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Correlates of HIV testing among South African women with high sexual and substance-use risk behaviours

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Abstract

Despite its importance in raising awareness of HIV risk behaviour and in linking HIV-positive individuals to care and treatment, research findings indicate that the HIV antibody testing rate in the general South African population remains relatively low, although knowledge of HIV testing services is high. The identification of important correlates of testing behaviour can be used to improve HIV testing campaigns by refining messages that target individuals at highest risk for infection. This study uses data from an ongoing prevention intervention study in Pretoria, South Africa to identify factors that may have a greater influence on facilitating or hindering HIV testing among South African women who face a high risk for infection. The data for this study ($n=425$) are derived from the baseline interviews and HIV test results collected between June 2004 and January 2007. HIV testing for this study was significantly associated with education level, alcohol and cannabis use, sex trading, number of STI symptoms, physical abuse and number of visits to a clinic for medical treatment. Results suggest that more focused efforts need to be made to provide HIV testing to women who report substance use behaviour, experience violence and report high-risk sexual behaviour. Interventions also need to address denial of HIV infection and fear to test for HIV.

Keywords

HIV testing; South Africa; women; sex risk; alcohol; drugs

Introduction

Although research findings regarding the role of HIV testing in prevention strategies are mixed and inconclusive, they do show the relevance of testing to HIV prevention strategies (Forsythe et al., 2002). Testing promotes knowledge of HIV status, which in turn may promote awareness and adoption of safer sex behaviours and serve as an initial step toward care and treatment services for HIV-positive individuals (Matovu et al., 2005; UNAIDS, 2006; Voluntary Counselling and Testing Study Group, 2000).

The HIV/AIDS epidemic continues to expand in South Africa where between 4.9 and 6.1 million people are infected. HIV prevalence among pregnant women is 30% and prevalence rates among young females of childbearing age are up to four times higher than among their male counterparts. Thus, HIV antibody testing has emerged as a key component of

prevention and care strategies in South Africa (Coovadia, 2000; Department of Health, 2006; Shisana et al., 2005; UNAIDS, 2006).

Despite its importance in raising awareness of risk behaviour and in linking HIV-positive individuals to care and treatment, research findings indicate that the HIV antibody testing rate in the general South African population remains relatively low, although knowledge of testing services is high (Shisana et al., 2005). Overall, little is known about the rates of HIV testing in underserved populations at highest risk for infection; in particular, poor women with low levels of education, limited job skills and few employment options. Many of these women abuse alcohol and other drugs (AOD), engage in sex work to support themselves and their families and/or have unprotected sex with partners. It is likely that few women in this vulnerable, high-risk group seek HIV testing services (Thiede, Palmer, & Mbatsha, 2005).

Barriers to seeking HIV testing services include low perception of risk for transmission or acquisition and perceived negative consequences of serostatus disclosure. In a study among adults with high HIV prevalence and incidence in Tanzania, participants who did not take the HIV test offered by the research team indicated that they felt unlikely to have AIDS (Killewo et al., 1998). Maman, Mbwambo, Hogan, Kilonzo and Sweat (2001) found that in a sample of Tanzanian women, many reported fear of conflict with partners as the primary barrier to seeking HIV testing services. Women who were able to overcome the obstacle of fear still needed to face the challenge of disclosing their HIV test results to their partners and risk physical violence and/or rejection.

In South Africa, as in many other sub-Saharan African countries, HIV/AIDS-related stigma and the ensuing discrimination is another significant barrier to HIV prevention strategies, including testing (Furber, Hodgson, Desclaux, & Mukasa, 2004; Kalichman & Simbayi, 2004). Kalichman and Simbayi (2003) examined the relationship between HIV testing and AIDS-related stigma and found that people who had not been tested for HIV held significantly greater stigmatizing beliefs than people who had been tested. In a sample from the Eastern Cape Province, Hutchinson and Mahlalela (2006) found that the absence of stigma-related beliefs toward people living with HIV/AIDS increased the probability of being tested for HIV. Further complicating HIV prevention efforts is the concomitant prejudice and discrimination experienced by women who engage in sex work, abuse substances and/or have been victimized.

The urgent need to increase access to humane, affordable and reliable HIV testing is unquestionable. The identification of important correlates of testing behaviour can be used to improve ongoing HIV testing campaigns by refining messages that target individuals at highest risk for infection (Tobin, Tang, Gilbert, & Latkin, 2004). This analysis aims to better understand testing behaviours in a sample of South African women who practice high-risk behaviours. Women who took the HIV test offered by the study were compared with those who did not in order to identify factors that may facilitate or hinder HIV testing among South African women who face a high risk for infection.

Methods

Data for this study are drawn from a randomized trial of an adapted woman-focused HIV prevention intervention for high-risk women in Pretoria, South Africa who use AOD, conduct sex work and/or report engaging in unprotected sex (Wechsberg, Lam, Zule, & Bobashev, 2004). Previous studies have supported the rationale for targeting these women (Wechsberg, Luseno, & Lam, 2005; Wechsberg, Luseno, Lam, Parry, & Morojele, 2006).

Participants for this study were recruited through targeted street outreach in neighbourhoods and townships in or within close proximity to Pretoria. When conducting street outreach,

project field staff began by identifying areas where members of the target population are known to frequent. Field staff then visited these areas regularly, approached potential study participants and verbally asked for permission to screen the individual to determine if she was eligible to take part in the study.

Eligible participants were female, at least 18 years of age, reported use of alcohol on at least 13 of the past 90 days, reported either trading sex for money or drugs or having had unprotected sex in the previous 90 days, provided written consent to participate and provided verifiable locator information for Gauteng Province.

On arrival at the field site for their appointment, women were invited to a private office where trained field staff conducted urine drug screens to determine cocaine, cannabis, opiates, amphetamines/methamphetamine and ecstasy use. Breath alcohol testing was performed to determine the breath alcohol concentration at the time of the interview. Study participants were then assessed using the paper-and-pencil interview format at a 2-part baseline intake occurring 2–4 days apart. Participants were also assessed at 3- and 6-month follow-up interviews. Instruments and consent forms were translated into two local languages in addition to English.

HIV antibody testing as well as pre- and post-test counselling were offered to all participants at their first intervention session as part of the intervention protocol. Only participants who consented were tested for HIV. Testing was done with OraQuick[®] Rapid HIV-1 Antibody Test and reactive samples were confirmed with Pareekshak[®] HIV Triline (a rapid test to detect HIV 1 and 2 antibodies). Participants with indeterminate OraQuick or Pareekshak test results were encouraged to seek testing services at a clinic or voluntary testing and counselling site. Participants who did not consent to HIV testing were encouraged at follow-up appointments to take the test, with additional pre- and post-test counselling.

This is an ongoing study and, as of January 2007, 479 participants had enrolled in the study and completed their first baseline interview. The data presented here are based on 425 participants, interviewed between June 2004 and January 2007, for whom complete baseline data and HIV test results were available.

The outcome of interest was a dichotomous variable indicating whether a participant took the HIV test offered by the study.

The demographic variables examined were age, level of education and marital status. The substance abuse variables examined were number of alcoholic drinks on a typical day, DSM-IV criteria for past year alcohol abuse, ever used cannabis and daily cannabis use. Sexual risk variables included number of self-reported sexually transmitted infection (STI) symptoms in the past 90 days, sex trading in the past 90 days, one main sex partner (e.g. boyfriend or husband) in the past 30 days, main partner has other sex partners and used a condom at last sex with main sex partner. Measures of physical and sexual abuse included ever physically or sexually abused.

To assess prior HIV testing behaviours, participants were asked whether they had ever been tested for HIV. Participants who reported having ever been tested were asked how many times they had been tested and how many times they received their test results. Disclosure of HIV testing was assessed by asking, “Does your main sex partner know that you have been HIV tested?” and “Have you told your main sex partner your HIV test results?”

A measure of health status was included (11-item index of physical health concerns in the past 90 days) in the bivariate analyses. In addition, the number of visits to a clinic for medical attention was used as a measure of healthcare utilization.

Descriptive frequencies and means are presented for sociodemographic variables and risk factors of interest. Bivariate analyses were conducted to examine relationships between sample characteristics and HIV testing. Statistical significance was assessed using the chi-square statistic and odds ratios for dichotomous and categorical variables and *t*-tests for continuous and interval variables. Analyses were conducted using SPSS v14.0.

Results

The mean age of study participants was 28 years, with an age range of 18–55 years (Table 1). A majority of the participants were under 35 years of age and 18% had a primary school education or less. Twenty-seven percent of the participants were single. Over half of the women (57%) reported having ever been physically abused compared with one-third (33%) who reported having ever been sexually abused.

With regard to sexual and substance-use risks, 74% indicated drinking five or more drinks containing alcohol on a typical day, over half (59%) reported a history of ever using cannabis and 22% reported daily cannabis use. Slightly over half (53%) of the women reported having three or more STI symptoms in the past 90 days; the majority (76%) had traded sex in the past 90 days. Among those who had a main sex partner in the past 30 days, 52% thought he had other sex partners and 37% used a condom during their last sexual encounter.

Out of 425 study participants, 200 (47%) reported having ever been tested for HIV prior to this study (range of total times tested=1–11; mean=1.88; SD=1.5). Of these individuals, 107 (53%) reported having only been tested once and 181 (90%) reported having received their HIV test results. Approximately 91 (46%) individuals who had ever been tested were tested within the past 12 months. Overall, 44 participants (22% of those who had ever been tested prior to this study) reported having ever been informed that they were infected with HIV.

Out of 131 women who reported they had a main sex partner (e.g. boyfriend or husband) at the time of the study and had tested for HIV prior to this study, 106 (73%) had told their partners that they had taken the HIV test and 95 (65%) had shared the test results with their partners. Among women who had shared their HIV test results with their partners, 55 (58%) reported supportive and understanding attitudes from their partners.

Twenty-six percent ($n=112$) of the sample indicated unwillingness to be tested for HIV for the study. Among those who were unwilling to be tested, 21 (18%) were concerned about violence, 28 (24%) were concerned about isolation and a similar proportion (24%) were concerned about being rejected. However, 76 (65%) indicated that they did not want to know their HIV status.

For the present study, 276 (65%) participants consented to HIV testing. Among those who took the test offered by the study, 163 (59%) had positive HIV test results.

A number of variables in the bivariate analyses were found to be associated with taking the HIV test offered by this study (Table 2). Education level was the only sociodemographic variable that was associated with HIV testing, with better educated women significantly less likely than women who were less educated to test for HIV in this study. With regard to substance use, history of alcohol abuse in the past year (defined using DSM-IV criteria) and daily cannabis use were associated with a greater likelihood of taking the HIV test for this study. The number of self-reported STI symptoms, a well-established sexual risk factor for HIV infection, was also significantly associated with HIV testing. While a history of physical abuse was strongly associated with a greater likelihood of HIV testing, sexual abuse history showed no significant relationship. The number of self-reported physical

health concerns in the past 90 days was significantly associated with HIV testing and the number of visits to a clinic for treatment in the past 12 months was weakly associated with testing.

Discussion

This study used baseline data from an ongoing HIV prevention intervention research project. The study sample consisted of 425 women recruited between June 2004 and January 2007 in Pretoria, South Africa. Study participants reported several behavioural risks for HIV infection, including histories of AOD use, sex trading, STI symptoms and unprotected sex with boyfriends and husbands who in many cases they believed had other sex partners.

Several important implications can be derived from this study. First, as the capacity increases in South Africa to provide care and treatment to individuals who are HIV-positive, it is necessary to raise awareness of the benefits of individuals knowing their HIV status, especially those who are considered to be at highest risk for infection. The finding that participants who made more visits to a clinic for medical care were significantly more likely to take the HIV test may suggest that effective prevention intervention strategies need to increase access to primary healthcare services and increase access to HIV antibody testing for high-risk populations. The more accessible and available that HIV testing services become, the more likely these services will be utilized by individuals at highest risk (Coovadia, 2000; Tobin et al., 2004). On the other hand, this finding may also indicate that those who made frequent visits to medical clinics were chronically ill and therefore more likely to be tested for HIV.

Further, similar to other studies in sub-Saharan Africa (Matovu et al., 2005), the present study found that women with higher levels of education were less likely to test for HIV compared with women with lower levels of education. This finding warrants further investigation but suggests a need to specifically target prevention interventions to high-risk, better educated women.

Research shows that women who use alcohol and cannabis are less likely to use safer sex practices consistently with their partners (Wingood & DiClemente, 1998). Violence against women, including rape and physical abuse, is reportedly high in South Africa (Jewkes & Abrahams, 2002). Violence has been associated with high-risk sex practices and AOD use among women (Dunkle et al. 2004). Taking the HIV test in this study was strongly associated with alcohol abuse in the past 12 months, daily cannabis use and physical abuse by a main partner. This suggests that more focused efforts need to be made to provide HIV testing to women who report high-risk substance using behaviours and experiences with violence because, while these factors may place women at high risk for HIV infection, they may also enable HIV testing.

Several US-based studies involving high-risk populations have reported on the lack of significant associations between sexual risks and HIV testing (Bond, Lauby, & Batson, 2005; Stein & Nyamathi, 2000). Bivariate analyses for the present study found that women who trade sex and women who self-reported more STI symptoms in the previous 90 days were more likely to take an HIV test. This suggests that with appropriate HIV education, individuals at highest risk may accurately assess their risk level and voluntarily undergo HIV testing.

Women who abuse substances, engage in sex work and/or have been victimized frequently face stigmatization and high levels of discrimination and prejudice. Often these women are perceived to be key vectors of HIV transmission. All of these factors contribute to women underestimating the risk for and/or denying HIV infection, as well as engendering fear to

test for HIV. Among those unwilling to take the HIV test for this study, a large proportion indicated not wanting to know their status. Preliminary findings from qualitative interviews with randomly selected study participants provide evidence that fear of stigmatization and discrimination are key barriers to HIV testing and treatment for at-risk women from disenfranchised populations. Slightly less than half of the participants in this study had obtained HIV testing in the past. Although this indicates slightly higher testing rates relative to the general population, it also indicates that over half the sample of an exceedingly high-risk population had not tested for HIV prior to this study. Following pretest counselling as part of this study's gender-specific intervention, 67% of participants agreed to undergo HIV testing. These results suggest that interventions that address denial of HIV infection, fear to test for HIV and HIV/AIDS-related stigma and ensuing discrimination may be more effective at increasing HIV testing and access to prevention, treatment and care services.

This study has several limitations that should be noted. First, because the sampling strategy specifically targeted high-risk women, the study findings may not be representative of South African women and should be interpreted cautiously. The research is also affected by limitations that apply to using self report measures of sensitive topics, such as substance use, sexual risk and HIV testing behaviour. However, the quality of the data was ensured by hiring experienced indigenous field staff, providing extensive training on interviewing techniques to the interviewers and regularly conducting quality assurance checks of the data and questionnaires. Finally, certain factors that were not assessed in this study may be important to consider in the attempt to understand HIV testing behaviours. For example, this study did not assess the history of condom use behaviour with main sex partners (e.g. boyfriends and husbands) among individuals who did not have a main partner in the past 30 days but may have had a partner prior to this period. It is important that these and other factors be explored to effectively reduce barriers that deter women at highest risk of HIV infection from seeking HIV testing services and from benefiting from available treatment and care services.

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Table 1

Sample sociodemographic characteristics, sexual and substance use behaviours and HIV testing experiences (n=425).

| Variable | n (%) |
|--|-----------|
| Sociodemographic characteristic | |
| Mean age (SD) | 28 (7.5) |
| Age groups | |
| 18–24 | 165 (39) |
| 25–34 | 187 (44) |
| 35+ | 73 (17) |
| Education | |
| None/primary | 77 (18) |
| Secondary | 325 (77) |
| Tertiary | 23 (5) |
| Substance use | |
| Number of drinks containing alcohol on a typical day | |
| 1–4 | 111 (26) |
| 5+ | 311 (74) |
| Ever used cannabis | |
| Yes | 250 (59) |
| No | 175 (41) |
| Daily cannabis use | |
| Yes | 94 (22) |
| No | 330 (78) |
| Sexual risk | |
| Mean number of STI symptoms past 90 days(SD) | 3.3 (2.8) |
| Traded sex in past 90 days | |
| Yes | 323 (76) |
| No | 102 (24) |
| Think main partner has multiple sex partners * | |
| Yes | 132 (52) |
| No | 120 (48) |
| Used condom last sex with main partner * | |
| Yes | 67 (37) |
| No | 114 (63) |
| Physical abuse 3 ever | |
| Yes | 244 (57) |
| No | 181 (43) |
| Sexual abuse 3 ever | |
| Yes | 141 (33) |
| No | 283 (67) |
| HIV tested 3 ever (prior to this study) | |

| Variable | n (%) |
|----------|----------|
| Yes | 200 (47) |
| No | 224 (53) |

Note. SD=Standard deviation;

* Includes only those who had a main sex partner in the past 30 days.

Table 2

Bivariate analysis by HIV testing status.

| Variable | Did not test <i>n</i> =149 (%) | Tested <i>n</i> =276 (%) | Chi-square(<i>p</i> -value) | Unadjusted Odds Ratios (95%CI) |
|---|--------------------------------|--------------------------|------------------------------|--------------------------------|
| Sociodemographic characteristics | | | | |
| Age groups | | | | |
| 18–24 | 58 (35) | 107 (65) | | 1.0 |
| 25–34 | 69 (37) | 118 (63) | 0.451 | 0.80 (0.44, 1.44) |
| 35+ | 22 (30) | 51 (70) | 0.305 | 0.74 (0.41, 1.32) |
| Education | | | | |
| None/primary | 17 (22) | 60 (78) | | 1.0 |
| Secondary | 119 (37) | 206 (63) | 0.002 | 4.59 (1.71, 12.28) |
| Tertiary | 13 (56) | 10 (44) | 0.063 | 2.25 (0.96, 5.29) |
| Marital status | | | | |
| Single | 38 (34) | 75 (66) | | 1.0 |
| Involved not living with partner | 70 (38) | 116 (62) | 0.853 | 0.95 (0.55, 1.65) |
| Living with partner or married | 38 (32) | 79 (68) | 0.362 | 0.80 (0.49, 1.30) |
| Substance use | | | | |
| Number of drinks containing alcohol on a typical day | | | | |
| 1–4 | 45 (41) | 66 (59) | | |
| 5+ | 103 (33) | 208 (67) | 0.160 | 1.38 (0.88, 2.15) |
| Past year alcohol abuse (DSM- IV criteria) | | | | |
| No | 52 (43) | 69 (57) | | |
| Yes | 96 (32) | 203 (68) | 0.035 | 1.59 (1.03, 2.46) |
| Ever used cannabis | | | | |
| No | 63 (36) | 112 (64) | | |
| Yes | 86 (34) | 164 (66) | 0.734 | 1.07 (0.72, 1.61) |
| Daily cannabis use | | | | |
| No | 124 (38) | 206 (62) | | |
| Yes | 25 (27) | 69 (73) | 0.051 | 1.66 (1.0, 2.76) |
| Sexual risk | | | | |
| Mean number of STI symptoms in past 90 days(SD) | 2.7 (2.6) | 3.6 (2.5) | 0.002 | 1.13 (1.04, 1.22) |
| Traded sex in past 90 days | | | | |
| No | 44 (43) | 58 (57) | | |
| Yes | 105 (33) | 217 (67) | 0.053 | 1.57 (0.99, 2.47) |
| Had one main sex partner in past 30 days | | | | |
| No | 37 (31) | 84 (69) | | |
| Yes | 112 (37) | 192 (63) | 0.223 | 0.76 (0.48, 1.19) |
| Think main partner has multiple sex partners ¹ | | | | |
| No | 47 (39) | 73 (61) | | |
| Yes | 45 (34) | 87 (66) | 0.404 | 1.24 (0.74, 2.08) |

| Variable | Did not test <i>n</i> =149 (%) | Tested <i>n</i> =276 (%) | Chi-square(<i>p</i> -value) | Unadjusted Odds Ratios (95%CI) |
|--|--------------------------------|--------------------------|------------------------------|--------------------------------|
| Used condom last sex with main partner ^a | | | | |
| No | 48 (42) | 66 (58) | | |
| Yes | 22 (33) | 45 (67) | 0.217 | 1.49 (0.79, 2.80) |
| Physical abuse – ever | | | | |
| No | 79 (44) | 102 (56) | | |
| Yes | 70 (29) | 174 (71) | 0.001 | 1.93 (1.29, 2.88) |
| Sexual abuse – ever | | | | |
| No | 100 (35) | 183 (65) | | |
| Yes | 48 (34) | 93 (66) | 0.792 | 1.06 (0.69, 1.62) |
| HIV testing – ever (prior to this study) | | | | |
| No | 83 (37) | 141 (63) | | |
| Yes | 64 (32) | 135 (68) | 0.292 | 1.24 (0.83, 1.86) |
| Physical health – number of visits to the clinic in past 12 months | | | | |
| 0 | 72 (38) | 117 (62) | | 1.0 |
| 1–3 | 51 (29) | 124 (71) | 0.460 | 1.26 (0.68, 2.31) |
| 4+ | 24 (44) | 31 (56) | 0.047 | 1.88 (1.01, 3.52) |
| Mean number of physical health concerns in past 90 days (SD) | 2.9 (2.4) | 3.6 (2.5) | 0.009 | 1.12 (1.03, 1.21) |

Note. SD=Standard Deviation;

^aIncludes only those who had a main sexual partner in the past 30 days.