

## Factors influencing condom use among women in Ghana: an HIV/AIDS perspective

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### Abstract

Although in Ghana information on HIV infection and prevention, both in terms of quality and quantity, has increased considerably within the past few years, available literature indicates that behaviour change is yet to correspond with the amount of information and education provided. The objective of this study is to examine factors that influence condom use among women in Ghana in the context of HIV/AIDS prevalence. Data for this study are from the 2003 Ghana Demographic and Health Surveys (GDHS) and the study population ( $N=5\ 691$ ) was analysed using logistic regression with the Health Belief Model (HBM) as an explanatory tool. The outcome variable for this study is condom use during last sexual intercourse. The HBM identifies perception of HIV/AIDS risks, awareness of its seriousness, knowledge about prevention, and confidence in condom use as predictors of safe sexual activity. Results show that the proportion of women reporting use of condoms remains tremendously low, in both the rural and urban areas. In the urban areas, only 15% of women reported having sex with condom during their last intercourse, whereas in the rural areas the proportion is even lower (10%). However, multivariate analyses based on the HBM components show that speaking with a partner about how to avoid AIDS (Odds Ratio = 1.63) and perceived benefits of using condoms (Odds Ratio = 1.54) are notable factors that predict condom use. Overall, the study points out that with the exception of perceived severity, the HBM can be applied to understand condom use among the study population. It will be important to emphasise all components of the HBM and empower women with condom negotiation skills.

**Keywords:** Health Belief Model (HBM), HIV/AIDS, condom use, Ghana.

### Résumé

Au Ghana, bien que l'information sur la prévention et l'infection VIH est considérablement augmentée au cours des dernières années, aussi bien en qualité qu'en quantité, les publications récentes indiquent que les changements de comportement ne sont pas encore liés à la quantité d'information et à l'éducation dispensée. L'objectif de cette étude est d'examiner les facteurs qui influencent l'utilisation du préservatif chez les femmes au Ghana, dans le cadre de la prévalence du VIH/SIDA. Les données de cette étude provenant de l'enquête sur la démographie et la santé de 2003 et du recensement de la population ( $N=5\ 691$ ) ont été analysées en utilisant la méthode de régression logistique avec le 'Health Belief' Modèle (HBM) comme outil d'explication. La finalité de cette étude est de connaître le niveau d'utilisation du préservatif durant les derniers rapports sexuels. La méthode HBM détermine le niveau de perception du risque VIH/SIDA et la conscience de sa gravité, connaissance des mesures de prévention et confiance envers le préservatif comme outil de protection de l'activité sexuelle. Les résultats montrent que la proportion de femmes qui dit utiliser le préservatif demeure extrêmement faible, aussi bien au niveau rural qu'urbain. Dans les zones urbaines, seulement 15% des femmes disent avoir utilisé le préservatif durant le dernier rapport. Aussi, en milieu rural cette proportion est encore plus faible (10%). Quoi qu'il en soit, les multiples analyses basées sur la méthode HBM montrent que parler avec son partenaire sur comment éviter le SIDA (Odds Ratio = 1.63) et des avantages perçus de l'utilisation du préservatif (Odds Ratio = 1.54) sont les facteurs clés qui poussent à l'utilisation du préservatif. En général, l'étude révèle qu'en dehors de sa perception de sévérité, le HBM peut être utilisé pour comprendre l'utilisation du préservatif au sein d'une population. Il est important de souligner tous les aspects de la méthode HBM et en particulier le pouvoir des femmes dans la négociation pour l'utilisation du préservatif.

**Mots clés:** Health Belief Model (HBM), VIH/SIDA, utilisation du préservatif, Ghana.

### Introduction

The HIV/AIDS pandemic has struck harder in Africa than in any other continent in the world. Well into the second decade of the epidemic, Africa continues to be at the epicentre of the HIV epidemic. Social and biomedical research has established that HIV/AIDS intensifies gender inequality (Anarfi, 1997; Opong, 1998). Nowhere is the epidemic's 'feminisation' more apparent than in Sub-Saharan Africa, where the Joint United Nations programme on AIDS

(UNAIDS) epidemic update for 2007 reported that as of 2007, almost 60% of adults living with HIV in sub-Saharan Africa are women, and 75% of young people infected are girls (UNAIDS, 2008).

In Ghana, the first case of HIV was diagnosed in 1986 and by the year 2000, UNAIDS had estimated that 330 000 adults and 14 000 children had been infected by the virus (UNAIDS, 2002). In 2004, approximately 400 000 Ghanaians were estimated to be HIV positive

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and this number is expected to reach 550 000 by 2015. Prevalence rates have increased from 2.6% in 2000 to 3.6% in 2003 and 3.1% in 2004 (UNAIDS, 2008). Ghana's HIV/AIDS has exhibited a different pattern from that found in many other parts of sub-Saharan Africa (Oppong, 1998). Oppong (1998) further observed that commercial sex workers (CSWs) and their clients are the groups in Ghana who are most vulnerable to HIV infection and the driving force behind the country's epidemic. CSWs contribute disproportionately to the number of new infections. A recent 2006 study of CSWs in Accra, 'Strengthening HIV/AIDS Response Partnership (SHARP)' found that 52% of stationary and 37% of mobile sex workers had HIV. Although information on HIV infection and prevention in Ghana, both in terms of quality and quantity, has increased considerably within the past few years (Bosompra, 2001; Luginaah, 2008; Mill, 2001; Yeboah, 2007), available literature indicates that behaviour change is yet to correspond with the amount of information and education provided (Awusabo-Asare, Abane, Badasu, & Anarfi, 1999). The HIV/AIDS epidemic can potentially derail Ghana's efforts to achieve its Vision 2020 Development Agenda.

The basic goals of Ghana's Vision 2020 Development Agenda are to reduce poverty, increase average incomes, reduce disparities in incomes and opportunities, thereby making Ghana a middle-income country by the year 2020. These goals will be achieved by reducing the rate of HIV/AIDS infection, reducing infant and childhood mortality and general morbidity, improving food security and nutrition and further increasing access to health services, safe water and sanitation, and adequate housing. They also involve the achievement of universal basic education and adult literacy, especially for females, and increased access to secondary and tertiary education (Ghana-Vision 2020, 1997). Given the human capacity needed to achieve these goals and the impact of HIV/AIDS on life expectancy through person-years of life lost, there is the potential that the country might be losing its human resources as it works towards the attainment of these goals.

Although Ghana is seen as having relatively fewer reported cases of HIV than some neighbouring countries, the 2007 infection rate of 2.3% should be of great concern to all. The UNAIDS epidemic update for 2007 notes that although AIDS prevalence has stabilised worldwide, the number of persons living with HIV is increasing owing to ongoing accumulation of new infections with longer survival times. The report further quotes Angola, Kenya, Mozambique, Nigeria, Benin and Zimbabwe as countries in Africa where the proportion of decline is due to a reduction in the number of new infections, which is in part due to a reduction in risky sexual behaviours (UNAIDS, 2008).

Determining the exact magnitude of HIV in Ghana to warrant research can be extremely difficult. As noted by Kirby (1997) and Oppong (1998), the unavailability of accurate diagnostic equipment and the fact that many residents in Ghana do not have access to quality healthcare facilities compound the problem of providing accurate data on the epidemic. Oppong (1998) went on to say that for fear of stigmatisation, not many people with HIV, especially women, seek medical care in institutions that report new cases to the Ministry of Health. Thus, it is more probable that the number of reported HIV cases may be under-recorded. Given the potential for the future spread of the disease, the focus on Ghana is timely and appropriate to examine the factors that influence condom use in Ghana.

Ghana's HIV/AIDS rate, although relatively low, deserves some attention. Ghanaians, especially women and children, are the most infected (Mill, 2001; UNAIDS, 2008) with the virus that is almost certain to result in their deaths in the near future. And more are becoming infected every day. What is of concern is evidence by Ghana AIDS Commission (GAC) that suggests that while the epidemic is still expanding throughout the country, condom use still remains unpopular (NACP/MOH, 2006). On the other hand, there is much that can be done to change the course of the epidemic in Ghana. The virus that causes AIDS is not found in the air or water. Neither is it spread by insects or witchcraft; rather, it is transmitted by certain types of lifestyles and behaviour. More than 95% of adults aged 15 - 49 years are not infected (see NACP/MOH, 2006), and all of these uninfected Ghanaians can take positive and active steps to protect themselves from HIV.

A key feature of Ghana's AIDS epidemic is that it is transmitted primarily through heterosexual intercourse. The biological make-up of the female genitalia coupled with the gender/structural constraints within which sex takes place thus exposes sexually active women to contracting the disease more than their male counterparts. In Ghana, gender norms often dictate that women and girls be kept passive about sex, which greatly constrains their ability to negotiate safe sex or access appropriate STIs services (Mill, 2001). Such gender stereotypes account for women having much less access than men to key productive resources such as education, income and employment, which significantly reduces the leverage they have in negotiating protection with their sexual partners and affects their ability to practise safe sex. Gender norms create social pressure on men and boys to take risks, be self-reliant, and prove their manhood by having sex with multiple partners. This gender-wise socio-cultural expectations in Ghana tend to leave a woman more vulnerable to infection, while men risk infection because of ideals of masculinity associated with risk-taking and sexual conquest. Furthermore, research indicates that even those gender norms which supposedly protect girls, such as those that expect girls to remain virgins until marriage, can put them at risk by restricting their access to full information about condom use and other reproductive health services (Agyei, Biritwum, Ashitey, & Hill, 2000; Ankomah, 1998; Bosompra, 2001; Mill & Anarfi, 2002).

Given this context, it is no surprise that more women than men living in rural areas have been diagnosed with HIV in Ghana (see UNAIDS, 2008). Studies show that the hardest hit groups are women in their peak childbearing years, that is, women aged of 20 - 30 years (Takyi, 2003). Since most women aged 15 and above are sexually active, understanding and promoting change in individual behaviour for HIV prevention is necessary. Reports from Uganda show that it is possible for an African country to make important strides in changing the behaviour of individuals and the course of the epidemic (de Walque, 2007; Hulton, Cullen, & Khalokho, 2000). In spite of the gender/structural constraints within which sex takes place in Ghana, if women are able to insist/negotiate condom use with their partners, then it would enhance safe sex practices for both sexes. In this situation women would benefit enormously in reducing their risk of contracting HIV/AIDS. It is against this backdrop that we seek to examine the factors that influence condom use among women in Ghana.

We hypothesise that women who know that using condoms can reduce their risk of contracting AIDS will be more likely to report having used them during their last sexual intercourse. We also hypothesise that women who had spoken to their partners about avoiding AIDS will be more likely to have used condoms during their last sexual intercourse.

The Health Belief Model (HBM) basically addresses the question: 'How does behavioural change occur?' This question probably has as many answers as there are diverse populations and cultures. Every HIV prevention programme, however, is based on theories about how and why people change their behaviours. Some of the underlying principles may not be formally recognised as theories but they focus HIV prevention efforts on the elements believed to be essential for individuals to enact and sustain behaviour change. In Ghana, many prevention strategies were developed in the mid-90s to inform the population about HIV prevention methods, such as condom use, delaying sexual initiation and fewer sexual partners that could protect individuals from contracting the viral infection. Faithfulness to sexual partner, partner reduction, abstinence and condom use are longstanding primary prevention messages. By the year 2000, the major interventions tailored to reducing risky behaviours used many psychosocial and anthropological theories that have been previously used for other situations but with the same purpose of changing risky health behaviour to attain a better state of health. This paper uses the prominent components of the HBM, namely perceived susceptibility, perceived severity, perceived benefits and perceived self-efficacy, as a theoretical perspective to examine the factors that influence condom use in Ghana.

The HBM is one of the most influential and widely used models to explain health conditions and health-related behaviours (Rosenstock, 1990; Rosenstock, Strecher, & Becker, 1994). The model has been used with great success to promote greater condom use, seat belt use, medical compliance, health screening, to name a few behaviours. The model's major strength is in its ability to highlight the range and complexity of factors involved in attempting to modify health-related behaviour. It therefore offers a useful framework for analysing the factors influencing condom use behaviour in Ghana, focusing in particular on the role of beliefs in condom use and self-efficacy to use condom during sexual intercourse. The HBM is built on the understanding that:

- a person will take a health-related action (e.g. condom use) if he or she first realises that a negative health condition (e.g. HIV) can be avoided
- a person will avoid a negative health condition if he or she has a positive expectation of a recommended action, (e.g. condom use will be effective at preventing HIV)
- a person believes that he or she can successfully take a recommended health action (e.g. he or she can use condom comfortably and with confidence).

The prominent components of the model incorporate the following ideas:

- perceived susceptibility refers to one's subjective perception of the risk of contracting a health condition
- perceived severity refers to feelings concerning the seriousness of contracting an illness

- perceived benefits relates to the belief that a certain action can reduce one's risk of contracting an illness
- perceived self-efficacy refers to the conviction that one can exert control over his/her own motivation, thought processes and patterns of behaviour (Bandura, 1994).

In the Ghanaian context, studies examining various constructs of the HBM have revealed mixed results with AIDS-related behaviours. For instance, Mill (2001) found perceived severity to be a better predictor of safe sex than perceived susceptibility. However, in a later study, Mill and Anarfi (2002) did not find such associations. They found belief in condom use to be associated with AIDS-preventive behaviours. The HBM would hypothesise that these associations would be even stronger among those reporting confidence in using condoms during sexual intercourse. This is consistent with Bosomprah's (2001) theoretical analysis suggesting that although women acknowledge that safe sex practices reduce risk of HIV infection, they do not adopt them if they cannot exercise control in sexual relations.

## Methods

### Data

Data for this study are from the 2003 Ghana Demographic and Health Surveys (GDHS), a nationwide sample survey that collected information on population, family planning, maternal and child health, nutrition, childhood mortality, HIV/AIDS and sexually transmitted infections (STIs). GDHS 2003 is the fourth survey of its kind to be undertaken in Ghana, the earlier ones conducted in 1988, 1993 and 1998. The latest GDHS included, for the first time, testing of blood samples to provide national rates of anaemia and HIV. Informed consent was sought from respondents before interviewing began and respondents interviewed were asked to voluntarily provide a few drops of blood for anaemia and HIV testing. The protocol for the blood specimen collection and analysis was based on the anonymous linked protocol developed for DHS. The protocol allows for the merging of the HIV results with the socio-demographic data collected in the individual questionnaires, provided the information that could potentially identify an individual is destroyed before the linking takes place (GDHS, 2004).

The 2003 GDHS, conducted from July to October 2003, is a nationally representative sample of 5 691 women aged 15 - 49 and 5 015 men aged 15 - 59 from 6 251 households. This study uses only the sample of women. The survey utilised a two-stage sample based on the 2000 Ghana Population and Housing Census. The sample covered the population residing in private households in Ghana. A probability sample of 6 628 households was selected nationwide. The list of enumeration areas (EAs) from the 2000 Ghana Population and Housing Census was used as a sampling frame. The sampling frame was first stratified into the 10 administrative regions in Ghana, then into rural and urban EAs. The sample was selected in such a manner as to allow for separate estimates of key indicators for Ghana as a whole and for each of the 10 regions, as well as for rural and urban areas separately. The structure questionnaire was administered through face-to-face interview.

A major strength of using the GDHS data for this study is that the data are of high quality and have been used in other studies (see e.g. Gyimah, Takyi, & Addai, 2006; Takyi, 2003). In addition, 2003 GDHS for the first time collected detailed information on measures that can

be used to tap several aspects of HIV/AIDS, including, for example, perceived susceptibility, perceived severity, perceived benefits, cues for action, infection rates, commercial sex work activities, just to mention a few. In addition to these HIV-related dependent measures, the 2003 GDHS collected basic geographic and socio-demographic data that allow us to test their possible influence on the practice of safe sex.

### Outcome measure

The outcome variable of interest for this study is condom use (be it male or female condom) at *last* sexual intercourse as reported by women, on the assumption that it is a good indicator of the prevalence of condom use within the last 12 months. Male condoms are most commonly used in Ghana although it is possible that respondents could have used female condoms as well. The question asked respondents who were sexually active: 'The last time you had sexual intercourse, was a condom used?' This was coded as '0=No' and '1=Yes'. Condom use is known to be protective when used consistently. However, in order to limit bias in recalling whether condom is used sometimes, always or never, one can more reliably use the information on using condom at last intercourse and assume that it will reflect the habit of condom use (UNGASS, 2007).

Promoting the use of condoms is an important strategy in the fight against HIV/AIDS transmission. Table 1 gives the proportion of

women reporting condom use, in both the rural and urban areas. It is clear that the proportions are tremendously low. In the urban areas, only 15% of women reported having used condoms during their last intercourse; whereas in the rural areas the proportion is even lower (10%).

### Explanatory and control variables

A number of explanatory and control variables were included in model building. The descriptive statistics of these variables are given in Table 1. Thirty four per cent of respondents had no formal education, and 47% had secondary education and above. In terms of marital status, 65% of the sample respondents were married. The distribution of household wealth is quite interesting as 41% of respondents fall into both low and high household wealth categories. As for the four different constructs of the HBM, awareness about the disease in terms of having heard about how to avoid AIDS (that is, perceived susceptibility) is quite high. A little over 77% of women have heard about how to avoid AIDS. However, the majority of the respondents (80%) do not know that a healthy-looking person can have HIV, the virus that causes AIDS. As for perceived severity of the disease, about 38% of women know someone who has or died of AIDS. For perceived benefits, we find a considerable proportion of respondents having a positive perception about the different preventive methods being used by public health service providers to arrest the spread of

**Table 1. Distributions of outcome and explanatory variables by place of residence**

Variables	Rural %	Urban %	Total Freq.	%	Chi-square
<b>Used condom at last sexual intercourse</b>					
No	89.9	84.8	3 435	87.6	22.51**
Yes	10.1	15.2	485	12.4	
<b>Demographic variables</b>					
<i>Marital status</i>					
Never married	27.0	25.9	1 508	26.5	7.84*
Married	63.7	66.5	3 694	64.9	
Formerly married	9.3	7.5	488	8.6	
<i>Education</i>					
No formal education	36.2	30.1	1 916	33.7	23.06***
Primary education	18.8	20.6	1 112	19.5	
Secondary education and above	45.0	49.3	2 662	46.8	
<i>Household wealth</i>					
Low	67.7	3.9	2 338	41.1	30.94***
Average	20.4	13.1	990	17.4	
High	11.9	83.0	2 363	41.5	
<i>Employed</i>	70.7	75.3	4 127	72.6	14.80***
<b>Perceived severity</b>					
Knows someone who has AIDS or died of AIDS	37.7	38.3	2 113	38.0	0.25
<b>Perceived benefits</b>					
Reduce risk of AIDS by using condom during sex	72.7	73.5	4 063	73.0	0.40
<b>Perceived susceptibility</b>					
Heard about how to avoid AIDS	76.9	77.7	4 298	77.2	0.49
Can a healthy person have AIDS	20.0	20.6	1 127	20.3	0.36
<b>Perceived self-efficacy</b>					
Spoken with sexual partner about avoiding HIV/AIDS	57.9	58.9	2 098	58.3	0.40
<sup>a</sup> Condom use at sexual debut	25.6	29.5	467	27.4	3.22*

Statistical significance: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

<sup>a</sup> This question was asked of respondents aged 15 - 24 years only who had initiated sexual intercourse, thereby reducing the number of cases to 1 774.

the HIV epidemic. For instance, more than 70% of women agree that using condoms during sex can reduce their risk of contracting HIV. Similarly for perceived self-efficacy, about 58% of respondents have spoken with their partners about avoiding AIDS, but the proportion of women aged 15 - 24 years reporting condom use during sexual debut (27.4%) is relatively low.

### Method of analysis

Logistic regression analysis was performed using SPSS version 17.0 to examine the probability of having used condom at last sexual intercourse. Unlike ordinary least squares (OLS) regression, which has some distributional requirements for predictors, the logistic regression does not require the predictors to be normally distributed, linearly related, or to have equal variances within each group. Logistic regression is especially useful when the distribution of responses on the dependent variable is expected to be nonlinear with one or more of the independent variables (Agresti, 2007; Hosmer & Lemeshow, 2000). The procedure gives rise to estimates of odds of a certain event occurring, given a set of explanatory variables (e.g. use of condoms will be more likely for a higher educated woman than for a lower educated woman).

The criteria for determining the best fitting model are based on the log likelihood test as well as on the Hosmer-Lemeshow goodness-of-fit test. In interpreting the results, we focus on variables whose effect sizes are significant and theoretically relevant to the topic under discussion.

### Results

To assess the relative importance of socio-demographic variables and the main components of the HBM, we built six models predicting condom use during last sexual intercourse. These variables were entered into the model in a forward stepwise fashion to identify the net contribution of specific sets of variables while adjusting for the simultaneous effects of other sets of variables in the model. In step 1, all demographic variables were entered into the model. To assess the predictive utility of each component of HBM as a whole model, that is, how individuals with various combinations of health beliefs are more or less likely to have used condoms during their last sexual intercourse, each component of the HBM was entered into the model one at a time, in steps 2 - 5. We also included an additional model (Model 6) for women aged 15 - 24 years only ( $N=1\ 774$ ) who reported having used condoms during their sexual debut; this variable therefore represents the 'self-efficacy' component of the HBM.

Table 2 presents results from the logistic regression models. As seen in the last few rows of the table, the models correctly classify more than 85% of cases in the sample into condom users or non-users. The log-likelihood chi-square statistics are largely significant, denoting the adequate explanatory power of the variables used in explaining the dependent variable. And, according to Nagelkerke pseudo-R square values, all the independent variables explain around 22 - 23% of variation in the dependent variable.

In Table 2 we find most of the independent variables (excepting age and knowledge of someone who died of AIDS) to be significantly associated with condom use during last sexual intercourse. Marital status is a significant predictor of women having used condoms during their last sexual intercourse. Formerly married women are about 70%

less likely to have used condoms during their last sexual intercourse, compared with the never married (see Model 5, Table 2). Married women are generally more likely to have used condoms, although the estimates are not statistically significant.

Changes in the impact of education from Model 1 to Model 5 on the odds of having used condoms at last sexual intercourse are interesting. Controlling for all other variables in the model, women with primary education are significantly less likely to report condom use at last sexual intercourse, compared with women with no education. This finding persists from model to model, with only slight variation in the odds and, although at first sight seems unexpected, is consistent with the findings in other topics such as fertility. In other words, education exercises its impact on behaviour only after a certain level and after a certain age. In particular, the link between education and condom use occurs only at a later age in life, not when women are at the primary education and when they would not have initiated sex. In contrast, the changes from model to model are different in the case of women with secondary education and above. The odds change from being non-significant to being significant with the inclusion of HBM components. Model 5 shows that women with secondary education are 28% more likely to report having used condoms during their last sexual intercourse, once the effects of HBM variables are accounted for. Similarly, in Model 6, odds are doubled for women aged 15 - 24 with secondary education and above, compared with their colleagues with no education.

As for the impact of household wealth, a proxy for social status, on condom use during last sexual intercourse, changes in the odds from Model 1 to Model 5 remained significant for women with average household wealth. The odds increased from 42% less (i.e. 1 - 0.58) in Model 1 to 23% less (i.e. 1 - 0.77) in Model 5. Women from high household wealth have the expected higher odds of using condoms, although the estimates are non-significant throughout.

Women who are employed are significantly less likely to have used condoms at last sexual intercourse, compared with unemployed women, but the odds increase from model to model. The odds change from 30% less to 17% less when compared with women who are unemployed. Although unexpected, this result for employment is interesting and should be seen in conjunction with the results on marital status seen above. The unemployed could include students and young people and may be responsible for the employed being less likely to use condoms. We also found through a cross-tab analysis between employment and marital status that most of the women who are married (73%) are also employed. In contrast, for women aged 15 - 24 years only, employment loses its significance. This may be due to the fact that most women in this age group are not gainfully employed.

Residing in an urban area has significant positive effects on the odds of condom use and the odds persist in the presence of additional variables through Models 1 to 6. The odds are 23% higher (Model 5) for women in urban areas, compared with rural women. Among younger women (Model 6), urban women are 4 times more likely to have used condoms when compared with their counterparts in rural areas.

As for the various components of the HBM, we find in Table 2 the following salient results. There is no association between perceived

severity (knowing someone who has or died of AIDS) and condom use during last sexual intercourse. Even after introducing other HBM components (perceived benefits, susceptibility and self-efficacy) in Models 3 - 6, the odds still remained non-significant although slightly elevated (see Table 2).

In contrast to perceived severity, perceived benefits have significant role in predicting condom use. That is, women who know that one can reduce risk of infection by using condoms are 35% more likely to have used condoms during their last sexual intercourse (Model 3). This finding persists from Model 4 to Model 5 with slight variations, and in the presence of all the HBM components, the likelihood increases to 54% (Model 5). However, among younger women (Model 6) for whom we consider condom use at first sexual intercourse, perceived benefits have much lower, although still positive (only 8% more likely), impact on the odds of having used condoms during their last intercourse.

Results from Model 5 in Table 2 show that women who know that a healthy-looking person can have AIDS are about 47% more likely to have used condoms, compared with women who do not. Also, women

who answered 'Yes' to whether they have heard about how to avoid AIDS are 21% more likely to have used condoms, compared with those who answered 'No' to that question.

Finally, we find significant positive association between 'spoken to partner about avoiding AIDS' and condom use at last sexual intercourse. Among women aged 15 - 24 years who had protected sex at their first sex, the odds are significantly higher (2.2 times higher).

## Discussion

This study highlights critical information related to factors conducive to the use of condoms as reported by Ghanaian women. Women in both rural and urban areas of Ghana are aware of the disease. First, given the fact that in the Ghanaian culture people tend to see HIV as a punishment from God or sent from another person through spirits (Agadjanian, 2001; Takyi, 2003), it is interesting to see that the majority of Ghanaian woman have heard about the disease and ways to avoid contracting it.

**Table 2. Odds Ratios (*p*-value) of using condoms from the multivariate logistic regression models**

Demographic variables	Demographic (M1)	Severity (M2)	Benefits (M3)
<b>Age</b>			
15 - 24 (ref)	1.00	1.00	1.00
25 - 34	1.06	1.03	1.03
35 - 44	0.98	0.98	0.98
45 - 49	0.79	0.79	0.79
<b>Marital status</b>			
Single (ref)	1.00	1.00	1.00
Married	1.26	1.29	1.30
Formerly married	0.27 (0.000)	0.28 (0.000)	0.29 (0.000)
<b>Education</b>			
No education (ref)	1.00	1.00	1.00
Primary education	0.14 (0.000)	0.12 (0.000)	0.11 (0.001)
Secondary education and above	0.99	0.87	1.11 (0.015)
<b>Household wealth</b>			
Low (ref)	1.00	1.00	1.00
Average	0.58 (0.008)	0.58 (0.008)	0.60 (0.007)
High	1.13	1.10	1.14
<b>Employment</b>			
Not employed (ref)	1.00	1.00	1.00
Working	0.70 (0.034)	0.70 (0.005)	0.71 (0.006)
<b>Place of residence</b>			
Rural (ref)	1.00	1.00	1.00
Urban	1.17 (0.000)	1.17 (0.001)	1.18 (0.001)
<b>Perceived severity</b>			
Knows someone who has AIDS or died of AIDS		1.05	1.04
<b>Perceived benefits</b>			
Reduce risk of AIDS: Use condom			1.35 (.022)
Per cent correctly classified	87.5	87.3	87.4
Model Chi-Square (sig)	495.45 (0.000)	492.71 (0.000)	498.08 (0.000)
Nagelkerke R Square	0.225	0.227	0.229
Chi-Square GOF	10.886 (0.208)	10.113 (0.257)	9.996 (0.256)
<i>N</i>	3 916 (81%)	3 844 (79.5%)	3 841 (79.5%)

ref = reference category.

**Table 2 (cont'd). Odds Ratios (p-value) of using condoms from the multivariate logistic regression models**

Demographic variables	Susceptibility (M4)	Self-efficacy (M5)	Self-efficacy (M6)
<b>Age</b>			
15 - 24 (ref)	1.00	1.00	
25 - 34	0.98	1.10	
35 - 44	0.95	0.85	
45 - 49	0.78	0.79	
<b>Marital status</b>			
Single (ref)	1.00	1.00	
Married	1.37	0.97	
Formerly married	0.30 (0.000)	0.30 (0.000)	
<b>Education</b>			
No education (ref)	1.00	1.00	1.00
Primary education	0.11 (0.000)	0.24 (0.009)	0.06 (0.034)
Secondary education and above	1.12 (0.05)	1.28 (0.044)	2.00 (0.047)
<b>Household wealth</b>			
Low (ref)	1.00	1.00	1.00
Average	0.60 (0.014)	0.77 (0.047)	0.20
High	1.15	1.18	0.03
<b>Employment</b>			
Not employed (ref)	1.00	1.00	1.00
Working	0.72 (0.007)	0.83 (0.01)	1.03
<b>Place of residence</b>			
Rural (ref)	1.00	1.00	1.00
Urban	1.18 (.003)	1.23 (.005)	4.05 (.02)
<b>Perceived severity</b>			
Knows someone who has AIDS or died of AIDS	1.04	1.05	1.36
<b>Perceived benefits</b>			
Reduce risk of AIDS: Use condom	1.35 (.041)	1.54 (.044)	1.08 (.043)
<b>Perceived susceptibility</b>			
Heard about ways to avoid AIDS	1.13 (.034)	1.21 (.037)	1.02 (.041)
Can a healthy person have AIDS	1.39 (.021)	1.47 (.025)	0.52
<b>Perceived self-efficacy</b>			
Spoken with partner about avoiding AIDS		1.63 (.047)	2.21 (.016)
Condom use at sexual debut			2.23 (.006)
Percent correctly classified	87.7	92.3	89.9
Model Chi-Square (sig)	479.242 (0.000)	469.316 (0.000)	59.318 (0.000)
Nagelkerke R Square	0.227	0.218	0.346
Chi-Square GOF	11.984 (0.152)	10.461 (0.149)	4.601 (0.591)
N	3 748 (77.6%)	3 090 (63.9%)	316 (17.8%)

ref = reference category.

Behaviour change models suggest that adoption of condoms to prevent HIV infection is influenced by an individual's level of education and awareness that the method is effective (Bandura, 1994; Rosenstock *et al.*, 1994). Findings of this study support the propositions of the models and explain why use of condoms is high for women with secondary education and above and relatively low for women with primary education. That condom use is more likely with women who had secondary education and above is consistent with existing studies (Agyei *et al.*, 2000). It appears that a sense of risk of contracting HIV increases as a woman advances in her educational career. This finding appears to be implicitly corroborated by a study of patterns of condom use in Lusaka, which found that the use of condoms increased with education and improved social economic status (Agha, 2001). In Lusaka, condom use is about three times more likely among women

with secondary education compared with women with no education. However, Awusabo-Asare and Annim (2008) found women with higher education to be more likely to be involved in risky sexual behaviour.

Results concerning household wealth and employment were unexpected although they are consistent with that of Hallman (2005), who found that low socioeconomic status has persistent negative effects on female sexual behaviour and also increased their risk of early pregnancy. Poverty and low education could influence women's sexual behaviour by reducing access to information about safe sex practices or by inhibiting their ability to put such information into practice. There is growing evidence that young women engage in sex for money, goods or favours. Luke and Kurz's (2002) review of studies

from sub-Saharan Africa indicates that reports of this behaviour vary greatly by country, ranging from 5% of girls aged 12 - 17 in Cameroon to 66% of girls aged 10 - 18 in Malawi, to 80% of girls aged 14 - 19 in urban Tanzania. Using data from Demographic and Health Surveys collected in five sub-Saharan African countries between 1994 and 1998 that included a question on exchanging sex, the Population Reference Bureau (2001) reports the prevalence of recent exchanges among unmarried women aged 15 - 19 at 13% in Zimbabwe, 21% in Kenya, 26% in Mali, 31% in Uganda, and 38% in Zambia. While information alone is not a panacea to bring about changes in sexual behaviour, it is a prerequisite. Various studies indicate that for young women in Ghana, condom use is a difficult topic to introduce in relationship conversation (see Awusabo-Asare *et al.*, 1999; Mill & Anarfi, 2002).

Although findings of this study on household wealth point to a certain direction, we caution that HIV/AIDS should not be seen as a 'disease of poverty' since relatively well-off individuals are also likely to engage in risky behaviours. For instance, Anarfi (1993) observed that Ghanaians who are well to do and better-educated were more likely to have multiple sexual partners and engage in risky behaviours because of greater mobility and higher disposable income to pay for casual sex. Awusabo-Asare and Annim (2008) also found that in Ghana, females with higher socioeconomic status are about five times more likely to be involved in sexual risk taking than females with low socioeconomic status. Some scholars have observed that engaging in risky behaviours among women who are relatively well educated and not poor is largely a matter of power and choice (see Yeboah, 2007).

The HBM postulates that a person will adopt a healthy behaviour if he or she ever acknowledges his or her susceptibility to a particular disease, the severity of that disease, the benefits of adopting a behaviour that will lead him or her to a better state of health and he or she has control over the practice of safe sex. This perspective has some explanatory value for the practice of safe sex among women in Ghana. We find that perceiving the benefits of condom use and one's perception of susceptibility to HIV relate to condom use at last sexual intercourse. Even though some researchers have found the opposite association between knowledge and condom use (see e.g. Brown, DiClemente, & Park, 1992; DiClemente *et al.*, 1992), findings in this study corroborate other studies that have found knowledge about the disease to be positively associated with condom use (Basen-Engquist, 1992).

Although the percentages of women using condoms are still low in both urban and rural areas in Ghana, we find that with the exception of perceived severity, all other components of the HBM included in this study are significantly associated with condom use. Ghanaian women are expected to be submissive to men. In such a context, it is interesting to find how inequality plays a role in the practice of safe sex. For instance, women who enter into sexual relationships to alleviate their economic vulnerability lack the decision-making power in that relationship (Anarfi, 1997; Hallman, 2005). However, we found that majority of Ghanaian women (58%) answered 'Yes' to discussing how to avoid AIDS with their sexual partners, translating into increasing odds of using condoms during their last sexual intercourse. For some, the perception that condoms can interfere with pleasure can be a factor in not using condoms.

Multivariate results from Table 2 show no significant relationship between knowing someone who has AIDS or died of AIDS, and condom use. Although some studies have shown such associations (Macintyre, Brown, & Sosler, 2001), this specific finding is consistent with other studies on South African women (Camlin & Chimbwete, 2003). One explanation provided by Camlin and Chimbwete (2003) is that the relationships between these two variables may not be evident if HIV mortality is generally not high enough to influence public perception and to encourage widespread condom use. Also consistent with our study is that of Anarfi (1993), who found that many respondents felt they could not be infected as long as they avoided intercourse with a bed-ridden person. This is part of the general belief that the disease was introduced into the country by Ghanaian migrants returning home from abroad. This misconception, which increases women's optimistic biases to infection, is partly due to earlier shortcomings in Ghana's HIV preventive strategies. In the late 1990s and early 2000, HIV education included a poignant film, a true story, of a man with a history of outside travel, detailing his daily progressive deterioration until death. Using this as the reference point, many Ghanaians without the characteristics portrayed in the film considered themselves invulnerable to infection. This study further reveals that the majority of women (80%) in both residential areas do not know that a healthy-looking person can have HIV, the virus that causes AIDS.

The present study shows that condom use at sexual debut increases the likelihood of condom use during last sexual intercourse, and this effect is net of the influence of stable demographic and perception components of the HBM. This finding is consistent with the idea that early condom use could help establish a pattern of condom use that carries forward to subsequent sexual activity (Agha, 2001; Oppong, 1998). As previously reported in the literature, we observe that having self-efficacy in terms of discussing with a partner how to avoid AIDS, using condom at sexual debut, and personal motivation to use condoms, increases a woman's ability to plan for and execute safe sex practices. Bandura (1994) suggests self-efficacy to be the most powerful tool to increase safe sex practice among women. Therefore, an important consideration in promoting safe sex practices is the need to provide women with condom negotiation skills.

A more important point that our study brings to the fore is that the perception constructs of the HBM have their influence on condom use, *not individually but collectively*. This is because separate bivariate analyses of each component of HBM on the outcome variable (results not reported in this paper) showed no statistical association between them. Thus the relationships are complex, resulting in a synergistic effect on condom use. Our findings suggest that AIDS prevention programmes for women should emphasise the four components of the HBM concurrently. Such programmes should also increase women's self-efficacy that they can use condom any time and address how to overcome barriers in negotiating condom use. HIV/AIDS education messages that focus on the threat of AIDS as a means of inducing condom use may be counterproductive, as shown in our analyses; knowing someone who has or died of AIDS does not necessarily translate into condom use. This study also suggests that AIDS prevention programmes in countries such as Ghana should address ways to help women overcome gender barriers to condom use. Ways should be found to reduce the negative connotation associated with women's insistence on 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 emphasised that with practice, condoms become easier and more fun to use. Condoms can become a regular and pleasurable part of a romantic relationship. Furthermore, the government should consider subsidising condoms to bring condoms of optimal quality within the financial reach of the young and poor. Currently, condoms that are sold at the Ministry of Health's facilities are cheaper than those sold in commercial outlets such as drugstores.

Our study has used the data from the 2003 Ghana Demographic Health Survey, which is a nationally representative data set. However, we have to acknowledge that it is a cross-sectional survey; hence, results from this study remain equivocal on the direction of causality in the relationship between explanatory variables and the dependent variable. A study using a longitudinal design would be necessary to assess the significance and stability of factors or 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 condom use, the potential that the responses provided by subjects were biased by their wish to provide culturally desirable responses cannot be ruled out. Since great care was taken to assure respondents of confidentiality and privacy of the information collected, we hope that such problems were minimised. Furthermore, we were not able to distinguish the use of condoms for family planning purposes from condom use to prevent STIs, in particular HIV infection. Also, the possibility that some of the indicators used might not tap well into some of the HBM constructs cannot be over-ruled.

## Conclusion

Overall, the study points out that the HBM is a useful tool to understand the practice of safe sex. The urban and rural areas did not differ in the types of associations between different variables and condom use at last sexual intercourse, though they did differ in the strength of their associations (results not shown here). Although many Ghanaian women (38%) in both rural and urban areas know someone who has or died of AIDS, this knowledge does not translate to safe sex practices. Many Ghanaians still think that people may contract HIV no matter what they do, if they are 'predestined' to be infected, and since people are going to die anyway, it may not matter much what they die from. This line of reasoning corresponds to the expression 'All die be die' (Awusabo-Asare *et al.*, 1999), implying that the cause of death does not matter much. The phrase was used by a 16-year-old sex worker who, when asked why she was in commercial sex in spite of the spread of HIV, said that she needed to survive and that she could die from anything, including AIDS. In her view, dying from AIDS through commercial sex was not different from dying from any other disease, including hunger. Education programmes in the country need to combat such fatalistic attitudes of people.

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