

Risk Behaviour of HIV Positive Individuals who are Aware of their Serostatus: Evidence from the 2012 HIV Population-based Household Survey in South Africa

Musawenkosi LH Mabaso^{1*}, Leickness C Simbayi^{1,2}, Vincent Maduna¹, Thendo Ramaliba¹ and Yogandra Naidoo¹

¹HAST Research Programme, Humans Sciences Research Council, Durban, South Africa

²Department of Psychiatry & Mental Health, University of Cape Town, Cape Town, South Africa

Abstract

Introduction: HIV positive people are the main source of new infections, which occur mainly through risk behaviours with a high-risk partner. Awareness of HIV status has been proposed as a key factor underlying sexual and HIV risk behaviour. This study sought to determine whether awareness of one's HIV positive status translates to reduced sexual risk behaviour among HIV positive individuals.

Methods: The analysis was based on the 2012 South African National HIV Prevalence, Incidence and Behaviour Survey, which included socio-demographic characteristics, age at sexual debut, age disparate partnerships, multiple sexual partners, condom use at last sex, self-perceived risk of HIV infection and alcohol use. Bivariate and multivariate logistic regression was used to assess sexual and HIV risk behavioural factors associated with awareness of HIV status.

Results: Of 2565 HIV positive individuals, 48.3% reported that they were aware of their HIV status while the remainder indicated they were aware not aware of their HIV status. HIV positive females were more likely to report that they knew their status than their male counterparts [OR=1.6 (95% CI: 1.0-2.7), p=0.049]. Knowing that one was HIV positive was associated with increased likelihood of condom at last sex [OR=1.5 (95% CI: 1.1-2.0), p=0.010], low risk perception of HIV infection ([OR=0.7 (95% CI: 0.5-0.9), p=0.011], and reduced likelihood of risky/hazardous drinking of alcohol among males [OR=0.3 (95% CI: 0.2-0.6), p<0.001].

Conclusion: The current findings confirm that gaining knowledge of one's own HIV status is key to adopting HIV prevention behaviours. Given the large number of people living with HIV/AIDS in South Africa more efforts should be made to promote positive prevention programmes.

Keywords: Risk behaviour; Awareness of HIV Status; South Africa

Introduction

South Africa has one of the biggest HIV/AIDS epidemics globally with an estimated 6.4 million people (12.2% of the population) living with HIV, and approximately 469 000 new HIV infections recorded in the general population in 2012 [1]. HIV positive people are the main source of new infections, which occur mainly through risk behaviours such as unprotected heterosexual intercourse with a high-risk partner, early sexual debut, age disparate sex, multiple sexual partners, alcohol or drugs use before sexual intercourse [1,2]. Among other factors, awareness of HIV status has also been proposed as a key factor underlying sexual and HIV risk behaviour. Knowledge of HIV status promotes adoption of safer risk behaviours and serves as an initial step toward care and treatment services [2,3].

More than two thirds of South Africans aged 15 years and older are aware of their HIV status largely due to the success of the National HIV Counselling and Testing (HCT) campaign [1,4]. It remains necessary to maintain high levels of HIV-status awareness particularly because HIV-infected persons unaware of their HIV status may be the source of new cases of HIV infection. On the other hand, HIV positive individuals who are aware of their status and who engage in high-risk behaviour may also pose a significant risk for new infections in the country [1,2]. Many HIV-infected persons tested through HCT receive pre and post-test counselling including risk reduction counselling [4]. Consequently, individuals who know their HIV status should have significantly different HIV-related risk behaviours compared to those who are HIV positive but do not know their status.

The impact of awareness of HIV status on the sexual and risk behaviours of individuals has not been as extensively researched compared to the impact that knowledge of HIV transmission and prevention has on sexual risk practices [5]. This study investigated the impact of awareness of HIV status on risk behaviours among HIV positive individuals in South Africa using archival data from the 2012 national HIV prevalence, incidence and behaviour survey [1]. Specifically, this study sought to answer the question: Does knowing one's HIV status translates to reduced sexual risk behaviour among HIV positive individual?

Methods

Study sample

This study used data from the 2012 South African National HIV Prevalence, Incidence and Behaviour Survey, a nationally representative

*Corresponding author: MLH Mabaso, Human Sciences Research Council, HAST, Private Bag X07, Dalbridge, 4014, Durban, South Africa, Tel: +27 031 242 5608; E-mail: mmabaso@hsr.ac.za

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population-based household survey, described in detail elsewhere [1]. In summary, participants were selected using multi-stage stratified cluster sampling. A systematic probability sample of 15 households was drawn from each of 1000 enumeration areas (EAs) selected randomly from strata defined by locality type and province from the updated 2007 master sample of census EAs. A detailed questionnaire soliciting information related to knowledge, attitudes, practice, behaviours, and demographic factors was administered to participants with informed consent. Dried blood spots (DBS) specimens collected by nurses were tested anonymously for HIV antibodies using a testing algorithm with three different immunoassays.

The current study is based on a sample of individuals who tested positive for HIV less than one year prior to participating in the survey, which includes both those who are aware of their HIV status and those who were not aware.

Outcome variable

The primary outcome variable knowledge of HIV status was divided into two categories: 0=HIV positive individuals who do not know their status and 1=HIV positive individuals who know their status. This is a composite variable based on the following question: Have you ever had an HIV test (yes/no)? If yes how long ago did you have your most recent HIV test (0 to 3 months/4 to 6 months/7 to 11 months/less than a year ago)? Have you been told/informed of the result of your most recent test (yes/no)?

Explanatory variables

Socio-demographic variables included sex (male/female), age (15 to 24 years, 25 to 49 years, 50+ years), race (Black African/other), marital status (not married/married), educational level (no education/primary, secondary, tertiary), employment status (not employed, employed), and locality type (urban/rural and formal/informal). HIV related sexual and risk behaviours included age at early sexual debut (less than 15 years/more than 15 years), age disparate partnership (5 year older/ 5 years younger, within 5 years older or 5 years younger), multiple sexual partners in the last 12 months (one partner/ two or more sexual partners), condom use at last sex (no/yes), self-perceived risk of HIV infection (no/yes) and alcohol use (abstainers, low risk, risky/hazardous, high risk/harmful, and high risk drinkers) based on the Alcohol Use Disorder Identification Test (AUDIT) scale [6].

Statistical analysis

Descriptive statistics was used to characterize respondent's socio-demographic, sexual and risk behavioural factors by HIV status and knowledge of HIV status. Differences between categorical variables were assessed using chi-square test. Bivariate logistic regression was used to explore the impact of knowledge of HIV status on sexual and HIV risk behaviour. Statistically significant variables were entered into a multivariate logistic regression to determine sexual and HIV risk behavioural factors associated with awareness of HIV status. Odds ratios (OR) with 95% confidence intervals (CIs) and p-values ≤ 0.05 were reported for all statistically significant results. Statistical analyses were performed using STATA statistical software version 13.0 (Stata Corporation, College Station, USA).

Ethical Considerations

Ethical approval for the study was obtained from the Research Ethics Committee of the Human Sciences Research Council, South Africa (REC: 5/17/11/10). The study protocol was also reviewed and cleared by the Associate Director of Science of the National Center

for HIV and AIDS, Viral Hepatitis, STD and TB Prevention at the US Centers for Disease Control and Prevention (CDC) in Atlanta, USA.

Results

Out of a total sample of 2565 HIV positive individuals 15 years and older who had been tested for HIV less than a year before participating in the 2012 HIV population-based household survey, 48.3% were aware of their HIV status while the remainder (i.e., 51.7%) were not aware. Table 1 presents background characteristics of the study sample by awareness of HIV status. There was no statistically significant difference in the distribution of sex, age, race, marital status, educational level, employment status, and locality type by awareness status. However, a higher proportion of males were not aware of their HIV status when compared to females. Also the proportion of respondents who were not aware of their HIV status came mainly from urban and rural formal areas while those who were aware of their status were from urban and rural informal areas.

Table 2 shows distribution of sexual and risk behaviours by awareness of HIV status. There was no statistically significant difference in sexual debut and number of sexual partners by HIV by awareness status. A higher proportion of individuals who were not aware of their HIV status had sexual partners 5 years and younger, lower proportion of condom use at last sex, higher perception of HIV risk and drank more alcohol compared to those who were aware of their HIV status.

Risk factors associated with awareness of HIV status

In the bivariate logistic regression analysis sex, age disparate partnerships, condom use at last sex, perceived risk of HIV infection,

Variables	n	Not aware of HIV status		Aware of HIV status	
		%	95% CI	%	95% CI
Age (years)					
15 to 24	389	51.5	44.3-58.7	48.5	41.3-55.7
25 to 49	1791	51.5	47.6-55.3	48.5	44.7-52.4
50+	385	53.8	45.7-61.7	46.2	38.3-54.3
Sex					
Male	801	62.2	56.6-67.5	37.8	32.5-43.4*
Female	1764	45.0	41.3-48.8	55.0	51.2-58.7
Race					
Black African	2335	51.6	48.3-54.9	48.4	45.1-51.7
Other	225	55.3	42.7-67.2	44.7	32.8-57.3
Marital status					
Not Married	2067	51.3	47.6-55.0	48.7	45.0-52.4
Married	461	51.8	44.1-59.5	48.2	40.5-55.9
Educational level					
No education/Primary	567	50.5	44.5-56.6	49.5	43.4-55.5
Secondary	1518	52.5	48.6-56.5	47.5	43.5-51.4
Tertiary	83	49.0	31.4-66.9	51.0	33.1-68.6
Employment status					
Not employed	1540	50.7	46.5-55.0	49.3	45.0-53.5
Employed	895	53.3	47.7-58.8	46.7	41.2-52.3
Locality type					
Urban formal	884	57.9	52.2-63.4	42.1	36.6-47.8*
Urban informal	521	50.6	44.1-57.0	49.4	43.0-55.9
Rural informal	830	45.3	41.0-49.7	54.7	50.3-59.0
Rural formal	330	57.8	49.3-65.9	42.2	34.1-50.7

*Significant at $p \leq 0.05$

Table 1: Socio-demographic characteristics of the study sample (HIV positive individuals, n=2565) by awareness of HIV status.

Variables	N	Not aware of HIV status		Aware of HIV status	
		%	95% CI	%	95% CI
Sexual debut (age in year)					
<15	24	41.4	19.1-67.9	58.6	32.1-80.9
>=15	361	52.0	44.5-59.5	48.0	40.5-55.5
Sexual partners in last 12 months					
One partner	1607	49.6	46.0-53.2	50.4	46.8-54.0
Two partners	117	54.5	41.7-66.7	45.5	33.3-58.3
More than 2 partners	72	54.8	34.4-73.7	45.2	26.3-65.6
Age disparate partnerships					
5 years and older	545	43.6	37.4-50.1	56.4	49.9-62.6
5 years and younger	295	55.6	47.0-63.9	44.4	36.1-53.0
Within 5 years older or younger	945	51.9	46.6-57.2	48.1	42.8-53.4
Condom use last sex					
No	872	55.0	49.8-60.1	45.0	39.9-50.2*
Yes	890	46.8	42.0-51.7	53.2	48.3-58.0
Perceived risk of HIV infection					
No	1269	47.5	43.2-51.8	52.5	48.2-56.8*
Yes	1235	57.0	52.0-61.9	43.0	38.1-48.0
Alcohol use risk score (AUDIT)					
Abstainers	1630	47.7	43.4-51.9	52.3	48.1-56.6*
Low risk (1-7)	421	57.8	49.1-66.0	42.2	34.0-50.9
Risky/hazardous level (8-15)	168	76.4	66.7-83.9	23.6	16.1-33.3
High risk/harmful (16-19)	38	53.1	29.5-75.5	46.9	24.5-70.5
High risk (20+)	39	39.7	17.7-66.7	60.3	33.3-82.3

*Significant at $p \leq 0.05$, AUDIT Alcohol Use Disorder Identification Test

Table 2: Sexual and risk behaviours among HIV positive individuals (n=2565) by awareness of HIV status.

and alcohol use risk score (AUDIT) were the only factors significantly associated with awareness of HIV status. In the final multivariate model (Table 3) the effects of associations varied slightly but the direction was similar to that observed in the bivariate analysis.

The model (Table 3) indicated that HIV positive females were more likely to be aware of their status [OR=1.6 (95% CI: 1.0-2.7), $p=0.049$] compared to their male counterparts. Individuals who were aware that they were HIV positive were significantly more likely to come from rural informal areas [OR=1.4 (95% CI: 1.0-2.0), $p=0.047$]. The model showed that individuals who were aware that they were HIV positive were significantly more likely to use condoms at last sex [OR=1.5 (95% CI: 1.1-2.0), $p=0.010$] than those who were not aware of their status. They were also significantly less likely to perceive themselves as being at risk of HIV infection [OR=0.7 (95% CI: 0.5-0.9), $p=0.011$] compared to those who did not know their status. Furthermore, HIV positive individuals who were aware knew their status were significantly less likely to engage in risky/hazardous drinking than their counterparts [OR=0.3 (95% CI: 0.2-0.6), $p<0.001$].

When risk factors were stratified by sex the effects were similar for both sexes (Figure 1). However, condom use at last sex was strongly associated with males than their female counterparts [OR=1.9 (95% CI: 1.1-3.5), $p=0.023$]. Perceived low risk of HIV infection remained significantly stronger among males [OR=0.5 (95% CI: 0.3-0.9), $p=0.033$]. Risky/hazardous drinking use also remained significantly low for both male [OR=0.3 (95%: 0.1-0.7), $p=0.006$] and females [OR=0.3 (95%: 0.2-0.8), $p=0.009$].

Discussion

In this study HIV positive females were more likely to report that they know their status than their male counterparts. The results suggest that awareness of ones HIV positive status reduced the likelihood of risky behaviours. Knowing that one was HIV positive was associated with increased likelihood of condom use during sexual intercourse, low perception of being at risk of HIV infection, and reduced likelihood of risky/hazardous alcohol drinking.

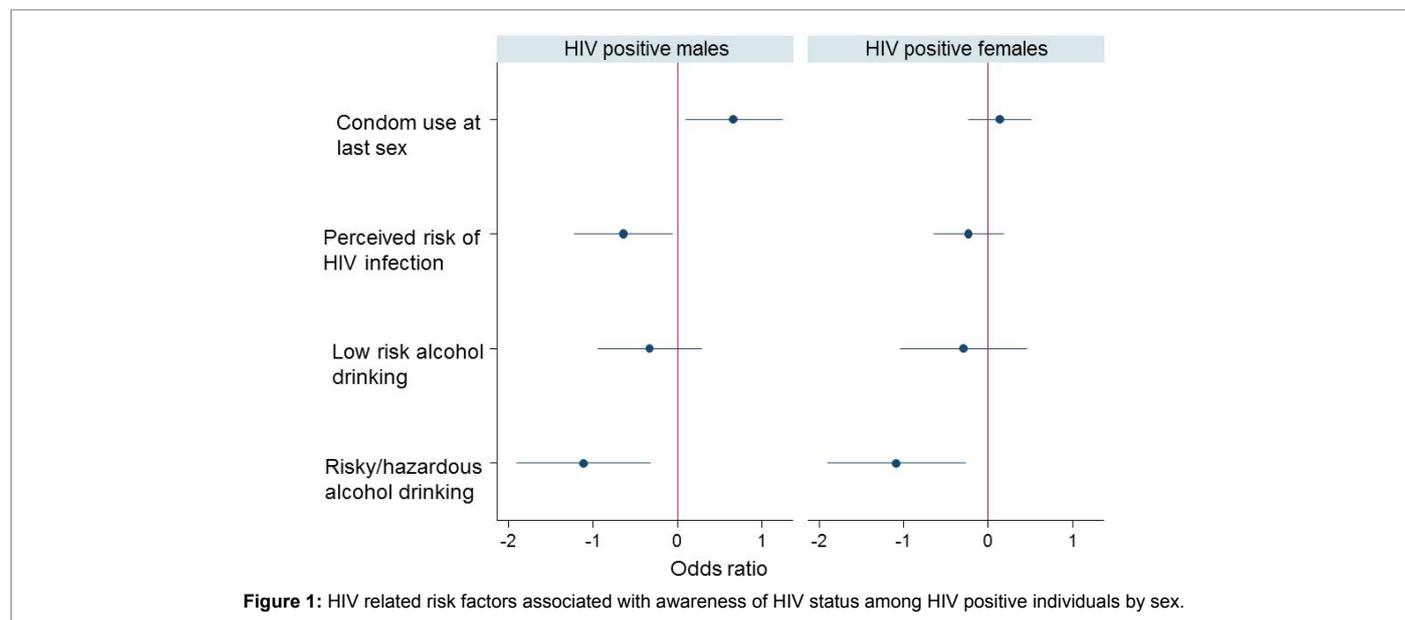
Elsewhere in sub-Saharan Africa, evidence exists that HIV positive individuals who are aware of their status are more likely to increase their use of condoms during sexual intercourse and adopt behavioural changes to reduce the likelihood of HIV transmission [7,8]. Other studies found that consistent condom use was higher among HIV positive individuals who were aware of their status and who did not use alcohol [9,10]. Consistent condom use among HIV-positive individuals is vital in reducing further transmission of HIV.

Awareness of one's HIV status through testing is considered to be an important entry point to a comprehensive package of care for HIV/AIDS prevention and treatment [4]. Given the current findings it is safe to assume that the benefits of pre- and post-HIV counselling during HIV testing and subsequent knowledge of one's HIV status empowers individuals to avoid transmission to others. Low risk perception coupled by safe risk behaviour among those aware of their HIV status may be reflective of the benefits of counselling during HIV testing. This also highlights the importance of promoting positive prevention programmes for people aware their positive HIV status [11].

Variables	OR	95% CI	p-value
Sex			
Male	1		
Female	1.6	1.0-2.7	0.049
Locality type			
Urban formal	1		
Urban informal	1.1	0.7-1.8	0.586
Rural informal	1.4	1.0-2.0	0.047
Rural formal	1.2	0.7-1.9	0.551
Age disparate			
5 years and older	1.0		
5years and younger	1.0	0.5-1.9	0.916
Within 5 years older or younger	0.9	0.6-1.4	0.698
Condom use last sex			
No	1		
Yes	1.5	1.1-2.0	0.010
Perceived risk of HIV infection			
No	1		
Yes	0.7	0.5-0.9	0.011
Alcohol use risk score AUDIT			
Abstainers	1.0		
Low risk (1-7)	0.8	0.5-1.3	0.338
Risky/hazardous level (8-15)	0.3	0.2-0.6	0.001

AUDIT Alcohol Use Disorder Identification Test

Table 3: Multivariate logistic model of factors associated with awareness of HIV status among HIV positive individuals.



Despite the positive contribution of knowledge of one's HIV status to the reduction in sexual and risk behaviour, the negative effect associated with not knowing one's status among HIV positive individuals is worrying. Specifically, the tendency not to use condom during sexual intercourse and the reported excessive alcohol use is of great concern given their perceived risk of HIV infection. New HIV infections occur through sexual contact, and transmission occurs more commonly from persons unaware their HIV positive status [7]. Ongoing risk-reduction counselling and substance abuse treatment for HIV-infected persons are needed to reduce behaviours associated with HIV transmission.

This study is limited by the fact that behavioural variables used are based on self-report and the study is therefore prone to the possibility of recall and social desirability biases due to the sensitive nature of the topic. The cross sectional nature of the study is limited to assessing associations and cannot infer causality. Nevertheless, the results of this study are based on a nationally representative sample and can be generalised to the HIV-positive population of South Africa.

Conclusion

The current findings highlight the importance of knowing one's HIV positive status. In the general population, education, information and communication about HIV and AIDS is one of the important ways of encouraging awareness of HIV status, reduction of risky behaviour and prevention of HIV transmission. Many of the infected persons are not aware of their status until they have tested for HIV but even after testing, they play a critical role in prevention if they adopt safer sexual and risky behaviours. Greater sensitization, both at population level and at health facilities is necessary to mitigate risky behaviour and transmission of HIV. Furthermore, given the large number of people living with HIV/AIDS in South Africa, more efforts should be made to promote positive prevention programmes [11].

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