

ORIGINAL ARTICLES

FACTORS ASSOCIATED WITH SEXUALLY TRANSMITTED INFECTIONS AMONG YOUNG GHANAIAAN WOMEN

S. OHENE and I. O. AKOTO¹Department of Population and Family Health, School of Public Health and ¹Institute of Social and Statistical Economic Research University of Ghana, Legon, Ghana*Corresponding Author: Dr Sally-Ann Ohene Email: salohene@yahoo.com**Conflict of interest: None declared***ABSTRACT****Objective:** To identify factors associated with a history of sexually transmitted infections in Ghanaian women 15 – 24 years.**Design:** The study was a cross-sectional data analysis of 1280 sexually experienced females from the 2003 Ghana Demographic Health Survey. Using chi square and t-test, those with a history or symptoms of STI were compared with those denying such a history on demographic, individual and partner level variables. Significant variables were entered into logistic regression to identify variables associated with STI.**Results:** The STI group comprised 12% of the study population. Compared to those denying a history of STI, the STI group was less likely to know where to get condoms (37% vs 23%, $p=.001$) but more likely to use a condom at their last sexual encounter (27% vs 17%, $p=.003$). Women in the STI group were significantly less likely to discuss family planning with their partners but more likely to have 2 or more partners in the preceding 12 months. Logistic regression showed that factors associated with STI among sexually active Ghanaian female youth included not knowing where to get condoms and not discussing family planning with partner.**Conclusion:** Majority of sexually experienced Ghanaian female youth do not know where to get condoms. Lack of knowledge of source of condoms was identified as a risk factor for STI for these women.**Keywords:** STI, female youth, condom source**INTRODUCTION**Sexually transmitted infections (STI) are a significant cause of morbidity among adolescents with multiple consequences.¹ In addition to some STI increasing the risk of HIV transmission, also problematic is the long term sequelae which include infertility, tubal pregnancy, chronic pain in the pelvis and cervical cancer.¹⁻⁴Adolescents, especially female adolescents, are particularly vulnerable to the acquisition of STI because of biological, cognitive and socio-cultural factors.⁵⁻⁷ For several STI, adolescents have been reported to have the highest age-specific risk.¹One out of eight sexually experienced 15 to 24 year old women self-reported STI and symptoms of STI in the 2003 Ghana Democratic Health Survey (GDHS).⁸ These rates represent the highest prevalence recorded among all the age groups surveyed. Despite being sexually active, the majority of adolescents do not always use condoms or use them inconsistently. Only one out of three female youth used a condom at last sex.⁸⁻¹⁰ Consequently, the risk of adolescents contracting STI is high. For STI among Ghanaian youth to be effectively reduced and prevented, it is important to identify and address the factors that are associated with STI.Several studies have examined some correlates of STIs in adolescents. Factors associated with the individual include early age at initiation of sexual activity, alcohol and drug use before sex, having multiple sexual partners and condom availability and use.¹¹⁻¹⁶ Diclemante et al. found that female adolescents who had sexual relations while drinking alcohol were two times more likely to have had a diagnosis of a sexually transmitted disease (STD) compared to adolescents who had never had an STD.¹⁶ Adolescent females in Jamaica had an odds ratio of 4 for an STI if they had more than two sexual partners.¹³ Non-use of a barrier method is also a risk factor for STI. In a study of Cameroonian youth, Suigoli *et al.*, reported that those who had never used condoms had a quadruple risk of having herpes simplex virus – type 2 (HSV-2).¹⁵ Condom use at last sexual intercourse in the study by Simeon et al. was found to be protective against STD.¹³ Research into peer and family level correlates of STIs showed that having an older partner and low level of family communication were associated with STI acquisition.¹⁷⁻¹⁹

While much research on the determinants of STI in youth has been carried out in other countries, very little is known about these associating factors among Ghanaian adolescents. Thus the rationale for carrying out this study was to investigate factors that are associated with sexually transmitted infections in young Ghanaian women to inform preventive interventions. The study involved a comparison of two groups of sexually experienced Ghanaian women 15 to 24 years: those self-reporting history or STI (referred to as the index group) and those denying a history or symptoms of STI (referred to as the control group). The index and control groups were compared on individual and partner level factors with the hypothesis that youth with self-reported STI will be more likely to report factors found from previous studies to be associated with STI including alcohol use before sex, older age of sexual partner, younger age at first intercourse and multiple sexual partners.

METHOD

Study Population

The sample for the study was derived from 2003 Ghana Demographic Health Survey (2003 GDHS). The 2003 GDHS, conducted from July to October of 2003, is a nationally representative survey of 5015 men and 5691 women 15-59 and 15-49 years respectively. By means of a questionnaire and after informed consent, trained interviewers collected information on awareness and use of family planning, sexual activity, nutrition, maternal and child health, and awareness and behavior regarding HIV/AIDS and STI.

The study sample comprised sexually experienced female youth 15-24 years. Women in the index group were those who self reported a history or symptoms of STI. This variable was assessed by questions asking participants whether in the last 12 months before the survey they had had a sexually transmitted disease, a bad smelling abnormal genital discharge or a genital sore or ulcer. Responses were coded yes, no and don't know.

Table 1: Demographic Characteristics of Sexually-experienced Women 15-24 years

	Denies history/symptoms of STI (n=1123)	Self-reported history/symptoms of STI (n=157)	<i>p</i> -value
Age, mean (SD), y	20.5 (2.4)	20.4 (2.4)	.499
Education %			
No Education	24.8	17.8	
Primary	23.5	21.0	.063
Secondary or Higher	51.7	61.2	
Never married	37.4	51.6	.001
Urban residence	38.2	45.9	.066

Endorsing symptoms or history of STI or STD as above was coded as self-reporting a history of STI. The control group consisted of sexually experienced young women who denied having symptoms or history of STI.

Variables for Comparison

The two groups were compared on demographic and a number of dependent variables. Demographic variables included participant's age, urban or rural residence, education and marital status.

The dependent variables in the analyses were early sexual debut (measured as initiating sexual intercourse at or below 15 years), knowledge of where to get a male and female condoms and use of a condom at last sexual intercourse. Other measures included respondent and or partner drinking before last sexual intercourse, having 2 or more partners in last 12 months preceding the survey, last sexual partner being older than respondent and discussion of family planning with partner (used as a proxy for discussion of contraception with partner).

Data Analysis

Using X² and t-test, bivariate comparisons of the two groups of female youth were conducted for the stated demographic and dependent variables. The criterion for statistical significance was a *p*-value of <.05. Significant variables were entered into a logistic regression to identify those variables associated with STI.

RESULTS

Out of a total of 1280 women 15 – 24 years who were sexually experienced, 157 (12%) self reported a history or symptoms of STI. The mean age of the study population was 20 years. With the exception of marital status, there were no statistically significant differences in the mean age, level of education and area of residence of both the control and index groups.

The group self-reporting a history of STI was significantly more likely than the control group (51.6% vs 37.4%, $p=0.001$) to state that they had never been married (Table 1).

Bivariate Analyses

For the two groups the mean age at first intercourse was about the same, almost 17 years. Fewer than three

out of ten of the whole study population used a condom during the last sexual intercourse. A little over a quarter (27.6%) of those self reporting a history of STI reported using a condom during the last sexual intercourse which is significantly higher than the 17.1% of those denying having STI ($p=0.003$). (Table 2)

Table 2: Comparison of women with and without a history of STI on individual and partner level variables

	Denies history/symptoms of STI (n=1123)	Self-reported history/symptoms of STI (n=157)	<i>p</i> -value
Individual level			
Age at first intercourse, mean (SD), y	16.6 (2.1)	16.8 (2.3)	.280
Condom used last intercourse %	17.1	27.6	.003
Knows where to get male condom %	37.0	23.6	.001
Knows where to get female condoms %	54.6	40.8	.001
Partner level			
Last sexual partner older than respondent %	5.4	8.9	.082
≥ 2 sexual partners %	2.6	5.7	.030
Discussed family planning with partner %	5.0	0.6	.013
Alcohol use by respondent and/or partner before sex %	5.4	7.5	.326

The majority of all respondents did not know where to get condoms. Among those denying a history of STI, about half (54.6%) and less than 4 out of 10 (37%) knew where to get female and male condoms respectively. Of the STI group, significantly fewer ($p=0.001$), stated they knew where to get female (40.8%) and male condoms (23.6%) respectively.

The group with a history of STI was significantly more likely to report having two or more sexual partners in

the last 12 months before the survey and less likely to have discussed family planning with partner. There was no statistical difference in the proportions of both groups having a last sexual partner older than respondent. Similarly, the proportions of the respondents from the two groups, who reported alcohol use by themselves and/or their partners before sex, were about the same statistically.

Table 3: Logistic regression* to assess factors associated with history/symptoms of STI

Variables	OR (95% CI)	<i>p</i> -value
Condom used last intercourse	1.33 (0.82 - 2.17)	0.240
Knows where to get male condom	0.52 (0.27 - 0.99)	0.048
Knows where to get female condoms	0.73 (0.41 - 1.33)	0.310
≥ 2 sexual partners	1.18 (0.47 - 2.95)	0.714
Discussed family planning with partner	0.11 (0.01 - 0.78)	0.028

* Controlled for marital status

Multivariate Analyses

The significant variables in the bivariate analyses were entered into a logistic regression (controlled for marital

status) to identify the salient variables differentiating the index and control groups (Table 3).

These analyses showed statistically significant inverse relationships between knowing where to get male condoms and reporting a history of STI (OR=0.52, $p=0.048$) and also between discussing family planning with partner and a history of STI (OR=0.11, $p=0.028$). Thus the risk factors for a history of STI among sexually active Ghanaian female youth included lack of knowledge of source of male condoms and not discussing family planning with partner. Condom use at last intercourse, knowing where to get female condoms and having at least 2 partners in the preceding year were not found to be associated with STI.

DISCUSSION

This study of sexually-experienced young Ghanaian women revealed those self-reporting a history or symptoms of STI were more likely to have used condoms during the last sexual intercourse but less likely to know where to get either male or female condoms compared to their counterparts who denied having symptoms/history of STI. Not knowing where to get male condoms and not discussing family planning with partner were found to be risk factors for STI.

While the prevalence of STI (12%) in the present study sample was higher than the 8% recorded for sexually experienced Ghanaian female youth in other studies, the age of onset of sexual intercourse was consistent with what others have reported.²⁰⁻²¹ The difference in STI rates may be attributable to the comparative studies involving unmarried 12 -24 year olds while the present study focused on 15 to 24 year olds some of whom were married. The use of condom at last sex by both index and control respondents in this study was comparatively lower than that reported by others.⁹ Again the current study sample included married respondents who have been found to be less likely to report using condoms for last sexual intercourse compared to single women.²² This may be attributed to a desire to get pregnant or poor bargaining power on condom use.

It is surprising to note that those self-reporting a history or symptoms of STI were significantly more likely to report using a condom for the last sexual encounter compared to those denying such a history. Given their recent history of STI, it is possible that the index group had a higher perception of their risk for acquiring or spreading STI. Consequently, they may have been more likely to use a condom the last time they had sex as a precautionary measure. A parallel can be drawn from the findings from a study by Adih in which perceived susceptibility to HIV was found to be associated with Ghanaian youth using a condom at last sexual intercourse.²³ Given that having more sexual partners has been found to be associated with STI as reported

by Boyer et al, it was not unusual to find that compared to the control, the index group in this study was significantly more likely to report having 2 or more sexual partners in the year preceding the survey.¹⁷

Interesting in this study was the finding that the majority of these sexually experienced females did not know where to obtain condoms especially male condoms. This was unexpected since sixty-five percent of the sexually active females in a study of Ghanaian youth 12 to 24 years stated that it was easy for young people to get modern contraceptives.²⁰ It is however possible that even though many young people may know that one can obtain family planning methods from different outlets including health facilities, they may not know where to get condoms specifically.

Some limitations of this study need to be taken into consideration. The self-report nature of the study leaves room for reporter bias. This is a cross-sectional study and thus it is not possible to determine either causality or directionality of the variables analyzed. Another limitation is the relatively small numbers from the two groups reporting some of the variables of interest. Further research, longitudinal in nature and involving larger numbers of study participants will help to throw more light on the other possible risk and protective factors that may be related to sexually transmitted infections.

In summary our study identified that a significant number of female youth who had initiated sexual intercourse did not know where to obtain condoms. The study also highlighted that not knowing where to get male condoms was a risk factor for sexually transmitted infections. Sexual and reproductive health intervention programs planned for young women should emphasize ways in which beneficiaries can protect themselves from acquiring STI. Messages should therefore stress abstinence and delay of sexual onset as well as safe sexual practices which emphasize the consistent and correct use of condoms in the event of initiating sexual activity. In giving these messages, it is also imperative to include specific messages on where to obtain condoms.

ACKNOWLEDGEMENT

The authors thank Ghana Statistical Service and ORC Macro for making data from the Ghana Demographic Health Survey available for the study.

REFERENCES

1. Santelli JS, DiClemente RJ, Miller KS, Kirby. Sexually transmitted diseases, unintended preg-

- nancy, and adolescent health promotion. *Adolesc Med State Art Rev* 1999; 10: 87-108.
2. Wasserheit JN. Epidemiological synergy: Interrelationships between HIV infection and other STDs. *Sex Transm Dis* 1992;19:61-77
 3. Herrero R, Brinton LA, Reeves WC, et al. Sexual behavior, venereal diseases, hygiene practices and invasive cervical cancer in a high-risk population. *Cancer* 1990; 65: 380-6.
 4. Laga M. STD control for HIV prevention-it works. *Lancet* 1995;346:518-9
 5. The Alan Guttmacher Institute. Into a new world: young women's sexual and reproductive lives. New York, NY: The Alan Guttmacher Institute, 1998.
 6. Hersh L, Lane C, Feijoo A. Adolescent sexual and reproductive health in Sub-Saharan Africa. *Advocates for Youth*, Washington DC. 1998
 7. Shrier LA. Sexually transmitted diseases in adolescents: biologic, cognitive, psychologic, behavioral and social issues. *Adolesc Med Clin* 2004 Jun;15(2):215-34
 8. Ghana Statistical Service (GSS). Noguchi Memorial Institute for Medical Research (NMIMR) and ORC Macro. 2004 Ghana Demographic and Health Survey 2003. Calverton, Maryland: GSS, NMIMR and ORC Macro
 9. Karim AM, Magnani RJ, Morgan GT, Bond KC. Reproductive health risk and protective factors among unmarried youth in Ghana. *Int Fam Plan Perspect* 2003;29(1):14-24
 10. Agyei WK, Biritwum RB, Ashitey AG, Hill RB. Sexual behavior and contraception among unmarried adolescents and young adults in Greater Accra and Eastern regions of Ghana. *J Biosocial Sci* 2000;42:495-12
 11. Lewis LM, Melton RS, Succop PA, Rosenthal SL. Factors influencing STD transmission among African American college women. *J Am College Health* 2000; 49:19-23
 12. Weiss HA, Buvé A, Robinson NJ, Van Dyck E, et al. "The Epidemiology of HSV-2 Infection and its Association with HIV Infection in Four Urban African Populations." *AIDS* 2001; 15(supplement 4): S97-S108
 13. Simeon DT, Bain BC, Wyatt GE, LeFranc E, et al. Characteristics of Jamaicans who smoke marijuana before sex and their risk status for sexually transmitted diseases. *West Indian Med J* 1996; 45:9-13.
 14. Messersmith, LJ, Kane TT, Odebiyi AI Adewuyi A. Who's at risk? Men's STD experience and condom use in southwest Nigeria. *Stud in Fam Plan* 2000;31:203-216
 15. Suligoï B, Tchamgmena O, Sarmati L, Bugarini R, Toma L, Bakary DK, Glikoutou M, Rezza G. Prevalence and Risk Factors for Herpes Simplex Virus Type 2 Infection among Adolescents and Adults in Northern Cameroon. *Sex Transm Dis* 2001; 28(12): 690-693.
 16. DiClemente RJ, Wingood GM, Sionean C, Crosby R, Harrington K, Davies S, Hook EW. Association of Adolescents' History of Sexually Transmitted Disease (STD) and Their Current High-Risk Behavior and STD Status: A Case for Intensifying Clinic-Based Prevention Efforts. *Sex Transm Dis* 2002;29(9):503-9
 17. Boyer CB, Shafer MA, Teitle E, Wibbelsman CJ, Seeberg D, Schachter J. Sexually transmitted diseases in a health maintenance organization teen clinic: associations of race, partner's age and marijuana use. *Arch Pediatr Adolesc Med* 1999; 153(8):838-844
 18. Sionean C, DiClemente RJ Wingood GM, Crosby R, Cobb BK, Harrington K, Davies SL, Hook EW, Oh MK. Socioeconomic status and self-reported gonorrhoea among African American female adolescents. *Sex Transm Dis* 2001; 28(4):236-239
 19. Crosby RA, Wingood GM, DiClemente RJ, Rose ES. Family-related correlates of sexually transmitted disease and the barriers to care: a pilot study of pregnant African American adolescents. *Fam Community Health* 2002; 25(2):16-27
 20. I Tweedie, K Witte. Ghana Youth Reproductive Health Survey Report Accra, Ghana: Ghana Social Marketing Foundation, 2000.
 21. Glover EK, Bannerman A, Pence EW, Miller R, Weiss E, Nerquaye-Tetteh J. Sexual health experiences of Adolescents in three Ghanaian towns. *Int Fam Plan Perspect* 2003;29(1):32-40
 22. Zellner SL. Condom use and the accuracy of AIDS knowledge in Cote d'Ivoire. *Int Fam Plan Perspect* 2003;29(1):41-47
 23. Adih WK, Alexander CS. Determinants of condom use to prevent HIV infection among youth in Ghana. *J Adolesc Health* 1999;24:63-72