SEXUAL RISK BEHAVIOUR AMONG HIV-POSITIVE PERSONS IN KUMASI, GHANA

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SUMMARY

Objectives: To assess the prevalence and predictors of sexual risk behaviours among HIV-positive individuals in clinical care in Kumasi, Ghana.

Design: Cross-sectional survey of 267 (43 males and 224 females) HIV-positive individuals attending Kumasi South Regional Hospital.

Methods: An interviewer-administered questionnaire was used to asses demographic and health characteristics, HIV/AIDS knowledge, attitudes, and beliefs and sexual risk behaviours.

Results: Forty-four percent of the sample reported having sex after testing positive for HIV. Of the 175 participants with regular sex partners, 24% had HIV-positive partners. Majority (67%) had HIV-negative partners (serodiscordant couples) or partners of unknown status. More than half (51%) of the study population with regular sex partners reported that they had unprotected anal or vaginal sex. Participants who scored < 50% on the HIV/AIDS knowledge scale were 90% less likely to have used condoms during their last sexual intercourse. Disclosure of HIV status was associated with protective patterns of condom use (OR=2.2; 95% CI: 1.3-12.9). Participants on ARV were 80% less likely to have used condoms during the last sexual intercourse (OR=0.2; 95% CI: 0.04-0.6).

Conclusion: The high rates of sexual risk behaviour among HIV-positive individuals in this sample place others at risk of HIV infection. It also places these HIV positive individuals at risk for infection with sexually transmitted infections and super-infection with other HIV strains. These findings highlight the need to integrate HIV prevention in routine medical care in Ghana.

Keywords: HIV-seropositivity, sexual behaviour, Ghana, antiretroviral therapy, condom use.

INTRODUCTION

The continued spread of HIV in the populations of many sub-Saharan countries poses a major problem to control of the HIV/AIDS pandemic. Ghana has an estimated HIV/AIDS prevalence rate of 1.9%, [1] which is below the average levels for Africa. About 260,000 Ghanaians were living with HIV/AIDS in 2008. [1] Today, more people with HIV live longer, healthier lives because of antiretroviral drugs (ARV). Consequently, the continued spread of HIV may result from those who know their HIV-seropositive status but engage in sexual risk behavior.[2] Generally, most of the efforts to prevent the spread of HIV has been directed to the HIV-negative rather than to the HIV-positive populations.[3]

Studies in Ghana have reported social, cultural, economic and political factors as predictors of sexual risk behaviors.[4-5] The prevalence of unsafe sex among sexually active PLHIV has been documented to be high in the Cameroon, Kenya, South Africa and Uganda.[6-12] A South African study found that half of PLHIV had vaginal or anal sex, and 30% of these participants reported unprotected sex.[7] Clearly, there is a need to assess factors promoting sexual risk behaviour among PLHIV and design behavioural interventions optimally for HIV-positive individuals.

At present, few studies have been conducted with respect to risk reduction and prevention interventions among PLHIV.[13] The majority of studies investigating continued unsafe sex practices have concentrated on men who have sex with men and in developed countries.[13] Studies from other sub-Saharan countries (South Africa, Uganda and Kenya) have identified HIV treatment as a factor associated with safer sex.[7-9] Thus, behavioural intervention can be integrated with routine medical care in resource limited countries like Ghana. Given the potentially grave consequences of continued unprotected intercourse among HIV positive people, there is an urgent need for prevention interventions designed for people living with HIV infection.[14]

Thus, we investigated sexual behaviour among people who were aware of their HIV positive status to determine the factors associated with risky transmission behaviour and to make recommendations for strategies that can be implemented to stop transmission among HIV-seropositive people. This will result in reduction of HIV incidence.

PARTICIPANTS AND METHODS

Study site and Population

Participants were a convenience sample of 267 HIV-infected patients attending Kumasi South Regional Hospital's (KSRH) antiretroviral (ARV) clinic in Kumasi, Ghana during May to August 2008. Kumasi is the capital city of the Ashanti region of Ghana and the second largest city in Ghana (population 1.2 million).[15] The KSRH is located between three cities (Atonsu, Agogo and Chirapatre) in the Ashanti Region of Ghana and provides services to 56 communities which consist of approximately 400,000 people. The hospital provides clinical services including a HIV clinic (with a counselling centre), pharmacy, surgical, general, maternity, and regional reference laboratory.

Ethical considerations

The Institutional Review Board (IRB) of the University of Alabama at Birmingham and the Ccommittee on Human Research, Publications and Ethics, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, reviewed and approved the study protocol prior to its implementation.

Data Collection

A cross-sectional study design was used. Participants were defined as adults 19 years and older who attended HIV treatment clinic at the KSRH. After informed consent was obtained, participants were asked to complete an interviewer-administered questionnaire. The questionnaire covered various topics such as demographic characteristics; health information (including most recent CD4 cell count, current health status, year participants first tested HIV positive, HIV related symptoms); sexual risk behaviours (including number of sexual partners in the previous 3 months, condom use, treatment of sexually transmitted infections after testing HIV positive, HIV positive or negative status of sexual partners); HIV treatment beliefs; HIV transmission risk perceptions and feelings of sadness including current attitudes towards life; and disclosure of HIV status to family and sexual partners.

Measures

Eight questions were used to determine participants' knowledge, attitudes, and beliefs of HIV/AIDS. The possible responses to the questions were "true," "don't know," and "false". The correct response for each item was given one point while the incorrect and "don't know" responses were scored as zero.

Statistical analysis

Differences in socio-demographic and health characteristics, and HIV knowledge, attitude and sexual practices were assessed by sex using chi-square and Fisher's exact tests. We used multiple logistic regression to determine predictors of condom use during last sexual intercourse and use of condoms with regular sex partner. Variables that were statistically significant by bivariate analysis and those known to be associated with condom use based on previous studies were entered into a model. Odds Ratios and 95% confidence intervals were calculated from the models. Data analysis was performed using SAS software version 9.2 (SAS Institute, Cary, NC).

RESULTS

Sociodemographic and health characteristics

A total of 267 HIV-positive individuals (224 females and 43 males were interviewed between May-August, 2008. The average age of the participants was 37± 9 years. Approximately 57% of the participants were employed, 72% had low income (<100 Ghana cedis per month, US$1 = 1.46 GHc) and 59% were either married or living in union. A higher proportion (44%) of women had primary education or less compared to males (19%) and a higher proportion (84%) of males were household heads. About 4% of the study population reported that they had been diagnosed with a sexually transmitted infection (STI) since testing HIV positive. The CD4+ T cell count was higher for males (387.4 ± SD 360.3) than for females (322.9 ± SD 222.4), and the proportion of females (74%) on ARV treatment was higher than males (56%) (Table 1)

Knowledge, attitude and practice regarding HIV sexual risk behaviour

Overall 9% of the participants scored 75% or higher on questions related to HIV transmission and risk behaviour. Forty-four percent of the participants reported having sex after testing positive for HIV. However, 66% of these reported having a regular sex partner. Of the participants with regular sex partners, 24% had HIV-positive partners, and the majority (67%) had HIV-negative (serodiscordant) partners or partners of unknown status. Approximately 51% of the study population with regular sex partners reported that they had unprotected anal or vaginal sex. A large proportion (86%) of the study participants reported that they had disclosed their HIV status. On partner and condom-related questions, males and females differed significantly on a number of variables.

Table 1 Socio-demographic and health characteristics of participants by sex

Variables	Male n=43 (16.1%)	Female n=224 (83.9%)	p-value
Age			
< 35	12 (27.9)	103 (46.2)	0.07
35-44	19 (44.2)	80 (35.9)	
≥ 45	12 (27.9)	40 (17.9)	
Education			
Primary education or less	8 (18.6)	98 (43.8)	**< 0.01**
Secondary education or higher	35 (81.4)	126 (56.3)	
Employment			
No	14 (32.6)	102 (45.5)	0.12
Yes	29 (67.4)	122 (54.5)	
Household Head			
No	7 (16.3)	132 (58.9)	**< 0.01**
Yes	36 (83.7)	92 (41.1)	
ARV			
No	19 (44.2)	58 (25.9)	**0.02**
Yes	24 (55.8)	166 (74.1)	
Have had a STI			
No	41 (95.4)	214 (95.5)	0.96
Yes	2 (4.7)	10 (4.5)	
Have experienced HIV symptoms			
No	20 (46.5)	122 (54.5)	0.33
Yes	23 (53.5)	102 (45.5)	
HIV-related hospitalization			
No	38 (88.4)	198 (88.4)	0.99
Yes	5 (11.6)	26 (11.6)	
CD4 count mean (± SD)	387.4 (360.3)	322.9 (222.4)	**< 0.01**

Bold- Statistically significant; Sum of N for some variables may not equal total N due to missing variables

Factors associated with condom use during the last sexual intercourse

Table 3 shows that participants who were widows or divorcees were 3.5 times more likely to use condoms during their last sexual intercourse (95% CI: 2.0-13.9) than those who were single. Also, participants who had experienced HIV symptoms (OR=2.4; 95% CI: 1.3-6.8), who had other sex partners (OR=4.5; 95% CI: 1.6-31.2) and who had disclosed their HIV status (OR=2.2; 95% CI: 1.3-12.9) were significantly more likely to have used condoms during their last sexual intercourse. Participants on ARV were 80% less likely to have used condoms during the last sexual intercourse (OR=0.2; 95% CI: 0.04-0.6). Participants with HIV/AIDS knowledge less than 50% were 90% less likely to have used condoms during their last sexual intercourse (OR=0.1; 95% CI: 0.01-0.7). Those who were considering future pregnancy were 40% less likely to have used condoms during their last sexual intercourse (OR=0.6; 95% CI: 0.2-0.9) (Table 3).

Table 2 Knowledge, attitude and practice of participants by sex

Variables	Male n=43 (16.1%)	Female n=224 (83.9%)	p-value
HIV Knowledge (%)			
75-100	3 (7.1)	22 (9.9)	0.46
50-74	37 (88.1)	179 (80.3)	
< 50	2 (4.8)	22 (9.9)	
Have had sex after testing positive	22 (52.4)	126 (56.5)	0.62
No	20 (47.6)	97 (43.5)	
Yes			
Have a regular sex partner	10 (24.4)	80 (35.7)	0.16
No	31 (75.60)	144 (64.3)	
Yes			
Regular partner HIV status			
Positive	10 (37.0)	32 (24.2)	0.37
Negative	4 (14.8)	27 (20.5)	
Don't know	13 (48.2)	73 (55.3)	
Do you use condoms with regular partner	17 (40.5)	72 (32.3)	0.45
No	14 (33.3)	72 (32.3)	
Yes	11 (26.2)	79 (35.4)	
N/A			

A higher proportion of men than women always bought condoms (33% vs. 6%), considered condom expiration dates (28% vs. 10%), always carried condoms (17% vs. 6%), asked for sex (59% vs. 2%), and had other sex partners (10% vs. 1%). Approximately one third (31%; 3 males, 69 females) of the participants reported that they did not use condoms during their last sexual intercourse. The majority (82%) of the study sample reported never attending HIV support groups. However, 72% of the participants reported having a good support network. Nearly half (47%) of participants reported feeling depressed, however a higher proportion of women (52%) reported feeling depressed than males (26%) (Table 2).

Factors associated with condom use with regular sex partner

Male and female participants aged 35-44 years had a 3.3-fold increased odd of condom use with regular sex partner (OR=3.3; 95% CI: 1.2-9.3). Those with secondary education or higher were approximately three times as likely to use condoms with their regular sex partner as those with primary education or less (OR=2.9; 95% CI: 1.2-7.8). Participants who were divorced or widowed had a 2.8-fold increased odds of condom use with regular sex partner, while those whose sex partners had other sex partners and those who had disclosed their HIV status were 70% more likely to use condoms with their regular sex partners. These associations were statistically significant.

Table 3 Crude and adjusted ratios of the association between selected variables and condom use during last sexual intercourse

Variables	Crude Odds	Adjusted Odds Ratio (95% CI)
Age		
< 35	Ref.	Ref.
35-44	1.4	0.3 (0.1-1.0)
≥ 45	**4.8**	0.3 (0.1-2.4)
Sex		
Male	Ref.	Ref.
Female	1.1	1.1 (0.2-5.1)
Education		
Primary education or less	Ref.	Ref.
Secondary education or higher	0.8	0.9 (0.3-2.7)
Marital status		
Single	Ref.	Ref.
Married or living in union	0.3	2.0 (0.4-9.6)
Divorced or widowed	**3.8**	**3.5 (2.0-13.9)**
Employment		
No	Ref.	Ref.
Yes	**1.5**	1.4 (0.6-3.4)
ARV		
No	Ref.	Ref.
Yes	0.9	**0.2 (0.04-0.6)**
Have experienced HIV symptoms		
No	Ref.	Ref.
Yes	**1.7**	**2.4 (1.3-6.8)**
HIV Knowledge (%)		
75-100	Ref.	Ref.
50-74	0.5	0.6 (0.1-4.1)
< 50	0.4	**0.1 (0.01-0.7)**
Have a regular sex partner		
No	Ref.	Ref.
Yes	**0.4**	1.0 (0.1-10.4)
Considering becoming pregnant		
No	Ref.	Ref.
Yes	**0.3**	**0.6 (0.2-0.9)**
Don't know	**0.4**	0.9 (0.3-3.1)
Have other sex partners		
No	Ref.	Ref.
Yes	1.6	**4.5 (1.6-31.2)**
Regular partner has other sex partners		
No	Ref.	Ref.
Yes	**4.9**	2.7 (0.7-10.9)
Don't know	**2.1**	1.0 (0.3-3.3)
Has disclosed HIV status		
No	Ref.	Ref.
Yes	**2.5**	**2.2 (1.3-12.9)**
Has experienced physical abuse		
No	Ref.	Ref.
Yes	**2.4**	2.0 (0.5-8.9)

Note: All missing observations were excluded from the analysis. **Bold**-Statistically Significant

DISCUSSION

This study provides insights into the sexual risk behaviour of people living with HIV in Kumasi, Ghana. The high rates of sexual risk behaviour among HIV-positive individuals in this study have implications for the continued transmission of HIV in Ghana. Consistent with other similar studies, we found that nearly one in ten people living with HIV had low health knowledge.[16,17] Moreover, participants with HIV/AIDS knowledge less than 50% in our study were 90% less likely to have used condoms during their last sexual intercourse. In addition to poorer knowledge and understanding of HIV illness, studies have found that persons of lower

health literacy hold more misperceptions of how HIV treatments influence HIV-transmission risks.[18,19]

Nearly half of our participants reported having sex after testing HIV positive. This finding is consistent with similar previous studies.[6,7] Although many HIV-positive individuals engage in safer sex practices, a considerable percentage of seropositive persons continue to engage in unprotected sexual behaviours that place others at risk for infection and place themselves at risk for confection with pathogens that can complicate HIV disease progression.[2,13] Thus, it is imperative to develop behavioural interventions to help HIV-positive persons increase their skills in negotiating safer-sex practices, controlling sexual situations, and communicating effectively with sex partners.[2]

Consistent condom use among HIV-positive individuals is vital in reducing further transmission of HIV. A higher proportion of men in our study bought or carried condoms. This might partly explain the rise in condom use in higher risk sex in Ghana.[18] However, an alarming proportion 31% (13 males, 69 females) of the participants reported that they did not use condoms during their last sexual intercourse. Furthermore, more than half (51%) of the study population with regular sex partners reported that they had unprotected anal or vaginal sex. These figures are disturbing as HIV-positive individuals in Ghana place others at risk of HIV infection and place themselves at risk for infection with sexually transmitted infections and super-infection with other HIV strains.

On the other hand, participants who were widowed or divorced, and those who had other sex partners were 3.5 and 4.5 times (respectively) more likely to have used condoms during their last sexual intercourse. Those widowed or divorced were also 2.8 times more likely to use condoms with regular sex partners. Studies in Uganda and Tanzania have also documented higher condom use among widowed and divorced HIV positive individuals.[19]
Sexual behaviours of widows and divorcees is complex, since they have high rates of partner change and engage in sexual relationships with individuals who are HIV negative or of unknown HIV status.[20] This might explain why widows or divorcees and those who had multiple sex partners used condoms more frequently.

In accordance with similar studies in sub-Saharan Africa,[19,21,22] we found that participants with secondary education or higher were more likely to use condoms with a regular sex partner. Individuals with more education might have higher levels of HIV/AIDS knowledge and are less likely to have stigma towards HIV/AIDS, thus enabling them to easily change risky sexual behavior.[19,21] Additionally, individuals with higher education might be able to seek and accept information that would help protect their partners and themselves from HIV and STI transmission and re-infection.[19]

Participants who had experienced HIV symptoms were 2.4 times more likely to have used condoms during their last sexual intercourse. Perhaps, these individuals found it difficult to hide their HIV positive status and had to disclose their status and take preventative measures to protect their sexual partners. Increased condom use has been documented among HIV positive individuals who disclose their positive status to sexual partners.[23,24]

Our data show strong association between disclosure of HIV status and protective patterns of condom use. This finding is consistent with previous studies that found that disclosure was associated with reduced transmission risk behaviors.[23,24] For instance, a study in Cape Town, South Africa found that people who had not disclosed their HIV status to partners reported more sex partners and more unprotected vaginal and anal intercourse than people who had disclosed.[23] Therefore, interventions targeted to HIV-positive individuals must strengthen preventive altruism, promote HIV-status disclosure and assess issues relating to non-disclosure.[3,7]

Access to ARV is increasing in developing countries and enables HIV-positive individuals to live longer and healthier lives. Consequently, increased access to treatment may also affect sexual behavior.[2,25] For instance, studies from industrialized countries suggest that ARV is associated with changes towards unsafe sex.[26-28] However, results from developing nations have been mixed.[7-12]

Conversely, increased contact with health care professionals to receive treatment may encourage positive changes in sexual behavior.[25] For example, the use ARV therapy was not associated with risky sexual behaviour in Kenya, South Africa and Uganda, but resulted in reduction in risk behavior.[7-9] Our study found that participants on ARV were 80% less likely to have used condoms during the last sexual intercourse. This finding suggests that in this population, use of ARV therapy was associated with risky sexual behaviour. Clearly, more evidence is needed to assess the relationship between ARV therapy and sexual risk behaviour in Ghana.

Researchers have suggested that improvements in health and life expectancy resulting from ARV therapy may lead HIV-infected people to believe that HIV is no

longer a serious and deadly disease.[2,13,25] In addition, ARV significantly reduces the viral load of HIV positive persons and may give them the perception that they are no longer infectious. Furthermore, HIV-positive people may have difficulty sustaining safer sexual behaviour over a lifetime.[25] HIV outpatient clinics should integrate behavioural prevention with routine medical care; this approach may be useful in educating HIV-positive individuals about the risk of transmitting HIV and exposure to secondary infections that may accelerate disease progression.[2]

Emphasis on ARV and other health care services for HIV-positive individuals in sub-Saharan Africa has increased.[8-12] However, matters of fertility and childbearing among HIV-positive people have received little attention.[12] Studies from South Africa and Cote d'Ivoire have documented that HIV-positive individuals had intentions of having children in the future.[12,29] Our study found that participants who were considering future pregnancy were 40% less likely to have used condoms during their last sexual intercourse.

In Ghana, cultural beliefs and practices relating to fertility may present significant barriers to HIV prevention.[4,5] For example, the social status of Ghanaian women is directly linked to their fertility or potential fertility,[5] this is also true in many sub-Saharan countries.[5,12,29] These findings suggest that HIV transmission is embedded in socio-cultural factors, therefore the design and implementation of intervention strategies must take these factors into account.[4]

This study had several limitations. All participants were recruited at the Kumasi South Regional Hospital. Thus, these findings may not be representative of HIV-infected persons in other areas of Ghana or those not in any HIV care systems. There is a possibility of recall and social desirability biases due to the sensitive nature of this study. Despite these limitations, our findings have implications for health care services for HIV-infected individuals. The low health literacy associated with risk behaviour can be addressed by educating patients about the modes and risks of HIV transmission. The role of health care services can be expanded to include behavioural health interventions.[2]

CONCLUSION

In summary, we found that low HIV/AIDS knowledge; non-disclosure, ARV therapy and intentions to conceive were associated with inconsistent condom use. These findings highlight the need for the development and implementation of HIV prevention interventions for HIV-infected people in Ghana. Such interventions can be delivered along with ARV therapy. This is supported by a study that found less sexual risk behaviours among counselled and ARV treated patients compared to those who only received preventive therapy.[9] Further studies are needed to assess the durability of this finding.

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