although condom might be used for family planning purposes, it is not related to marital status, for which contraception might be most important.

In summary, findings from this study highlight important psychosocial and behavioral factors that affect condom use. These findings must be incorporated in HIV preventive programs for youth, as well as examined further in research in African countries.

This research was funded by the Rockefeller Sub-Saharan African Dissertation Internship Award and the United States Agency for International Development (USAID).

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