Published in final edited form as:

J Acquir Immune Defic Syndr. 2015 June 1; 69(2): 252–256. doi:10.1097/QAI.0000000000000594.

Relationship and demographic factors associated with willingness to use an in-home HIV rapid test (HT) to screen potential sex partners among a US sample of HIV-negative and HIV-discordant male couples

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Abstract

With dyadic data from a US Internet sample of 275 HIV-negative and 58 discordant male couples, we assessed HIV-negative partnered men's attitudes towards using an in-home rapid HIV test to screen potential new sex partners and associated factors by multivariate multilevel modeling. HIV-negative partnered men were “likely” to use a HT for screening purposes. More positive attitudes were associated with being in a mixed/nonwhite relationship; having an open sexual agreement. Less positive attitudes were associated with both partners being well educated. These findings may highlight how to make the most of HTs as risk-reduction screening tool among at-risk male couples.

Keywords

male couples; in-home rapid HIV test (HT); screening potential new sex partners; relationship characteristics

INTRODUCTION

Testing is an essential component for HIV prevention and the first step to access treatment and care. Annual HIV testing is recommended by the CDC for men who have sex with men (MSM), with more regular testing recommended (every 3 to 6 months) for those with identifiable risk factors [1]. HIV testing rates among US HIV-negative men in male couples remains low [2-5], although condomless anal sex (CAS) within main partnerships is common. Studies with HIV-negative and discordant male couples have reported rates of CAS occurring within the relationship ranging from 64% to 91%, and 10% to 53% for CAS occurring outside the relationship [2-7]. Moreover, between one-and two-thirds of HIV

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No financial or ethical conflicts of interest exist among the authors for the present study.

infections among US MSM are transmitted within same-sex primary relationships (i.e., male couples) [8, 9].

In 2012, the first over-the-counter in-home rapid HIV test kit (HT) was licensed for sale in the US. A HT provides an additional method for MSM to test for HIV, but in the comfort of their home or another private setting. Studies conducted with MSM in Australia, England, France, and the US have found at least two-thirds of men were interested in using a HT to either test themselves and/or to screen potential sex partners [10-13]. A US study with HIV-negative partnered MSM in either a concordantly negative or discordant same-sex relationship has also found high interest in using a HT for self-testing [14]. In addition, Carballo-Diéguez and colleagues described how men used HTs to screen potential sex partners [15]. In that study, there were 10 positive HIV test results among potential sex partners, of whom 6 were unaware of their HIV status. Men reported being able to use the HT in both private and public spaces with few problems, and had a strong desire to continue to use HTs with a willingness to buy them [15].

Though these studies have shown that MSM are interested in using a HT, little is known about male couples' attitude toward using HTs to screen potential sex partners. By using dyadic data collected in 2011 from a US Internet study with 333 male couples comprised of 275 HIV-negative and 58 HIV-discordant couples, we sought to describe and assess which couple-level factors are associated with 631 HIV-negative partnered men's attitudes to use a HT to screen potential sex partners.

METHODS

Protocol

The Medical College of Wisconsin Institutional Review Board approved the study protocol, and methods have been previously described [4, 5]. Recruitment occurred in 2011 through *Facebook* banner advertising to target partnered men who reported in their profile being 18 years of age, living in the US, interested in men, and being in a relationship, engaged, or married. Banner advertisements briefly described the purpose of the study. Men were eligible to participate if they: were 18 years of age; lived in the U.S.; were in a sexual relationship with another male and had had oral and/or anal sex with this partner within the previous three months. A partner referral system was embedded in the survey to enable dyadic data collection. Post-hoc analyses of response consistency were used to verify couples' relationships. In all, 361 MSM couples provided consent and completed the study questionnaire; 631 HIV-negative MSM representing 275 concordantly negative and 58 HIV-discordant male couples are included in this analysis.

Measures

Outcome variable—Participants' attitudes for using an in-home rapid HIV test (HT) to screen potential sex partners were assessed by 1-item with a 5-point Likert-type scale that had response options ranging from 0 (*Not at all*) to 4 (*Extremely likely*). We asked participants how likely they would use a rapid HIV test at home to screen potential new sex partners.

Independent Variables—A variety of demographic, relationship and behavioral characteristics were assessed. Relationship characteristics assessed included relationship and cohabitation length, sexual agreements, and validated scales regarding participant's level of trust [16], relationship commitment [17], and investment in a sexual agreement [18]. Details about these items and validated scales have been reported elsewhere [5].

Data analysis

Dyadic data from 333 couples with 631 HIV-negative partnered men were analyzed using Stata v12 (StataCorp, College Station, TX) with guidelines by Rabe-Hesketh and Skrondal [19]. A variety of couple-level factors, including the average of both partners' scores (i.e., between), were used to assess how these factors may affect participants' attitudes to using a HT to screen potential sex partners. Independent couple-level variables that were significantly ($P < 0.05$) associated with the outcome in bivariate analyses were included in a multivariate random-effects multilevel regression model with maximum likelihood estimation. For the final model, we used backward elimination to remove independent variables that remained non-significant until all variables, excluding the pre-determined confounders, remained significant. Couples' age difference between partners, HIV-status, relationship length and whether behaviorally non-monogamous were included as potential confounders; previous HIV prevention research has noted differences in male couples' attitudes and/or behaviors by these factors [4, 6]. We report the coefficients, standard errors, and statistical significance for the factors in the bivariate and multivariate models.

RESULTS

The average age of men was 32.2 years; the average age difference between partners was 4.9 years. Couples' relationship length averaged nearly 5 years. About a third of couples were: nonwhite or mixed race; had both partners who earned at least a Bachelor's degree. Most couples reported being employed, concordantly HIV-negative, and living together. Fifty-seven percent of couples concurred about having a sexual agreement; of these couples, 40% had an open sexual agreement. Most couples practiced CAS within their relationship. In about one third of couples, one or both partners had sex outside of their relationship. Of these couples, 63% had one or both partners who had CAS with a casual partner and 53% had one or both partners who had CAS within and outside of their relationship. Overall, partners were, on average, committed to their relationship, trusting of one another, and invested in their sexual agreement.

Most HIV-negative partnered men reported that they were somewhat to extremely likely to use a HT to screen potential sex partners; the modal response was "extremely likely" (28%). The average reported attitude was 2.3 (SD 1.4). However, men's attitudes toward using a HT to screen potential sex partners differed on whether they were in a behaviorally monogamous ($M=2.2$) or non-monogamous relationship ($M=2.6$) (Figure 1).

Findings from the bivariate and final multivariate random-effects multilevel regression models are provided in Table 1. The final random-effects multilevel regression model revealed several factors were associated with HIV-negative partnered men's attitudes to using a HT for screening purposes. More positive attitudes were associated with being in a

mixed or nonwhite race relationship and having an open sexual agreement. Less positive attitudes were associated with being in a relationship in which both partners had at least a Bachelor's degree.

DISCUSSION

To our knowledge, this study is the first to assess attitudes towards using a HT to screen potential sex partners among a US sample of 631 HIV-negative partnered men who are either in a concordantly negative or discordant relationship. Half of the participants reported being “very” to “extremely” likely to use a HT to screen for potential sex partners, and partnered men who were in a behaviorally non-monogamous relationship had more positive attitudes to use a HT for screening purposes. This interest is in line with what has been reported among other samples of MSM [10-13]. More positive attitudes to use a HT for screening purposes were associated with being in a mixed race or nonwhite relationship. This finding is significant because US MSM of mixed or non-white race are disproportionately affected by HIV/AIDS compared to their white counterparts [1]. Although studies have noted that black MSM test for HIV as often or more than white MSM [20, 21], HIV testing rates continue to be low for male couples [2-6]. Recent studies have found that one of the primary reasons why MSM showed interest in using a HT – for either themselves and/or to screen others – is due to an increase in autonomy and privacy [10, 11]. It is possible that some partnered men among the mixed race and nonwhite male couples had also thought of and agreed with these reasons for using a HT to screen for potential new sex partners.

More positive attitudes to use a HT for screening purposes were also associated with being in a relationship with an open sexual agreement. Sexual agreements by nature allow both men of the couple to explicitly discuss and decide which behaviors are allowed to occur within and/or outside of their relationship [22, 23]. Although several studies have been conducted to better understand male couples' sexual agreements, few have linked agreements with their attitudes toward newer HIV testing modes [24]. Couples with an open agreement may use a HT to screen for potential sex partners to help decide which sexual behaviors they would like to engage in with those partners. Other research with MSM has assessed whether the use of a HT would alter their sexual behaviors (e.g., CAS). In a study with 27 MSM who regularly engage in CAS, men reported that their sexual occasions with possible sex partners ended when these sex partners received a positive test result from the HT; half of the sexual encounters also ended when potential sex partners refused to be screened by a HT [25]. In 40 instances a potential sex partner had a HIV-negative test result from the HT which led to 25 occasions of CAS that included 9 of these being based on the HT results [25]. Moreover, using the HT to screen potential sex partners helped to heighten men's awareness of, and commitment to, reducing their risk for HIV [26]. These findings demonstrate the potential utility that a HT could be used as a screening tool among partnered men and couples who have established an open agreement that permits some type(s) of sexual behaviors to occur with casual partners.

Less positive attitudes to use a HT for screening purposes were associated with being in a couple in which both partners held bachelor's degrees. Prior research has found that well

educated MSM questioned the sensitivity of the HT [27]. Men in couples in which both partners held bachelor's degrees may have also questioned the utility of using a HT to screen potential sex partners. This may be particularly true if they knew about the limited accuracy of the HT for detecting antibodies for the HIV virus (based on the window period).

Limitations

This study has limitations including the use of a cross-sectional study design with a US Internet convenience sample. Although identifying information was not collected, biases of participation, social desirability, and recall may have influenced participants to inaccurately self-report information about their relationship, HIV status and behaviors. Further, other factors could affect male couples' use of a HT to screen for potential sex partners, including mental health, intimate partner violence, and perceived risk for acquiring HIV. We included responses from all couples, including couples who did not report having outside sex partners; the responses of such couples might have reflected their interest in using a HT if their partnership became open in the future, or if they became single in the future. Future studies about attitudes toward HT use for screening may benefit by addressing these limitations.

HIV-negative partnered men are interested in using a HT to screen potential new sex partners, especially in the context of a relationship of mixed or nonwhite race and relationships with an established open sexual agreement. In addition to using HTs for self-testing, male couples can use HTs as a risk-reduction strategy for screening potential new sex partners. This practice may be beneficial when they decide which sexual behaviors to engage in with these potential new sex partners. We encourage additional research to explore how the use of a HT for screening purposes may change male couples' sexual behaviors and testing rates for HIV/STIs. Current and future HIV prevention interventions should consider these findings when developing new messaging and educational strategies that include the use of a HT.

Acknowledgments

Data collection for this manuscript was supported by the center (P30-MH52776; PI J. Kelly) and NRSA (T32-MH19985; PI S. Pinkerton) grants from the National Institute of Mental Health. This work was facilitated by the Center for AIDS Research at Emory University (P30AI050409).

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Figure 1. HIV-negative partnered gay men's attitudes toward using a HT to screen potential sex partners, by whether couple was behaviorally monogamous or non-monogamous.

Table 1

Factors significantly associated with attitudes toward using a HT to screen potential sex partners among 631 HIV-negative partnered MSM in 275 HIV-negative and 58 HIV-discordant male couples: Results from bivariate and final multivariate random-effects multilevel regression models

	Bivariate models	Final multivariate model
Couple-level demographic	β (SE)	β (SE)
Relationship length		
5 years and less (ref)	-0.01 (0.13)	-0.12 (0.20)
Greater than 5 years		
Age difference between partners	-0.01 (0.01)	0.04 (0.19)
HIV status of relationship		
Negative concordant (ref)	-0.14 (0.18)	0.42 (0.26)
Discordant		
Race		
Mixed or nonwhite (ref)	0.39 (0.13) **	0.39 (0.19) *
White		
Education level		
Both men had Bachelor's or higher degree (ref)	-0.38 (0.13) **	-0.67 (0.19) ***
One or neither partner had a Bachelor's degree		
Type of sexual agreement (couple concurred)		
Open	0.66 (0.18) ***	0.80 (0.24) **
Closed / monogamous		
Couple-level sexual behavior	β (SE)	β (SE)
Sex outside of relationship prior 3 months		
One or both men reported yes (ref)	0.41 (0.13) **	0.01 (0.24)
Both partners reported no		
CAS within and outside of relationship prior 3 months		
One or both men reported yes (ref)	0.43 (0.17) **	--
Both partners reported no		
Between couple-level relationship characteristic	β (SE)	β (SE)
Investment model for relationship commitment		
Commitment level	-0.20 (0.09) *	--
Quality of alternatives	-0.27 (0.06) ***	--
Trust scale		
Predictability	-0.19 (0.07) **	--

Notes.

Results from final random-effects multilevel regression model controlled for couples' relationship length, HIV serostatus, occurrence of sex outside relationship, and age difference between partners.

308 obs., 163 dyads

$\chi^2(7) = 30.36, P < 0.001$, Log likelihood = -531.69

*
 $P < 0.05$

**
 $P < 0.01$

 $P < 0.001$

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