

FACTORS INFLUENCING CONDOM USE AMONG FEMALE STUDENTS

Solomon Yemidi^{*}

John Tumaku^{*}

James D. Fiagborlo^{**}

Etornam K. Kunu^{***}

Abstract

With the increasing prevalence of premarital sex among tertiary students with attendant problems, this study seeks to determine the individual, partner-related and environmental factors that influence condom use among female students of Ho Polytechnic. A descriptive, cross-sectional survey was conducted among 350 randomly selected female students of Ho Polytechnic. Logistic regression analysis was used to identify the predictors of condom use among the female students. Results show that five individual factors, three partner-related factors and two environmental factors were significant in influencing the use of condom among females. It is suggested that students besensitized on the risk of unsafe sexual behaviour, and advantages of condom usage, health educational programmes should aim at increasing women's self-confidence and adopting promotional strategies that will focus on correcting the misconceptions about condom use among females.

Keywords: Condom use, female students, logistic regression

^{*} Lecturer, Department of Mathematics and Statistics, Ho Polytechnic P. O. Box HP 217, Ho, Ghana

^{**} Lecturer, Department of Liberal and General Studies, Ho Polytechnic P. O. Box HP 217, Ho, Ghana

^{***} Teaching Assistant, Department of Mathematics and Statistics, Ho Polytechnic P. O. Box HP 217, Ho, Ghana

Introduction

The tertiary environment with its attendant relative lack of supervision or control offers a great opportunity for young people who are in transition from adolescence to adulthood to test the limits of their new found freedom through sexual experimentation Duncan et al, (2002). Young men and women (peers) in tertiary institution try to experiment about sex and a study by Reysoo (2005) found that young people experienced strong pressure from their peers to achieve their sexual debut in order to be considered men or women.

Many of the students who are already coming from uncontrolled parental background try to influence and initiate their peers into sexual activities and that early initiation of sexual activity increases the risk to get a sexually transmitted infection (Avery, 2010). Such experimentation frequently involves engagement in risky sexual activities with multiple partners, inconsistent use of condoms and having sex under the influence of alcohol or drugs. In addition, partner sexual mixing is likely to occur as some students may alternate between different sets of sexual partners during vacation and during academic sessions.

The liberal atmosphere on tertiary campuses means that some students may be enjoying independence from the watchful eyes of their parents for the first time in their lives. All these conditions exist within a general atmosphere of low condom use in the country as a whole (Anarfi, 2000). This exposes most students to potentially negative consequences of sexual intercourse, specifically unintended pregnancy and sexually transmitted infections and diseases including Human Immunodeficiency Virus (HIV).

According to Steiner, Warner, Stone, et al (2008) condoms provide protection against STIs transmitted via skin-to-skin contact or contact with mucosal surfaces, including genital herpes simplex virus, Human Papillomavirus (HPV), syphilis, and chancroid in those affected areas covered by the condom. This further supports Hoffman et al (2003) study which indicated that both laboratory and in-vitro-studies have established that polyurethane is impermeable to small viruses such as cytomegalovirus, herpes virus, hepatitis B virus and HIV. However, condom use is determined by a number of reasons, some of which are linked to gender in more or less obvious ways. Knowledge of whether these factors contribute to feminization of the sexually transmitted infection and diseases including HIV/AIDS epidemic in Ghana appears to be incomplete.

Though early acceptability studies of the female condom in Ghana were positive, many in the provider and programming communities perceive that acceptability is due to the concern that the product is scarce, big, messy, noisy, costly, and cumbersome to use. Socio-cultural factors may play a role in dissuading the use of the female condom, adolescent girls and women may feel shy to buy the female condom for the fear of being seen as promiscuous, and females may feel uncomfortable with the idea of having to touch or guide the penis prior to or during intercourse (Naikand Brady, 2008).

Moreover, in Ghana, femininity which is associated with docility, economic and social dependence on men due to low economic positions does not allow women to fully explore or even negotiate safer sex. The aim of the study was, therefore to determine the individual, partner-related and environmental factors that influence condom use among female students.

Sampling and Analytical Tools

This study used descriptive, cross-sectional study design. The setting was the Ho Polytechnic in Volta Region, Ghana. There are four faculties - Applied Sciences and Technology, Business and Management Studies, Engineering, and Art and Design. The study was conducted on registered students studying tertiary courses in Ho Polytechnic. The total number of registered tertiary students was 4,159 which comprise 2,676 males and 1,483 females (Planning & Quality Assurance Unit Ho Polytechnic, 2015). The target population was the female students only because a study conducted by Blay (2013) indicated that lack of proper awareness and knowledge regarding STIs may leave a large population of women vulnerable to contract infections.

A total sample of 350 was taken from the target population. Since the respondents appear to be in strata or departments, the selection of the 350 response units from each stratum was determined by applying proportional allocation formula, $n_h = \frac{N_h}{N} \times 350$, where n_h denote the number of samples to be selected from stratum h ; N_h denote the total number of elements (students) in stratum h ; and N , the total population. The **Table 1** is the summary of the sampling results.

Table 1: Stratified Random Sample Allocation

Academic Department	Number of elements	Proportional Allocation
Statistics	11	3
Hospitality & Tourism Management	336	79
I. C. T.	8	2
Computer Science	3	1
Agro-Enterprise Development	7	2
Industrial Art	7	2
Fashion Design & Modelling	163	38
Banking & Finance	60	14
Purchasing & Supply	65	15
Accountancy	342	81
Marketing	229	54
Secretaryship	220	52
Agriculture	8	2
Civil Engineering	0	0
Building Technology	6	1
Electrical/ Electronic Engineering	12	3
Automobile Engineering	4	1
Production Engineering	2	0
Oil & Gas Engineering	0	0
Total	1483	350

Data for the study was obtained using questionnaire. The questionnaire had three sections. The first section consisted of demographic information such as age, and marital status. The second section consisted of knowledge of sexually transmitted infection including HIV. The last section dealt with factors that influence condom use.

The study employed a simple random sampling technique to identify the research participants in each stratum. To arrive at the sample, a sampling frame was obtained from a list of female students provided by each course representative. A list of random numbers was then assigned to all units in the sampling frame. Numbers were then picked randomly from the random table designed. This process continued until the required number of respondents was achieved in all departments.

Data analysis was done in two sections. The first section which is the preliminary analysis was done using descriptive analysis to assess the frequency distribution of the demographics and also the respondents' knowledge of sexually transmitted infections and HIV

infections. The second section which is the further analysis uses logistic regression to determine the factors that were related to condom use among female students in Ho Polytechnic.

The **logistic regression** model has also been used to identify variables that have been influential in a student's choice of using condom during sexual intercourse. Specifically, the study seeks to find out if individual, partner-related and environmental factors (X) tend to influence the likelihood of female students opting for the use of condom (Y).

This type of regression model has been chosen because the outcome variable (Y) involved in this study is a dichotomous variable. Whereas linear regression model attempts to estimate the mean (or expected) value of the outcome variable (Y) given the values of the explanatory variables (χ 's), the objective in models with qualitative outcome variable, as in this study, is to estimate the probability of observing the outcome variable (i.e. a student's choice) given the individual, partner-related and environmental factors. The student's choice can be characterised by the relation

$$P(x) = \frac{e^{\chi'\beta}}{1+e^{\chi'\beta}} = \frac{1}{1+e^{-(\chi'\beta)}} \dots\dots\dots (1)$$

where χ is a set of explanatory variables and $P(\chi)$ denoting the probability of female students opting for use of condom.

It is easy to verify that as $x'\beta$ ranges from $-\infty$ to $+\infty$, $P(\chi)$ varies from 0 to 1 and that it relates nonlinearly to $x'\beta$. This specification thus models the outcome variable. This specification, however, poses estimation problems because $P(\chi)$ is non-linear not only in the regressors but also in the parameters as could be seen from (1). This means that we cannot use the familiar Ordinary Least Square (OLS) procedure to estimate the parameters. Equation (1) could be estimated using **maximum likelihood estimation** and the relevant inferences made using **Waldtest**.

Results and Discussion

This section is subdivided into preliminary and further analyses.

Preliminary Analysis

This subsection looks at the summary statistics of the respondents. A total of 350 female students completed the questionnaire. Table 1 summarizes the socio-demographic information of

the respondents. All (100%) the respondents were female students, 48% were between the ages of 18 and 23, and 84% were never married.

Table 2: Demographic information of the participants (n=350)

Variables	Frequency	Percentages
Ages		
18-23	168	48.0
24-29	140	40.0
30 and above	42	12.0
Marital Status		
Never Married	294	84.0
Married	54	15.4
Divorced	2	0.6

Source: Field data (2015)

Regarding the frequency of condom use, 46.9% indicate that they use condom occasionally while 21.4% reveal that they don't use condom. This outcome is consistent with Loads(2005), suggesting that the level of education has been found to influence condom use in the prevention of STIs and prevention of unwanted pregnancy.

When respondents were asked to indicate the mode of transmission and prevention of STIs and HIV, 76% were aware that STIs and HIV/AIDS could be transmitted through unprotected sexual intercourse with an infected person. Also, it was revealed that condom use is widely known to 83.1% as a way of preventing STIs and HIV/AIDS (Table 3).

Table 3: Frequency of Condom Usage and Mode of Transmission

<i>Frequency of Condom Usage</i>	Frequency	Percent		
Anytime I have sex	45	12.9		
Occasional when I have sex	164	46.9		
Anytime I have sex with someone	80	22.9		
I don't really know				
I don't use condom	61	17.4		
Mode of Transmission and Prevention of HIV/AIDS			Yes	No
	Frequency	Percent	Frequency	Percent
Through unprotected sex	266	76	84	24
Through infected blood	252	72	98	28

transfusion				
Through fluid/blood contact	246	70.3	104	29.7
Prevention by abstaining from sex	330	94.3	20	5.7
Prevention through the use of condom	291	83.1	59	16.9
By having only one sexual partner	206	58.9	144	41.1

Source: Field data (2015)

This is consistent with findings from a study by Tangie-Kessy and Kamugisha (2006) in Tanzania that assessed the levels of knowledge on STIs. In that study, they found that education had an influence on the knowledge and awareness of HIV/AIDS. There are other studies that support this position. For example, Lan et al., (2009) shows in a similar study in Vietnam that about three quarters of respondents did not know any symptoms of STIs because they had very little or no education.

Further Analysis

This sub-section looks at the logistic regression analysis to determine the factors that influence condom use among female students in Ho Polytechnic. The analysis is segmented into individual, partner-related and environmental factors.

DEFINITION OF INDIVIDUAL-FACTOR VARIABLES

ISF1= Always speak with partner about avoiding STIs and HIV

ISF2= I feel confident I could purchase condoms without feeling embarrassed

ISF3= Always suggest condom use with partner

IPR1= The use of condom can prevent me from getting STIs including HIV and unwanted pregnancy

IPR2= If I had STIs and HIV, my academic career would be endangered

IPR3= Everybody can get STIs and HIV

ISP1= The use of condom interferes with my sexual sensation

ISP2= The use of condom is cumbersome and messy

ISP3= Condoms makes noise when use during sexual intercourse

Table 4: Logistic Regression of Individual Factors Influencing Condom Use

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
ISF1	0.171	0.218	0.616	1	0.433	1.187	0.774	1.821
ISF2	-0.274	0.170	2.601	1	0.107	0.760	0.545	1.061
ISF3	-0.843	0.200	17.693	1	0.000	0.430	0.291	0.638
IPR1	0.737	0.242	9.293	1	0.002	2.091	1.301	3.359
IPR2	-0.818	0.190	18.606	1	0.000	0.441	0.304	0.640
IPR3	0.952	0.214	19.861	1	0.000	2.591	1.704	3.937
ISP1	0.678	0.298	5.174	1	0.023	1.971	0.649	1.657
ISP2	0.149	0.270	0.307	1	0.580	1.161	0.685	1.969
ISP3	0.036	0.239	0.023	1	0.880	1.037	1.098	3.535
Constant	-5.940	2.327	6.516	1	0.011	0.003		

Source: Field Data, 2015

From **Table 4** regarding the individual factors which influence female students, all the five factors were significant at 1% level except *ISP1* which is insignificant at 5% level; *ISF3* (always suggest condom use with partner), *IPR1* (the use of condom can prevent me from getting STIs including HIV and unwanted pregnancy), *IPR3* (If I had STIs and HIV, my academic career would be endangered), *IPR3* (everybody can get STIs and HIV) and *ISP1* (The use of condoms does not interfere with my sexual sensation).

This observation confirms assertions of Meekers and Klein (2002) that perception of risk is associated with the high levels of condom use among African adolescents. In addition, the findings are not different from Stanton et al. (2006) that women’s worry about STIs or pregnancy relates to condom use among women. Thus, the logistic function for individual factors is given by the equation (2):

$$P(\text{Condom Use}) = \frac{1}{1 + e^{-(0.940 - 0.843ISF3 + 0.737IPR1 - 0.818IPR2 + 0.952IPR3 + 0.678ISP1)}} \dots \dots \dots (2)$$

Furthermore, the odd ratio ($Exp(\beta)$) for the selected individual related factors, *ISF3* indicate that respondents who always suggest condom use with partner were 0.430 times more likely to have used condoms as compared with those who do not always speak with partner. The odds ratio for *IPR1* also indicate that respondents who feels that the use of condom can prevent them from getting STIs including HIV and unwanted pregnancy were 2.091 times more likely to have ever used condom as compared to those who does not feel the use of condom can prevent

them from getting STIs including HIV and unwanted pregnancy. For *IPR2* the odd ratio means that respondents who feels if they had STIs and HIV, their academic career would be endangered were 0.441 time more likely to have ever used condom than those who feels if they had STIs and HIV, their academic career would not be endangered. Also for *IPR3* those who thinks that everybody can have STIs and HIV were 2.591 times more likely to have ever used condom compared to those think that is not every that can get STIs and HIV. Finally, the odd ratio for *ISP1* means that respondents who feel that condom use does not interferes with their sexual sensation were 1.971 times more likely to have ever used a condom compared to those who feel condom does not make noise when use during sexual intercourse.

DEFINITION OF PARTNER-RELATED FACTORS

PPA1= Condom use means I do not trust my partner

PPA2= My partner always approve of condom use during intercourse

PPA3= If my partner insist on sexual intercourse without a condom, I will refuse to have sexual intercourse

PPF1= Everybody can contract STIs and HIV/AIDS

PPF2= If I know an encounter may lead to sexual intercourse, I will carry condom with me

PPF3= Condom use have no side effect like some contraceptives

PGR1= The use of condoms during sex is the lone decision of men

PGR2= I always initiate the topic of safer sex with my potential partner

PGR3= Females should have equal say in important decision like safer sex like their male partners

Table 5: Logistic Regression Estimates of Partner-Related Factors Influencing Condom Use

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
PPA1	0.146	0.140	1.096	1	0.295	1.158	0.880	1.523
PPA2	-0.442	0.181	6.008	1	0.014	0.642	0.451	0.915
PPA3	0.871	0.151	1.652	1	0.000	2.389	0.613	1.107

PPF1	-0.194	0.204	18.260	1	0.199	0.824	1.602	3.562
PPF2	-0.644	0.151	18.272	1	0.000	0.525	0.391	0.706
PPF3	-0.082	0.149	0.306	1	0.580	0.921	0.688	1.233
PGR1	-0.238	0.266	0.801	1	0.371	0.788	0.468	1.327
PGR2	0.008	0.167	0.002	1	0.963	1.008	0.727	1.398
PGR3	-0.384	0.267	2.072	1	0.150	0.681	0.404	1.149
Constant	0.294	1.688	0.030	1	0.862	1.342		

Source: Field Data, 2015

Concerning the partner-related factors, three factors have a significant value less than 0.05; *PPA2* (my partner always approves of condom use during sex), *PPA3* (if my partner insists on sexual intercourse without a condom, I will refuse to have sexual intercourse), *PPF2* (if I know an encounter may lead to sexual intercourse, I will carry condom with me). This finding supports Pearson (2006) that self-efficacy for sexual negotiation was significantly associated with increase condom use for females. However, findings of this study is in disagreement with Mill and Anarfi (2002) which indicate that for young women in Ghana, condom use is a difficult topic to introduce in relationship conversation. Again, the logistic function for partner-related factors is given by the equation (3):

$$P(\text{Condom Use}) = \frac{1}{1 + e^{-(0.294 - 0.442PPA2 + 0.871PPA3 - 0.644PPF2)}} \dots\dots\dots(3)$$

Regarding the odd ratio ($Exp(\beta)$) for the selected partner-related factors, *PPA2* shows that respondents whose partners always approve of condom use during sex were 0.642 times more likely to have ever used condoms compared to those partners who do not approve of condom use during sex. Also the odd ratio for *PPA3* means that respondents who will refuse sex if their partners insist on sexual intercourse without a condom were 2.389 times more likely to have ever used a condom compared to those who will not refuse sex if their partner insist on sexual intercourse without a condom. Finally, the odd ratio for *PPF2* means that respondents who will carry condom with them, if they know an encounter may lead to sexual intercourse were 0.525 times more likely to have ever used condoms as compared to those who will not carry condom if they know an encounter may lead to sexual intercourse.

DEFINITION OF ENVIRONMENTAL FACTORS

EPN1= My peers always influence me to use condom during sexual intercourse

EPN2= My friends may labeled me prostitute is they found out I carry condom

EPN3= My friends talks a lot about safer sex

EPC1= My parents always educate me on sexual behavior and condom use

EPC2= My parents feel sexuality education may lead to problematic sexual behavior

EPC3= I fear my parents may be disappointed when they see me with condoms

ESS1= Family members always give me an advice on abstinence safer sex practices

ESS2= Community groups normally encourage the youth to use condom in order to prevent STIs and HIV

ESS3= Advertisement on social medias influence me to use condom in preventing STIs including HIV

Table 6: Logistic Regression Estimates of Environmental Factors Influencing Condom Use

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
EPN1	0.047	0.199	0.056	1	0.813	1.048	0.710	1.547
EPN2	0.293	0.223	1.727	1	0.189	1.341	0.866	2.076
EPN3	0.289	0.179	2.606	1	0.106	1.336	0.940	1.898
EPC1	-0.256	0.211	1.469	1	0.226	0.774	0.512	1.171
EPC2	-0.384	0.269	2.035	1	0.154	0.681	0.402	1.154
EPC3	-0.024	0.243	0.010	1	0.920	0.976	0.607	1.570
ESS1	-0.590	0.155	14.444	1	0.000	0.555	0.409	0.752
ESS2	0.135	0.343	0.155	1	0.694	1.145	0.584	2.243
ESS3	-1.190	0.178	44.678	1	0.000	0.304	0.215	0.431
Constant	3.089	1.883	2.690	1	0.101	21.952		

Source: Field Data, 2015

Finally, the results show that only two environmental factors are significant at 1% level in influencing condom use; *ESS1* (family members always give me an advice on abstinence and safer sex practices) and *ESS3* (advertisement on social medias influence me to use condom in preventing STIs including HIV). This is consistent with a study conducted by Bankole et al. (2007) which revealed that exposure to mass media and education were found to be important in

the decision to use condom. Finally, the logistic function for environmental factors is given by the equation (4):

$$P(\text{Condom Use}) = \frac{1}{1 + e^{-(3.089 - 0.590ESS1 - 1.190ESS3)}} \dots \dots \dots (4).$$

Also the odd ratio ($Exp(\beta)$) for the selected environmental factors, $ESS1$ means that respondents whose family members give them advice on abstinence and safer sex practice were 0.555 times more likely to have ever used condoms compared to those who do not receive any advice on abstinence and safer sex practices from their family members. The odd ratio for $ESS3$ also means that respondents who indicated that advertisement on social media influence them to use condom in preventing STIs including HIV were 0.304 times more likely to have used condom as compared to those who indicate that advertisement on social media does not influence them to use condom in preventing STIs including HIV.

Limitations of the study

The study was conducted at Ho Polytechnic and as a result the findings might not be advisable to generalize our results with other Polytechnics or tertiary institutions. The researchers managed to minimize bias by ensuring confidentiality of the information provided. Considering the sensitive nature of the study, some respondents may have concealed the true information about their sexual life which could affect the result.

Conclusion

The study revealed that based on the five significant factor included in the model for individual factors ($ISF3=1$, $IPR1=1$, $IPR2=1$, $IPR3=1$, $ISP1=1$), the estimated probability that female student will use condom during sexual intercourse is 83.83% of the time. Also, for the partner-related factors, ($PPA2=1$, $PPA3=1$), the estimated probability is 51.97% and finally, for environmental factors, ($ESS1=1$, $ESS3=1$) is 78.73%.

Therefore, there is a need to sensitize students on the risk of unsafe sexual behaviour, and advantages of condoms aimed at changing the negative attitudes towards condom use through effective guidance and counselling programmes. Also, health educational programmes should aim at increasing women's self-confidence; that they can use condom anytime and addressing how to overcome barriers in negotiating condom use with partners.

Finally, promotional strategies such as advertisement that will focus on correcting the misconceptions about condoms and influencing individual usage of condoms should be adopted.

References

- Ahmed, F. H., Bankole, A., Konyani, S. Neema, S., & Ouedraogo, C. (2007). Knowledge of correct condom use and consistency of use among adolescents in four countries in Sub-Saharan Africa. *African journal of reproductive health*, 11(3), 197.
- Anarfi, J. (2000). Universities and HIV/AIDS in Sub Saharan Africa: A Case Study of the University of Ghana, Legon. *ADEA Working Group in Higher Education*. Accra, Ghana.
- Anarfi, J. K., & Mill, J. E. (2002). HIV risk environment for Ghanaian women: challenges to prevention. *Social science & medicine*, 54(3), 325-337.
- Avery, L., Lazdane, G. (2010). What do we know about sexual and reproductive health of adolescents in Europe? *The European Journal of Contraception & Reproductive Health Care*, 15 (Suppl.2):S54-S66.
- Blay, G. A. (2013). Awareness and Knowledge of Sexually Transmitted Infections among Female Porters in Madina (Doctoral dissertation, University of Ghana).
- Borskey, E.J., Davis, L. Dawson, P., Duncan, C., Fomby, B., & Miller, D. M. (2002). Barriers to safer sex practices among African American college students. *J Natl Med Assoc*, 94:944-951.
- Brady, M. & Naik, R. (2008). The female condom in Ghana; exploring the current state of affairs and gauging the potential for enhanced promotion. Population council inc., New York, 2-12.
- Chuc, N., T., K., Lan, P., T., Lundborg, C., S., Mogren, I., & Phuc, H., D. (2009). Lack of knowledge about sexually transmitted infections among women in North rural Vietnam. *BMC Infectious Diseases*, 9(85).
- Clemens, R., Deveaux, L., Harris, C. Li, X., Stanton, B., Yang, H., ... & Yu, S. (2006). Youth and parental perceptions of parental monitoring and parent-adolescent communication, youth depression, and youth risk behaviors. *Social Behavior and Personality: An International Journal*, 34(10), 1297-1310.

- Fang, X., Hong, Y., Li, X., Lin, D., Mao, R.,...& Stanton, B. (2006). Rural-to-urban migrants and the HIV epidemic in China. *AIDS and Behavior*,10(4), 421-430.
- Hoffman, S., Joanne, M., Theresa, E. &Zena, E. (2003). Female condom use in a gender specific family planning clinical trial. *American Journal of Public Health*. 26 (3) 450-454.
- Kamugisha, H., &Tengia-Kessy, A. (2006). Levels of Knowledge and Sources of Information on Sexually Transmitted Infections Among Secondary School Youth in Dar es Salam Tanzania. *East African Journal of Public Health*, 3(3).
- Klein, M., &Meekers, D.(2002). Determinants of condom use among young people in urban Cameroon. *Studies in family planning*, 33(4), 335-346.
- Oladosu, M. (2005). Consistent condom use dynamics among sex workers in Central America 1997_2000. *Journal of Biosocial Science*, 37, 435_457.
- Pearson, J. (2006). Personal control, self-efficacy in sexual negotiation, and contraceptive risk among adolescents: The role of gender. *Sex Roles*, 54(9-10), 615-625.
- Reysoo, F. (2005). Social construction of masculinity in Mexico. In *Rethinking masculinities, violence and AIDS*,Vol.1. (Eds.) D. Gibson and A. Hardon, 7-18. Amsterdam: Het Spinhuis Publishers.
- Stone, K. M. & Warner, L. (2007). Male condoms. In *Behavioral Interventions for Prevention and Control of Sexually Transmitted Diseases* (pp. 232-247). Springer US.