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The Utility of Non-proportional Quota Sampling for Recruiting At-risk Women for Microbicide Research

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Abstract

In the context of a measurement development study designed to contextualize microbicide acceptability, a sample that represented a range of at-risk women and maintained the statistical power needed for validity analyses was required. A non-proportional quota sampling strategy focused on race/ethnicity and number of sexual partners was utilized. This strategy resulted in enrollment of approximately equal proportions of Latina (31%), Black (36%), and White (32%) women, and an approximately 1:2 ratio of single-partnered (29%) and multi-partnered (71%) women. About 17% of women screened were ineligible based on eligibility criteria; an additional 16% were ineligible based on quota closures. Most participants were recruited through word of mouth (39%), community-based organizations (19%), or media sources (19%). Women recruited through word of mouth had the highest screen-to-interview completion percentage (67%). Non-proportional quota sampling is a feasible option for ensuring adequate representation of sample characteristics in microbicide research, but this goal should be weighed against cost and staff burden.

Keywords

Recruitment; Women; Non-proportional Quota Sampling; HIV/STD Research; Microbicide

Introduction

Women made up approximately 27% of reported HIV/AIDS cases in the United States (US) in 2004, 78% of which were infected via heterosexual intercourse (Centers for Disease Control and Prevention, 2005). HIV infection is disproportionate within racial/ethnic groups, with, for instance, African American/Black non-Hispanic women accounting for 64% of women with HIV/AIDS in 2004 but constituting only 13% of the female population (Centers for Disease Control and Prevention, 2005; US Census Bureau, 2005). Likewise, HIV infection is disproportionate within partnership contexts: women with casual, commercial, or otherwise “non-main” partners are more likely to acquire HIV than those with “main” and monogamous partners.

Conducting microbicide and other HIV/STD research with at-risk populations is necessary for meeting the needs of those who will benefit most from future interventions. However, recruiting women and racial/ethnic minorities into health related research can be challenging. Members of these groups may avoid research participation for a number of reasons, including fear of social stigma and, for some, the fear of breach of confidentiality regarding illegal activities (e.g., illicit use of substances) or immigration issues (Faugier & Sargeant, 1997; Magnani, Sabin, Sidel, & Heckathorn, 2005; Penrod, Preston, Cain, & Starks, 2003; Watters & Biernacki, 1989). Enrolling women in HIV prevention research may raise issues not present when enrolling men. Some women may lack the power to freely choose to enroll in sexual behavior studies (Mills et al., 2006), researchers may not offer flexibility to work around participants’ schedules (Dilworth-Anderson & Williams, 2004) or may create barriers to participation by not offering transportation and child care (Morrow & Costello, 2004), and some women and minorities face illiteracy and/or limited education (Mills et al., 2006), potentially challenging informed consent processes and privacy protections via self-administered questionnaires. These issues, together with cultural and language barriers and a historical lack of trust in health research (Dunn & Chadwick, 2004; Killien et al., 2000; Yancey, Ortega, & Kumanyika, 2006), may contribute to nonparticipation among racial/ethnic minorities. And while some (for cultural, religious, or personal reasons) may choose not to engage in sensitive or potentially stigma-related research protocols, a recent study showed that minorities participated at the same rate as non-Hispanic White participants when they were made aware of the study and met eligibility criteria (National Institutes of Health, 2003, 2005).

Whether sampling typically “hard-to-reach” populations (e.g., the homeless, drug users, commercial sex workers), women, and/or racial/ethnic minority populations, a variety of recruitment methods are used to increase enrollment. An advantage of snowball methods is that participants are likely to locate others with similar eligibility characteristics, while a disadvantage is over-representation by given sub-groups or social networks. Extensions of snowball sampling, including targeted sampling (Magnani et al., 2005), chain-referral sampling (Penrod et al., 2003), and respondent-driven sampling (Magnani et al., 2005; Ramirez-Valles, Heckathorn, Vazquez, Diaz, & Campbell, 2005), have attempted to advance traditional snowball sampling methods. Other strategies rely on recruitment locations, including facility-based sampling (Magnani et al., 2005), and time-location sampling (Magnani et al., 2005), identifying recruitment areas where specific participants can be accessed (Braunstein, 1993; Faugier & Sargeant, 1997; Kalsbeek, 2003; Killien et al., 2000; Magnani et al., 2005; Watters & Biernacki, 1989), and establishing a relationship and good communication with community organizations and community leaders to address potential participants’ distrust (Coleman et al., 1997; Deren, Shedlin, Decena, & Mino, 2005; Harris et al., 2003; Killien et al., 2000; Marquez, Muhus, Tosomeen, Riggs, & Melton, 2003; Story et al., 2003; Yancey et al., 2006). Protocol-driven strategies have also been employed (e.g., interviewers with similar backgrounds or similar race/ethnicity to potential participants;

flexibility when scheduling appointments, and providing adequate transportation (Deren et al., 2005; Dilworth-Anderson & Williams, 2004; Escobar-Chaves, Tortolero, Masse, Watson, & Fulton, 2002; Killien et al., 2000). Though racial/ethnic matching between interviewers and participants can be an important asset in recruitment, it may not be as important as staff recruitment experience and ties to the community (Yancey et al., 2006).

Researchers often combine methodologies to maximize recruitment and enrollment (McMahon, Tortu, Torres, Pouget, & Hamid, 2003), employing multi-faceted approaches using several recruitment sources or strategies (Coleman, et al., 1997; Harris, et al., 2003; Lewis, et al., 1998; McKee, et al., 2006; Rodriguez, Rodriguez, & Davis, 2006; Wilson & Orians, 2005; Wisdom, et al., 2002)). Non-probability sampling methods, with a focus on community-specific recruitment collaborations, offer a feasible option for recruiting those that are at risk for HIV/AIDS and, given the need to target at-risk samples, can be the most efficient choice.

Studies investigating microbicide development and use typically utilize convenience samples recruited via word of mouth, flyers, and outreach, often at a variety of community-based organizations (Coggins et al., 1998; Hammett, et al., 2000a, b; Holt et al., 2006; Mason et al., 2003). Weeks et al. (2004) used targeted sampling with outreach and referrals to recruit a sample of women at high risk for HIV infection. Others have used random sampling methods (Carballo-Diegeuez et al., 2006; Cohen, Steele, Urena, & Beksinska, 2007; Darroch & Frost, 1999).

Quota sampling ensures that the sample corresponds with the population(s) of interest in terms of specific characteristics (e.g., age, gender, race/ethnicity, socioeconomic status (Hung, 2005; Lee, Khang, & Lee, 2004). It can also be used to obtain certain proportions of characteristics within the sample population, even if the numbers are not proportionate to the population (Matthews, Anderson, & Nattinger, 2005; Promtussananon & Peltzer, 2005; Rogers, O'Donnell, Williams, Christensen, & Lowe, 2006; Young et al., 2005). This may be necessary if the proportions in the population are not known (McFarland & Caceres, 2001), or if the research question(s) require certain proportions of subgroups, such as the desire to perform subgroup-specific analyses (Yancey, et al., 2006). Sufficient numbers within different levels of given participant characteristics increase the power to perform statistical tests comparing members of each level in terms of the outcome variables. Having the necessary sample size to properly analyze the psychometrics of the scales being developed, as well as subsequent subsample comparisons was an important goal of the current study.

Appeals have been made for researchers to share the utility of recruitment sources (Harris et al., 2003; Keyzer et al., 2005). Im and Chee (2005) suggested using quota sampling for sampling ethnic minorities. Because of the disproportionate representation of racial/ethnic minorities in the HIV epidemic, and the data suggesting a unique role of partnership in HIV risk, the current project's investigators were interested in (1) comparing single- and multi-partnered women, as well as women with main, casual and other male sexual partners within the past year, and (2) being able to ascertain any differences in outcomes that might exist between Hispanic/Latina (Latina), Black/African –American (Black), and White women. A non-proportional quota sampling strategy was used to enroll approximately equal numbers of women by race/ethnicity (i.e., 1/3 each White, Black, and Latina) and a 1:2 ratio between single- and multi-partnered (two or more in the last 12 months) women. Rationale for the selection of quota sampling variables is described elsewhere (Morrow et al., in press). The goal of this paper is to explore the advantages and disadvantages of employing non-proportional quota sampling methods for enrolling at-risk women in HIV prevention studies.

Methods

Participants

Women from four states in the northeast US participated. Eligibility criteria (self-report) included: 18–55 years old; Black, Latina, or White; having had vaginal sex with at least one male sex partner in the last 12 months; HIV-negative or of unknown HIV status; and not pregnant. Race/ethnicity and number of partners (1 or 2+ vaginal sex partners) in the last 12 months were used as quota sampling criteria.

Project methods and procedures were approved by the appropriate institutional human subjects protections boards.

Design and Procedure

Project Interviewers—Interviewers completed a 2-day cross-site training focused on general information, ethical guidelines, project-specific procedures, and quota sampling methodology. Close collaboration between the study sites was maintained throughout data collection, including an ongoing dialogue on recruitment efforts. Interviewers were all female and were racially/ethnically diverse, with each site having both White and non-White staff.

Eligibility Process and Interviewing—Non-proportional quota sampling was used to recruit subgroups sufficient to address overall research questions. This involved a two-step process. First, each woman completed a screening questionnaire via audio computer-assisted self-interview (A-CASI) either in person on a laptop computer equipped with headphones or over the telephone with research staff. If eligible based on screening questions, research staff then determined whether or not the participant was eligible to enroll based on targeted quotas (i.e., race/ethnicity, number of male sexual partners). Targeted and actual enrollment data are presented in matrix form in Table 1. If there were spaces left in the potential participant's race/ethnicity and partner number targets, she was invited to enroll. Subsequently, written informed consent was obtained and participants completed an A-CASI-administered interview.

Cross-site Organization of Quotas—Target numbers for race/ethnicity and partner number were maintained across sites. For example, study sites worked together to fill the Latina, single-partnered target of approximately 50 women. Accurate information regarding the race/ethnicity and partner number of all participants was reported to the main site at regular intervals so matrix cells could be closed in a timely fashion to avoid over-enrollment into any one cell. Initially, updated totals for each of the matrix cells were tallied and communicated to each site weekly. When quotas were nearly full, information was communicated more frequently.

Measures: Recruitment Sources—Printed materials (e.g., newspaper/internet advertisements, flyers, business cards) contained IRB-approved information: age and sexual activity eligibility requirements, notations that participation involved a one-time survey and that compensation was available, and the project's local and toll free numbers. The collaborators' information sheet (distributed to staff at community-based organizations (CBOs)) contained additional information, including study purpose, detailed eligibility requirements, study methodology (e.g., length, A-CASI format), and confidentiality protections. The principal investigator appeared on local access television and community radio stations to discuss the project. Flyers and business cards were posted at CBOs, health clinics, and businesses (e.g., laundromats, nightclubs). Interviewers established formal collaborations with CBOs and health clinics. On-site activities at CBOs included: information sessions regarding sexual health and microbicides; information tables staffed by interviewers;

and recruitment efforts by CBO providers and outreach workers. Participants were offered the opportunity to screen for and complete the study on-site or at project offices.

The screening instrument contained a single open-ended question regarding recruitment source: “How did you hear about this study?” Responses were classified into categories, including word of mouth (WOM), media sources (media), CBOs, health clinics and doctor’s offices (clinics), staff outreach (outreach), and other (see Table 2 for detailed definitions).

Data Analysis Procedures—Cross-tabulations compared potential participant characteristics with steps in the recruitment and enrollment process and recruitment source. Chi-square tests examined the utility of recruitment sources. Success rates were calculated as a function of both study eligibility criteria and quotas. Estimates of women who would have been interviewed had quota sampling not been used were based on the number of women who were screener-eligible but ineligible based on quota closures, accounting for the percentage of women lost after establishing initial eligibility.

Results

Enrollment Process

Nine hundred and twenty-two (922) women were screened; 83% were eligible based on screening questions and 67% were eligible based both on screening questions and the availability of quota targets for race/ethnicity and number of male sexual partners in the past year. Of the 616 women who were eligible after the two-step process, approximately 14% ($n = 85$) did not schedule or keep interview appointments. Table 2 provides a detailed description of the participants who were screened (column A), eligible based on screening (column B), eligible based on quotas (column C), and interviewed (column D) by recruitment source.

Sample Characteristics

Five hundred and thirty-one (531) of the 922 women who were screened were enrolled: a 58% overall success rate. The sample closely approximated proportions of racial/ethnic groups and partner numbers targeted by quota sampling procedures and was balanced across racial groups by number of partners, $\chi^2(2, N = 531) = .116, P = .944$. The enrolled cross-site sample ($N = 531$) included 166 (31%) Latinas, 193 (36%) Black women, and 172 (32%) White women. With respect to partner status, 155 (29%) reported one (1) male vaginal sex partner, while 376 (71%) reported two or more (2+) male vaginal sex partners in the last 12 months. Among women with multiple partners, 32% reported two partners in the past 12 months, 43% reported 3–9 partners, and 25% reported 10 or more partners. One partner was randomly chosen by the computer’s randomization program as a referent for subsequent sexual risk and microbicide use questions. Fifty-eight percent (58%) of randomly chosen partners were main partners, while 42% were casual or other partners.

Participants ($N = 531$) averaged 33.8 years of age ($SD = 9.6$). Fifty-eight percent (58%) had never been married and 54% completed a high school education or less. Fifty-five percent (55%; $n = 518$) were unemployed. Approximately 40% ($n = 524$) had ever had an STD. Twenty-six percent (26%; $n = 525$) had ever been incarcerated and 29% ($n = 526$) had moved two or more times in the previous 12 months. Thirty-three percent (33%; $n = 526$) used marijuana, 17% used crack, and 9% injected drugs in the past 12 months.

The Utility of Non-proportional Quota Sampling

Had the quota sampling strategy not been used, i.e., had the project accepted all eligible women and not closed matrix cells once targets had been reached, an additional 150 women would have been eligible to enroll. Corrected for the estimated percentage of eligible participants who

would not have been interviewed due to cancellations and missed appointments, approximately 129 additional women could have been interviewed over the course of the 9-month data collection period. This would have increased the number of total interviews from 531 to approximately 660; however, sub-sample distributions would have differed from targets.

Assuming again that quota sampling had not been used, the targeted enrollment of 500 women would have been reached approximately 2 months earlier. However, again, sub-sample distributions across race/ethnicity and across numbers of partners would not have been as desired (Table 3).

The Utility of Recruitment Sources

Most of the 531 women interviewed were recruited by WOM (39%), media (19%), or CBOs (19%). WOM had the highest success rate (67% of those screened, and 88% of those eligible via quota targets, enrolled). Outreach was second (61% of screened; 90% of eligibles by quota targets, enrolled), and CBOs had the third highest screen-to-interview success rate (55% of screened; 94% of eligibles via quota targets, enrolled). Success rates at other recruitment sources varied: other (51%), media (50%), and clinics (49%) (See Table 4). Significant differences were found within racial/ethnic groups, $\chi^2(10,527) = 61.663$, $P < .001$, and partner categories, $\chi^2(5,527) = 32.723$, $P < .001$, with respect to recruitment source. The highest proportions of Latinas were accessed through CBOs and WOM, while Black women were accessed via the media and clinics and the highest proportions of White women were accessed through outreach and “other” recruitment sources. The highest proportions of single-partnered women were accessed via media and outreach sources, while the highest proportion of multi-partnered women were accessed through WOM, CBOs, clinics and ‘other’ recruitment sources.

Relative Utility of Recruitment Source Across Time—Over a 9-month recruitment timeline, the use and success of various recruitment sources varied at any given time. The numbers of women recruited each month from the three main recruitment sources (i.e., WOM, media, and CBOs) are presented graphically in Fig. 1. Activities at any specific recruitment source fluctuated as a function of project staff availability and—when collaborators had the control of recruitment efforts—collaborator availability.

Discussion

This project was a cross-sectional study to develop microbicide acceptability measures and determine relationships between person-, product-, and context-related factors related to acceptability. Quota sampling was used to ensure that cohorts stratified by race/ethnicity and partner number were large enough to analyze appropriately. Of note, the study aimed to recruit approximately one-third single-partnered women and two-thirds multi-partnered women, but did not set any type of definition on stratifications of multiple partnership. In this sample, the cohort of multi-partnered women distributed fairly evenly among women with 2 partners, 3–9 partners, and 10 or more partners, but should future studies warrant a greater degree of certainty, these “subquotas” might need to be formally established to ensure desired targets are achieved.

This study demonstrates that there are benefits to using quota-sampling strategies. First, the project was able to recruit enough women in each of the race/ethnicity and number of partner categories to have sufficient power to perform analyses across these variables, which are believed to have important implications for HIV prevention and microbicide use. Having multiple sexual partners is a risk factor for HIV and other STDs, and race and ethnicity are likely surrogates for other sociodemographic factors that are related to HIV/STD transmission, including socioeconomic status (Collins, 1996) and educational achievement (Putzke, Hicken, & Richards, 2002). Second, by accruing these proportions of single- and multi-partnered

women, the project had enough diversity by partner type to conduct analyses to determine whether main or casual/other partnerships differentially affected outcomes (Morrow, et al., in press).

The benefits of quota sampling, however, must be weighed against the costs. Since detailed information regarding the amount of time interviewers spent at given venues was not collected systematically, a cost-benefit analysis was obviated. However, it is clear that the success of quota sampling in the project was in large part due to the diligence and communication between interviewers and site coordinators at the four sites, as well as the trusting relationships developed with communities. The need to have accurate accounts of data transferred to the main site required close communication and extensive quality checks. Staff time and project resources were also spent on an increased timeline for data collection. Interviewers were in the field for approximately 2 additional months because many women who were eligible based on the screening questions were ineligible due to quota closures.

The success of recruitment sources was assessed via two measures: absolute numbers of women interviewed as a function of recruitment source, and screen-to-interview completion rates by recruitment source. Word of mouth, CBOs, and media sources yielded the highest number of women interviewed. Absolute numbers may be a function of both size of the population accessed via these sources, or staff time spent recruiting there. Word of mouth and outreach had the highest success rates (i.e., screened-to-interview-completion). It is important to note that success rates are conservative estimates of the study's ability to enroll participants: approximately half of those who were screener-eligible and not interviewed were a function of quota closures, not the participants' interest in or ability to complete the study.

Overall, word of mouth yielded the greatest numbers of women screened and interviewed and had the highest success rate. Because women recruited via word of mouth had heard about the study and its eligibility criteria from other participants, it is more likely that they were both eligible and comfortable with the interview content. Likewise, women who learned about the study from similar media outlets or from the same CBO would likely also tend to share similar characteristics of eligibility and comfort with the study content. Harris, et al. (2003) noted that recruitment via social networks may not be well understood because of a lack of information regarding original recruitment source. While we cannot know the primary recruitment source, it is clear throughout the literature that word of mouth plays a significant role in many recruitment efforts (Coleman et al., 1997; Harris et al., 2003; Rodriguez et al., 2006). Though data necessary to substantiate this claim were not collected, we hypothesize that a sizeable number of women recruited via WOM were informed about the study by women recruited via media and CBO efforts and that media-and CBO-related recruitment had a carryover effect with word of mouth that remained active longer than the active media or CBO source itself. As shown in Fig. 1, women screened as a function of recruitment by WOM increased and peaked in conjunction with both media and CBOs, and, in both cases, WOM decreased less precipitously.

In considering why word of mouth, media sources, and CBOs yielded approximately 76% of those interviewed, two possibilities emerge: an element of trust transmitted by the recruitment source, and the ability to reach a large number of women, especially via media-based strategies. These sources may legitimize the study for potential participants. It can take time to build a reputation in the community. Having staff who are part of those communities, or who are adept at building relationships, is a great benefit. Collaborators in the community, including those who allowed space for screening or interviews, were a significant source of recruitment. These institutions and individuals can have a greater influence on a person's decision to participate than an unknown interviewer, saving interviewer time and project resources. Likewise, community-based newspapers and radio programs are a trusted source of information for many,

and thus raise the level of trust involved in media recruitment. An alternative explanation is that media sources reach a large audience, and thus the number of women enrolled was a function of the absolute numbers who heard the message.

Once women were deemed eligible and had a space within the quota matrix, success at retaining them to complete the questionnaire was, to some extent, an artifact of recruitment source. Women recruited through CBOs and outreach could remain post-screening, to immediately enroll and complete the questionnaire in one session. To the contrary, women recruited through media, clinic, and some 'other' recruitment sources required scheduling of interviews, either because they completed the screener by phone or because their clinic visit was pending and did not allow time to complete the questionnaire immediately. Thus recruitment venues and the ability to follow through with participants as a function of venue logistics should be considered.

There are a number of lessons learned. First, non-proportional quota sampling is feasible, given adequate resources and time. Researchers must consider the importance of particular analyses and hence the need for specific numbers of subjects in specific categories. If such analyses may yield knowledge that advances the field, these types of sampling strategies should be considered. If similar advances can be made without the additional time and costs that may be required with these types of sampling procedures, there may not be a need.

Second, during times when recruitment increased the number of screenings and interviews, it was important to anticipate these influxes and have adequate resources and quality assurance measures in place. At times, interviewers were completing several screenings and interviews each day. The integrity of the data and the ability to maintain updated counts for quotas required frequent communication across sites. Typically, there would be an initial wave of interest at any given recruitment venue. Over time, interest would wane, as staff interviewed all those interested and eligible that could be accessed. These increases and decreases in recruitment can, and should, be anticipated and planned for. It is important not to rely on any given recruitment source and to seek alternative sources before current efforts wane. At the same time, it is important, from a staff burden perspective, not to recruit from too many sources at once, such that numbers can be more stable and potential participants are not required to wait long before they are screened or interviewed. Given the effectiveness of CBOs as a recruitment source, it may be reasonable to recruit at various CBOs consistently across the duration of data collection, attending one organization for a short time, then utilizing other CBOs for a period of time. Once time passes, there may be some turnover in the population served by the first organization and potential new women to screen. This requires that staff maintain relationships with the organizations during the times when they are not actively recruiting at those sites. In addition, recruitment via media can be spread out over the course of the study, particularly utilizing different newspapers and media sources, in order to avoid sharp influxes in interested individuals and the potential for increased staff burden as a result of long hours and multiple daily interviews.

Third, building a reputation in the community takes time. Community-based organizations were identified and asked to serve as collaborators through both previously established relationships and 'cold calling.' The collaborations offered a mutual benefit: for the research study, by gaining access to targeted populations, and for the CBOs, by having the opportunity for clinicians and HIV/STD specialists to provide educational sessions to consumers or staff. These collaborations are important, as case managers and other staff are a trusted source of outreach to potential participants. Taking the time to familiarize CBO staff with the project and enlist their help as collaborators likely led to increased interest in the project among the organization's clientele, and increased the trust that the potential participant had toward project staff and goals.

While a strength of the current study is that the present sample was derived from several sites, results may not be generalizable to women outside the northeast United States, and specifically to women from other racial/ethnic groups or in other countries. One of the difficulties in obtaining approximately equal numbers of Latina, Black, and White women was that the instrument required that participants understand English well (either spoken or written). Thus the Latina sample captured here may not be representative of the broader US Latina population. It will be imperative for researchers in other sociogeographic arenas to assess the feasibility of utilizing similar recruitment venues. For example, some areas may have few community-based organizations or health clinics, or may not have venues that are amenable to collaborating with researchers.

In summary, non-proportional quota sampling utilizing a variety of recruitment sources is a feasible option for recruiting a diverse sample of at-risk women for microbicide research. The goal of obtaining sufficient numbers to have the statistical power to perform psychometric and inferential subgroup analyses must be weighed against staff burden and project resources necessary to potentially prolong the amount of time spent collecting data.

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Fig. 1. Number of potential participants recruited through word of mouth, media or community-based organizations and eligible based on screening questions, by recruitment source and month screened ($N = 576$)

Table 1

Targeted and actual enrollment numbers (percentages) for the sample

	Latina	Black, non Hispanic	White, non Hispanic	Totals by number of partners
One partner:				
Targeted	50	50	50	150 (30%)
Actual Enrollment	50	55	50	155 (29%)
Two or more partners:				
Targeted	117	117	117	351 (70%)
Actual Enrollment	116	138	122	376 (71%)
Totals by race/ethnicity:				
Targeted	167 (33%)	167 (33%)	167 (33%)	501
Actual Enrollment	166 (31%)	193 (36%)	172 (32%)	531

Note: Enrollment target categories for race/ethnicity were defined as follows: If a woman reported that she was Latina, regardless of endorsements in any other racial category, and that her or her family's country of origin was either Puerto Rico or the Dominican Republic, she was categorized as Latina. If a woman reported that she was not Latina and that she was Black, regardless of endorsements in any other racial category, she was categorized as Black. If a woman reported that she was not Latina and not Black, and that she was White, regardless of endorsements in any other racial category, she was categorized as White

Table 2

Women screened (A), eligible after screening (B), eligible with quota availability (C), and interviewed (D) by recruitment source

Recruitment Source	A Screened	B Eligible after screening	C Eligible with quota availability	D Interview complete
WOM ^a	306 (33%)	274 (36%)	233 (38%)	206 (39%)
Media ^b	199 (22%)	164 (21%)	126 (20%)	99 (19%)
CBO ^c	182 (20%)	138 (18%)	106 (17%)	100 (19%)
Clinic ^d	85 (9%)	67 (9%)	51 (8%)	42 (8%)
Street Outreach ^e	57 (6%)	48 (6%)	39 (6%)	35 (7%)
Other ^f	88 (10%)	70 (9%)	57 (9%)	45 (8%)
Recruitment Source Missing	5 (1%)	5 (1%)	4 (1%)	4 (1%)
TOTAL	922	766	616	531

^aWord of Mouth: participant named or referred to another person who was not a research or CBO staff member as their recruitment source (e.g., relative, friend, or co-worker who heard about, screened for, or participated in the study)

^bMedia: specific references to advertisements (e.g., newspaper, radio, or television). This category was used if the participant named a specific media source or noted something general (e.g., "website," "newspaper," or "the radio")

^cCommunity-based Organization: organizations (e.g., shelters, community advocacy groups). Sources were categorized as a CBO if a participant specifically mentioned having seen an advertisement or having talked to an interviewer or other staff member at a CBO

^dClinic: participant specifically mentioned having seen an advertisement or having talked to an interviewer or other staff member at a health clinic or doctor's office, including addiction treatment centers

^eOutreach: participants reported that a member of the research or other staff approached them at venues that were not specifically named as a CBO or clinic. *Outreach* was reserved for those who named a specific person, or generally said researcher or staff, but did not include information on the location where outreach occurred

^fOther: referrals from other research projects, project flyers and business cards, community events, other locations, and miscellaneous

Table 3

Hypothetical Enrollment: Numbers and percentages of women that would have hypothetically been interviewed chronologically across a 7 month recruitment period had quotas not been used and study completion criteria was set at a total of 500 interviews completed

	Latina	Black	White	Total by partner number
One partner	50	110	81	241 (48%)
Two or more partners	62	113	84	259 (52%)
Total by race/ethnicity	112 (22%)	223 (45%)	165 (33%)	500 ^a

^aThe study aimed to enroll 500 participants. The actual number of interviews is 531, as communications regarding quota closures between sites and between site coordinators and interviewers were sometimes impeded by interviewers being in the field, thus totals in some quota cells were higher than expected. As this is an artifact of employing the quota sampling strategies, there would have been 500 total interviews without using this sampling method

Table 4
Race/ethnicity and number of male sexual partners for women who completed interviews: by recruitment source (*N* = 531)

	Latina [†]	Black [†]	White [†]	Total race/ethnicity	1 Partner [‡]	2+ Partners [‡]	Total partners
WOM ^a	80 (39%)	75 (36%)	51 (25%)	206	56 (27%)	150 (73%)	206
Media	14 (14%)	43 (43%)	42 (42%)	99	49 (49%)	50 (51%)	99
CBO ^b	49 (49%)	30 (30%)	21 (21%)	100	14 (14%)	86 (86%)	100
Clinic	10 (24%)	18 (43%)	14 (33%)	42	12 (29%)	30 (71%)	42
Outreach	9 (26%)	10 (29%)	16 (46%)	35	13 (37%)	22 (63%)	35
Other	3 (7%)	14 (31%)	28 (62%)	45	11 (24%)	34 (76%)	45
Total	165 (31%)	190 (36%)	172 (33%)	527	155 (29%)	372 (71%)	527
Missing	1	3	0	4	0	4	4

^a Word of mouth
^b Community-based organization
[†] Comparison across race/ethnicity by recruitment source: $\chi^2(10,527)=61.663, P < .001$
[‡] Comparison across number of partners by recruitment source: $\chi^2(5,527)=32.723, P < .001$