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Predictors of Participation and Attrition in a Health Promotion Study Involving Psychiatric Outpatients

Peter A. Vanable, Michael P. Carey, Kate B. Carey, and Stephen A. Maisto

Center for Health and Behavior, Syracuse University

Abstract

Participant selection biases can reduce the generalizability of research findings and lead to overestimates of intervention effectiveness. We examined factors associated with study participation and attrition among psychiatric outpatients recruited for the initial phase of a health promotion trial. Medical records were reviewed to obtain HIV risk and substance abuse data, as well as psychiatric and demographic characteristics of potential participants. Out of 895 eligible outpatients, 67% ($n = 601$) consented to participate, among whom 69% ($n = 415$) completed all baseline appointments. Compared to non-consenters, consenters were more likely to be at risk for drug problems, and to receive care from clinics serving more impaired patients. Study completion was associated with older age, a psychiatric diagnosis other than adjustment disorder, and a recent STD diagnosis. These findings suggest that patients who could most benefit from risk reduction interventions are more likely to participate.

The external validity of findings from clinical trials hinges on the assumption that research participants represent the population from which they were drawn. Biases stemming from differential patterns of study enrollment or attrition can lead to overestimates of the effectiveness of an intervention, particularly if non-participants report higher levels of distress or risk relative to those who join and complete a study. Likewise, studies that provide prevalence estimates of specific risk factors or health-related outcomes can be affected by participation biases, leading to misestimation of important population parameters. Such concerns are underscored by several studies demonstrating a “healthy participant effect,” in which participants report healthier lifestyles or fewer risk factors than non-participants (Klesges et al., 1999; Lynch, Golaszewski, Clearie, & Vickery, 1989; Pullen, Nutbeam, & Moore, 1992). To reduce the threat of sampling bias, investigators often devote considerable attention and staffing resources towards insuring high initial response rates and low attrition rates (Cunningham-Williams et al., 1999; Hough, Tarke, Renker, Shields, & Glatstein, 1996). Nonetheless, biased study enrollment patterns and differential dropout rates pose a major challenge for many studies (Davis & Addis, 1999).

Research involving individuals being treated for a psychiatric disorder may be particularly vulnerable to participation biases (Hough et al., 1996; Mechanic, 1996; Patten, 2000). Fluctuating symptom severity, comorbid substance use disorders, and challenging social circumstances (e.g., homelessness, poverty, recurrent hospitalizations) may lead to differential participation and dropout rates among important patient subgroups. Although several survey studies suggest that elevated psychopathology contributes to premature dropout (Clark, Niaura, King, & Pera, 1996; Eaton, Anthony, Tepper, & Dryman, 1992; Farmer, Locke, Liu, & Moscicki, 1994), little research has examined whether psychiatric patients who consent to participate in research differ in important ways from patients who decline participation.

Directly contrary to the “healthy participant effect” observed in community-based studies, patients experiencing greater symptom severity and lower social functioning appear to be more likely to enroll in psychiatric (Shadish, Matt, Navarro, & Phillips, 2000) and substance abuse treatment trials (Rychtarik, McGillicuddy, Connors, & Whitney, 1998; Strohmets, Alterman, & Walter, 1990), relative to patients who decline such participation. On the other hand, research documents that patients experiencing greater psychiatric symptom severity are also more likely to miss appointments or to drop out of treatment (Killaspy, Banerjee, King, & Lloyd, 2000). Because these studies focus exclusively on participation in treatment outcome research, findings provide little insight into the nature and degree of participation bias as it might apply to research programs that are not geared towards treatment of specific psychiatric disorders. Thus, investigations of the characteristics of participants and non-participants in clinical research would help to clarify the degree to which participant selection bias is of broad concern for research undertaken in psychiatric settings.

We examined factors associated with study participation among psychiatric outpatients recruited to participate in a trial evaluating methods to reduce HIV related risk behaviors and harmful substance use. In addition to experiencing high rates of comorbid substance use disorders (Regier et al., 1990), men and women living with a mental illness represent an important target population for HIV prevention efforts, as indicated by higher rates of HIV-related drug and sexual risk behavior (Carey et al., 1999; Carey, Carey, Maisto, Gordon, & Vanable, in press; Carey, Carey, Weinhardt, & Gordon, 1997), and higher incidence rates of HIV infection (Carey, Weinhardt, & Carey, 1995). Recruitment and retention biases may be particularly common in HIV prevention research because (a) study participation requires disclosure of sensitive information about sexual and drug use behaviors, and (b) participants often come from difficult-to-reach populations. Indeed, concern about participant selection biases in HIV prevention research has been widely noted (Auerbach & Coates, 2000; Catania, Gibson, Chitwood, & Coates, 1990). In one of the few studies examining attrition in HIV prevention research, younger age, non-white ethnicity, lower AIDS-related knowledge, and injection drug use (IDU) were associated with study dropout among gay and bisexual men (DiFrancesco et al., 1998). In the same study, separate analyses of a sample of participants receiving treatment for a mental illness showed that lower HIV knowledge was associated with program attrition. To the extent that demographic and psychosocial factors associated with non-participation may characterize a segment of men and women who are especially vulnerable to HIV infection, such findings raise concern about the generalizability of HIV intervention findings to key segments of the population.

In the present report, we sought to extend existing research on participant selection bias by focusing on the characteristics of respondents who declined to participate in a large-scale clinical research program. Medical records among consecutive psychiatric outpatients recruited for an HIV prevention trial were reviewed to obtain health behavior and substance abuse data, as well as psychiatric and demographic characteristics of potential participants. Because of our interest in HIV prevention among patients with a severe mental illness, health behavior measures included in the present study emphasize sexual and drug use behaviors that confer risk for HIV and other sexually transmitted diseases. The goals of this study were (a) to examine the role of demographic, psychiatric, and health related risk factors as predictors of consent to participate in the study; and (b) to identify factors associated with attrition among patients who initially provide study consent. Based on prior research linking health-related risk taking and elevated psychopathology to study drop-out, we hypothesized that study non-participation and attrition would be associated with higher rates of HIV-related risk taking, elevated risk for substance use disorders, as well as greater psychopathology.

Method

Participants

The sample was drawn from 2,514 consecutive outpatients seen for an intake appointment or ongoing treatment at one of two psychiatric hospitals in Syracuse, New York. Across the two hospitals, seven outpatient clinics served as recruitment sites, including several clinics serving severely impaired patients (e.g., a day treatment program), an outpatient psychotherapy clinic, as well as several “medication management” clinics serving patients who required only brief check-in appointments. From this initial population, study eligibility was limited to those patients who reported (a) one or more occasions of sexual activity; and (b) any amount of alcohol or drug use, both assessed for the past year. A total of 1,142 patients (45%) met initial eligibility criteria. Of those meeting initial study criteria, a total of 895 (54% female) were recruited for the study.¹ The mean age of participants was 35 years ($SD = 9.7$); the ethnic composition consisted of 74% White, 18% African-American, 3% Latino, and 5% “other.” Psychiatric diagnoses, as determined by chart review, consisted of 16% schizophrenia, 10% schizoaffective disorder, 12% bipolar disorder, 31% depressive disorder, 8% anxiety disorder, 12% adjustment disorder, and 11% “other.”

Measures

Demographic information—Participant age, marital status, ethnicity, and participant gender were obtained through a review of chart data.

Psychiatric diagnosis—Primary Axis I diagnosis was determined by hospital staff during intake interviews, based on the Diagnostic and Statistical Manual of Mental Disorders (DSM IV; American Psychiatric Association, 1994).

Psychopathology level—Systematic data on symptom severity were not available for individual patients from the charts; however, as a proxy indicator, we were able to calculate an average Global Assessment of Functioning score for each clinic recruitment site using data from a subset of patients ($n = 462$) who later completed a Structured Clinical Interview (SCID) for the DSM-IV (First, Spitzer, Gibbon, & Williams, 1995). The average GAF score for the seven clinic sites was 46.4 ($SD = 4.3$, median = 47.9), indicating a high degree of psychopathology in the sample as a whole. Using the median GAF score of 47.9 as a cut-point, each clinic was determined to serve “higher severity” or “lower severity” patients. The clinic rating was shared by all patients who attended that clinic. This variable was then included as a proxy measure for severity of psychopathology.

Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993)—The AUDIT is a widely used 10-item self-report instrument developed to identify individuals at risk for alcohol problems or who are already experiencing such problems. The AUDIT improves upon existing assessments of alcohol use disorders by detecting at-risk drinkers who are experiencing problems prior to dependence, disease, or major life problems. AUDIT scores correlate with other self-report screening tests (e.g., CAGE, MAST), and is associated with biochemical measures of drinking (Bohn, Babor, & Kranzler, 1995). Summary scores range from 0–40, and prior research with psychiatric patients indicates that a cut point of 7 maximizes sensitivity and specificity scores for identifying those with an alcohol-related disorder (Maisto, Carey, Carey, Gordon, & Gleason, 2000). Internal consistency in the current sample was .90, providing strong evidence of measurement reliability.

¹We were unable to recruit 247 patients who met study eligibility criteria due to a hospital policy prohibiting recruitment of research participants seen during their initial intake appointment.

Drug Abuse Screening Test (DAST-10; Skinner, 1982). The DAST-10 is a short version of the 28-item DAST, designed to identify drug-use related problems in the previous year—A single summary score reflects the number of drug abuse items endorsed. Research indicates that the DAST-10 is internally consistent ($\alpha = .86$), temporally stable ($ICC = .71$), and able to discriminate between psychiatric outpatients with and without current drug abuse/dependence diagnoses (Cocco & Carey, 1998). Sensitivity and specificity with this population are optimized with a score of > 2 (Maisto et al., 2000). Cronbach's alpha in the current sample was .91, reflecting a high degree of internal consistency.

HIV-related risk behavior—To assess risk for HIV infection, participants reported (a) number of sexual partners; and (b) number of sexually transmitted diseases (STDs), both in the previous year. Responses were coded into dichotomous indicators to indicate whether participants had multiple sex partners in the last year (2 or more) and whether participants reported 1 or more sexually transmitted disease in the past year.

Procedure

Data were obtained from archival chart records with the approval of each hospital's Institutional Review Board. Consecutive patients seeking outpatient psychiatric care at either hospital completed an interview-based sexual health and substance use screening instrument administered as part of standard care. Three items were included in the screening instrument as a means of assessing whether participants were sexually active and had used drugs or alcohol in the past year: (a) "During the past year, about how often did you have sex?"; (b) "In the past year, about how often did you have beer, wine, or liquor"; and (c) "In the past year, about how often did you use street drugs?" Upon completion of the screening questionnaire, patients who reported that they were sexually active and had used alcohol or drugs in the last year were invited by a research assistant to participate in the "Health Improvement Project," designed to reduce risks for HIV and harmful substance use. The research assistant provided a detailed description of the baseline assessment study, emphasizing the primary goals of developing an improved understanding of people's decision making with regard to their health, and the goal of developing and evaluating educational programs to improve people's health. Patients were told that study participation would involve answering general health-related questions (e.g., caffeine use, smoking, and diet), as well as questions about sexual behavior, attitudes towards HIV/AIDS, and substance use. Participants were also told that they may be asked to participate in a second phase of the research project, but were not provided with information concerning the nature of that study (an HIV and substance use intervention) until after they completed the baseline assessment. The same recruitment protocol was used at each clinic site.

As compensation for travel expenses and as a modest incentive, patients were also told that they would be paid \$30 to complete the extensive (4 to 6 hour) baseline assessment. The "baseline" interview included a SCID to establish a DSM-IV diagnosis, as well as in depth measures of sexual risk behavior, substance use, and AIDS-related attitudes. Completion of the baseline assessment required that patients attend between two and three appointments scheduled over the course of a week or more. Patients who completed all baseline measures and who met lifetime criteria for an Axis I mood or thought disorder (e.g., schizophrenia) were subsequently invited to participate in a randomized clinical trial (RCT).

Overview of Analyses

The analyses were designed to differentiate between (a) patients who consented to participate in the baseline phase of the research vs. those who did not consent, and (b) patients who completed baseline assessment vs. those who did not. Univariate analyses are presented first to identify group differences using chi-square statistics for categorical variables, and *t*-tests for continuous variables. Next, we examined the relative contributions of specific predictor

variables for the two study outcomes using multivariate logistic regression analyses. Predictor variables were entered simultaneously into the model, and adjusted odds ratios (AOR) are reported to characterize the relative strength of the association between predictor variables and respective outcomes, controlling for the influence of all other predictor variables. Psychiatric diagnosis and ethnicity were entered into the each regression using standard dummy coding procedures.

Results

Characteristics of Patients who Agreed to Participate in the Study

Out of the 895 outpatients recruited for the study, 601 patients (67%) agreed to participate in the first phase of the research project. As shown in Table 1, bivariate analyses indicate that study consenters differed from non-consenters on five dimensions. Analyses of the demographic variables showed that participants who provided study consent were more likely than non-consenters to be unmarried (88% vs. 81%). Although consenters and non-consenters did not differ in terms of psychiatric diagnosis, differences did emerge with regard to psychopathology level. Consenters were more likely to have been recruited from clinics serving severely impaired patients, relative to non-consenters (36% vs. 27%). In addition, participants who provided study consent were more likely to be at elevated risk for alcohol abuse or dependence based on the AUDIT (38% vs. 28%), and were more likely to be at elevated risk for drug-related problems as indicated by the DAST (28% vs. 15%). Finally, in terms of HIV risk, consenters were more likely to report having multiple partners in the previous year compared to those not consenting to the study (30% vs. 23%), but did not differ with regard to past history of an STD diagnosis.

Characteristics of Study Completers vs. Non-Completers

Table 2 summarizes the characteristics of study completers versus non-completers. Of the 601 patients who consented to participate in a baseline assessment session, 415 (69%) actually completed the required assessment sessions. Completers were older than non-completers ($M_s = 35.9$ vs. 33.1), but did not differ on any other demographic characteristics. Analyses revealed a trend for study completers to differ as a function of psychiatric diagnosis ($p < .07$). Exploratory analyses contrasting patients with an adjustment disorder ($n = 66$) to all other diagnostic groupings combined ($n = 535$) revealed that non-completers were more likely to have an adjustment disorder relative to those who completed the study (17% vs. 8%, $\chi^2 = 8.91$, $p < .005$). Data concerning psychopathology level, HIV risk, and substance use variables revealed no significant differences at the $p < .05$ level, although findings suggested a trend for completers to report greater risk for HIV as reflected by a past STD diagnosis ($p < .06$).

Multivariate Analyses

For the final set of analyses, all predictor variables were included in two multivariate logistic regression analyses to predict study consent and completion of the baseline study. The overall regression model developed to identify predictors of study consent was significant (model $\chi^2 = 44.16$ $p < .0005$). Risk for drug-related problems as indicated by elevated DAST scores (Wald $\chi^2 = 9.93$, AOR = 1.90, CI = 1.27–2.82, $p < .003$) and elevated psychopathology level (Wald $\chi^2 = 4.18$, AOR = 1.44, CI = 1.02–2.04, $p < .05$), emerged as significant multivariate predictors of study consent. The overall regression model developed to identify predictors of study completion was also significant (model $\chi^2 = 32.28$, $p < .01$). In terms of predictors of study completion, older age (Wald $\chi^2 = 9.24$, AOR = 1.03, CI = 1.01–1.05, $p < .003$), a psychiatric diagnosis other than adjustment disorder (Wald $\chi^2 = 4.55$, AOR = .45, CI = .21–.94, $p < .04$), and a history of an STD diagnosis (Wald $\chi^2 = 4.02$, AOR = 2.61, CI = 1.02–6.68, $p < .05$) emerged as significant predictors of study completion.

Discussion

In this large, diverse sample of psychiatric outpatients, individuals who agreed to participate in a health promotion study differed from those who declined participation on several psychosocial and demographic characteristics. Relative to patients who declined study participation, patients who agreed to join the study were at higher risk for substance-related problems and were more likely to receive psychiatric care from clinics serving lower functioning patients. The only demographic variable associated with agreement to participate in the study was marital status, indicating that unmarried participants were somewhat more likely to consent for the study than married participants (univariate analysis only). A different set of predictors emerged in analyses of attrition. Among those who agreed to participate, individuals who actually completed the baseline study were older in age and were more likely to report a recent STD diagnosis relative to those who dropped out of the study. Psychiatric diagnosis also emerged as a predictor of study completion, with patients diagnosed with an adjustment disorder being more likely to drop out of the study.

We initially hypothesized that patients experiencing greater psychosocial dysfunction would be less rather than more willing to participate and follow-through with research participation. In general, findings were contrary to this hypothesis, indicating a modest participation bias towards enrolling and retaining patients with greater impairment. Although researchers generally strive to enroll participants who are similar to non-participants with respect to key study outcomes, we view the present results as encouraging news for investigators working within psychiatric or community-based settings. That is, to the extent that those who are most in need of intervention are more likely to become research participants, investigators and consumers can more confidently conclude that research findings are generalizable to those patients with the greatest need for clinical services. In this respect, results appear to be most consistent with a small body of treatment outcome research indicating that individuals who volunteer for clinical research in mental health or substance abuse settings tend to be more severely impaired than those who decline participation (Rychtarik et al., 1998; Shadish et al., 2000). Thus, although the present study was not a treatment program, it is plausible that individuals with more severe psychopathology or substance abuse difficulties were motivated to join the study in hopes of obtaining personal benefit, support, or symptom relief. Given the pattern of findings, we also would have expected that patients with a more disabling psychiatric diagnosis (e.g., schizophrenia or bipolar disorder) would express greater interest in study participation. Although there were no differences in consent rates as a function of diagnosis, patients with the least disabling diagnosis (adjustment disorder) were more likely to discontinue the study.

Several studies involving the general population (Klesges et al., 1999; Pullen et al., 1992) raise concerns about the consequences of biases associated with a “healthy participant” effect, in which participants report healthier lifestyles or fewer risk factors than non-participants. In general, we found no evidence of the healthy participant effect, with one exception: younger aged participants were more likely to drop out of the study. To the extent that younger age is often associated with greater health-related risk taking (e.g., Vanable, Ostrow, McKirman, Taywaditep, & Hope, 2000), age differences in attrition point to a potential concern associated with under-representation of an important subgroup of participants who could benefit from psychosocial intervention. The other predictors of study completion (past history of an STD and non-adjustment disorder diagnosis) appear to be more consistent with the study consent findings, suggesting that those with a more disabling diagnosis and greater health risks are more likely to be retained. However, because the predictors of study consent and study completion were not identical, it will be important for future research to identify common underlying factors contributing to both study consent and completion.

Findings from the current research underscore the potential for population differences in receptivity to health-related research. Specifically, for research involving psychiatric patients, intervention or treatment effects could potentially be attenuated by the disproportionate enrollment of patients with more severe psychiatric or substance abuse difficulties. Given that these conditions correlate with higher risk behaviors, it is possible that this research appealed to those at highest risk for health-related problems or to those with less access to other health-related educational opportunities. Alternatively, lower functioning patients may have been more responsive to the modest financial incentives offered in exchange for participation. In terms of our own interests in health behavior change in the area of HIV risk, these findings may alleviate some concerns recently expressed in the literature (Auerbach & Coates, 2000; DiFranceisco et al., 1998) about problems associated with over-enrollment of participants with fewer HIV-related risk factors. Indeed, for the purposes of conducting health behavior research, we are less troubled by the relatively modest evidence of participation bias reported here because it suggests that those who might benefit most from a psychosocial or health behavior intervention are most likely to enroll. Nonetheless, for research conducted in psychiatric settings to be most broadly generalizable, our findings encourage additional efforts to enroll and retain higher functioning patients.

A major strength of this study concerns the fact that we report on archival chart data for individuals who chose not to join the research project. Although not always feasible, results highlight the importance of considering differences between study joiners vs. non-joiners, as there are often a substantial number of individuals who refuse participation in clinical research programs. Other study strengths include the use of psychometrically validated measures, our large sample size, and the fact that patients were recruited from multiple psychiatric clinics within the community. Several limitations are also worth noting. Our use of average GAF scores from each clinic site as a means of categorizing patients as “lower” vs. “higher” functioning provided only a rough approximation of individual psychopathology level. Thus, although findings concerning the role of psychopathology and study participation were intriguing, they require replication and further exploration with improved indices of psychopathology. More generally, we note that our selection of predictor variables was limited to those that were assessed during a brief health screen. Future research should build on the findings reported here by developing and testing a more comprehensive theoretical model to clarify the psychological processes underlying decisions about study participation and attrition. Finally, the study could be improved upon by including follow-up data on participants who decline participation or who discontinue the study to identify reasons for their non-participation. Such qualitative data would help to provide additional context for the findings reported here.

The research described in this study required considerable planning and staffing resources directed towards the goal of recruiting and retaining representative research participants from psychiatric outpatient clinics. These results point toward the importance of considering the potential impact of (and possible remedies for) biases that arise from differential enrollment and dropout patterns. Besides taking steps to assure maximum enrollment and retention of all eligible participants, a number of researchers have moved towards the use of “intent to treat” analyses (Lachin, 2000), in which efforts are made to report on outcome data from participants who fail to complete an intervention as a means of increasing the external validity of findings. If such analyses are not possible, we suggest that researchers should, at a minimum, report observed differences between study completers and non-completers as a means of evaluating the degree to which external validity is threatened by differential enrollment and dropout patterns.

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Table 1
Study Consent as a Function of Demographic, Psychiatric, Substance Use, and HIV Risk Behavior Characteristics (N = 895)

	Consent				
	No (N = 294)	Yes (N= 601)	χ^2 (df)	t (df)	p <
<u>Demographic variables</u>					
M Age (SD)	36.09 (9.86)	35.04 (9.57)		1.52 (893)	ns
Gender, %			.74 (1)		ns
Female (n = 487)	57	53			
Male (n = 408)	43	47			
Ethnicity, %			4.23		ns
White (n = 661)	78	72			
Black (n = 160)	14	20			
Other (n = 74)	8	8			
Marital status, %			7.49 (1)		.007
Not married (n = 763)	81	88			
Married (n = 132)	19	12			
<u>Psychiatric variables</u>					
Diagnosis, %			4.46 (6)		ns
Schizophrenia (n = 145)	17	16			
Schizoaffective (n = 87)	8	10			
Bipolar (n = 107)	11	13			
Depression (n = 280)	33	31			
Anxiety disorder (n = 71)	7	8			
Adjustment disorder (n = 107)	14	11			
Other (n = 98)	10	11			
Psychopathology level, %			6.80 (1)		.01
Lower severity (n = 599)	73	64			
Higher severity (n = 296)	27	36			
Substance use variables					
AUDIT risk classification, %			9.42 (1)		.005
low risk (≤ 7 , n = 586)	72	62			
high risk (> 7 , n = 309)	28	38			
DAST risk classification, %			18.64 (1)		.0001
low risk (≤ 2 , n = 679)	85	72			
high risk (> 2 , n = 216)	15	28			
HIV risk indicators, last year					
Multiple partners (≥ 2), %			4.35 (1)		.04
no (n = 643)	77	70			
yes (n = 246)	23	30			
One or more STD, %			.27 (1)		ns
no (n = 841)	95	94			
yes (n = 51)	5	6			

Note. AUDIT = Alcohol Use Disorders Identification Test; DAST-10 = Drug Abuse Screening Test (short version); STD = sexually transmitted disease.

Table 2
Baseline Completion as a Function of Demographic, Psychiatric, Substance Use, and HIV Risk Behavior Characteristics (N = 601)

Baseline Study Completion				
	No (N = 186)	Yes (N = 415)	χ^2 (df)	t (df)
Demographic Variables				
M Age (SD)	33.11 (9.06)	35.91 (9.68)		
Gender, %				
Female (n = 321)	49	55	1.69 (1)	-3.33
Male (n = 280)	51	45		
Ethnicity, %				
White (n = 432)	76	70	2.38 (2)	
Black (n = 118)	18	21		
Other (n = 51)	6	9		
Marital status, %				
Not married (n = 526)	88	87	.003 (1)	
Married (n = 75)	12	13		
Psychiatric variables				
Diagnosis, %				
Schizophrenia (n = 94)	13	17	12.00 (6)	
Schizoaffective (n = 63)	8	12		
Bipolar (n = 76)	11	13		
Depression (n = 184)	33	30		
Anxiety disorder (n = 50)	8	8		
Adjustment disorder (n = 66)	17	8		
Other (n = 68)	11	12		
Psychopathology level, %				
Lower severity (n = 385)	69	62	3.28 (1)	
Higher severity (n = 216)	31	38		
Substance use variables				
AUDIT risk classification, %				
low risk (≤ 7 , n = 373)	64	61	.42 (1)	
high risk (> 7 , n = 228)	36	39		
DAST risk classification, %				
low risk (≤ 2 , n = 430)	69	73	.64 (1)	
high risk (> 2 , n = 171)	31	27		
HIV risk indicators, last year				
Multiple partners (≥ 2), %				
no (n = 418)	69	71	.11 (1)	
yes (n = 178)	31	29		
One or more STD, %				
no (n = 564)	97	93	3.68 (1)	
yes (n = 36)	3	7		

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