

Respondent-Driven Sampling in a Multi-Site Study of Black and Latino Men Who Have Sex with Men

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Abstract: Purpose: Respondent-driven sampling (RDS) was used to recruit four samples of Black and Latino men who have sex with men (MSM) in three metropolitan areas to measure HIV prevalence and sexual and drug use behaviors. We compared demographic and behavioral risk characteristics of participants across sites, assessed the extent to which the RDS statistical adjustment procedure provides estimates that differ from the crude results, and summarized our experiences using RDS.

Methods: From June 2005 to March 2006 a total of 2,235 MSM were recruited and interviewed: 614 Black MSM and 516 Latino MSM in New York City, 540 Black MSM in Philadelphia, and 565 Latino MSM in Los Angeles County. Crude point estimates for demographic characteristics, behavioral risk factors and HIV prevalence were calculated for each of the four samples. RDS Analysis Tool was used to obtain population-based estimates of each sampled population's characteristics.

Results: RDS adjusted estimates were similar to the crude estimates for each study sample on demographic characteristics such as age, income, education and employment status. Adjusted estimates of the prevalence of risk behaviors were lower than the crude estimates, and for three of the study samples, the adjusted HIV prevalence estimates were lower than the crude estimates. However, even the adjusted HIV prevalence estimates were higher than what has been previously estimated for these groups of MSM in these cities. Each site faced unique circumstances in implementing RDS.

Conclusions: Our experience in using RDS among Black and Latino MSM resulted in diverse recruitment patterns and uncertainties in the estimated HIV prevalence and risk behaviors by study site.

Keywords: Respondent-driven sampling ■ HIV ■ Field experiences ■ Men who have sex with men

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INTRODUCTION

Although they represent only 2% of the United States population, men who have sex with men (MSM) account for an estimated 61% of all new HIV infections in U.S.^{1,2} In 2010, among HIV-positive MSM, new diagnoses among Blacks (37%) and Latinos (23%) were disproportionately higher than among Whites (37%) in comparison to the racial/ethnic distribution of the U.S. population (13%, 15%, and 66%, respectively).² Given the burden of HIV in minority MSM populations, it is imperative to conduct research to identify factors that place Black and Latino MSM at risk for infection and to facilitate the design and implementation of targeted behavioral and biomedical interventions.

Black and Latino MSM are often difficult to recruit into research studies. It is particularly challenging to recruit representative samples of MSM because there are no sampling frames from which to generate a probability sample.³ Silvestre et al. explored recruitment barriers for Black and Latino men in urban settings and noted that recruiting MSM of color required attention to cultural norms of the “target” group, use of members of the “targeted” community, and the use of promotional materials that were accepted by community members.⁴ Fernandez et al. describe the use of Internet methods to recruit Latino MSM in Miami.⁵ They found that men recruited through Internet chat rooms did present at physical study sites, although formative work in the community and inclusion of members of the targeted community were necessary to ensure their successful recruitment.

Venue-based (time-space) sampling has been the most broadly used method to recruit MSM populations for HIV behavioral research.^{3,6} The Centers for Disease Control and Prevention (CDC) first implemented venue-based sampling in 1994 with the multi-site Young Men's Survey;⁷ this method continues to be used to recruit MSM

ages 18 years and older for CDC's National HIV Behavioral Surveillance system.⁸ Despite its widespread use, some experts believe that venue-based sampling may miss non-gay-identified or minority MSM who do not frequent predominantly gay-identified venues.³

In this report we describe the use of Respondent-Driven Sampling (RDS),¹² a form of chain-referral sampling, for recruiting four samples of Black and Latino MSM in three U.S. metropolitan areas. RDS has increased in popularity as a means to reach persons from hard-to-reach populations for which construction of a sampling frame is not feasible, such as injection drug users,⁹ ecstasy users,¹⁰ and Latino MSM.¹¹ We were particularly interested in 1) describing the RDS recruitment statistics across our study sites; 2) comparing the demographic and behavioral risk characteristics across each site; 3) assessing the extent to which the RDS statistical adjustment produces estimates that differ from the crude results, especially with respect to estimating HIV prevalence and behavioral risk; and 4) describing benefits and problems associated with using RDS as a sampling strategy, as well as suggesting recommendations for future studies that recruit Black and Latino MSM.

METHODS

Data were collected as part of the CDC's Brothers y Hermanos (ByH) study. The chief aims of the study included identifying the structural, psychological, socio-cultural and behavioral factors associated with elevated HIV transmission among Black and Latino MSM. From June 2005 through March 2006, Latino MSM were recruited in Los Angeles County and New York City, and Black MSM were recruited in New York City and Philadelphia. To be eligible, participants had to 1) be male (and identify as such), 2) identify as Black or Latino, 3) be 18 years of age or older, 4) report sex (oral, anal sex or mutual masturbation) with another male in the past 12 months, and 5) be a resident of New York City, NY, Philadelphia, PA, or Los Angeles County, CA. Men who were HIV-positive, HIV-negative, or of unknown serostatus were eligible to participate.

Participant Recruitment

Recruitment for ByH has been described.^{13,14} Briefly, an initial set of target population members ("seeds") were selected using a quota so that approximately two thirds of the seeds recruited would be gay-identified, and approximately half of the seeds would be less than 30 years of age. We also attempted to recruit equal numbers of seeds who were HIV-positive, HIV-negative, and unknown HIV status to help diversify the initial sample of recruits by serostatus. Based on prior experience, additional seeds

were selected if the pace of recruitment slowed to the point where few potential participants per week would present for interview appointments. Seeds and the individuals they recruited were encouraged to refer (using study coupons) up to three eligible individuals from their social networks to participate as the next wave of enrollees, with the process continuing until a sample size of 500 per study site was achieved.

Data Collection Procedures

Study enrollment took place in project offices located in office buildings, community-based organizations (gay and non-gay identified), community health centers or neighborhood storefront offices. After screening for eligibility and obtaining written informed consent, participants completed an Audio Computer-Assisted Self-Interview (ACASI). The ACASI was available in English and Spanish and took approximately 45 minutes to complete. Next, all participants, except those who disclosed that they had been previously diagnosed as HIV-positive, were tested for HIV using a rapid, oral fluid HIV-antibody test (OraQuick Advance; OraSure Technologies, Inc., Bethlehem, PA). Men with a preliminary positive result on the rapid test, and those who disclosed that they were already HIV positive, provided a blood specimen for confirmatory testing through Western blot assay.

All participants were paid \$50 for their participation in the interview and HIV test. Participants earned an additional \$15-\$20 for each eligible person who they successfully recruited. The protocol was approved by the Institutional Review Boards at CDC and the local study sites.

Measures of Participant Attributes

The study questionnaire included questions on demographics, HIV testing history, behavioral variables, and psychosocial factors. To assess recent (past 3 months) sexual and substance use behaviors, participants were asked about insertive and receptive protected and unprotected anal sex, protected and unprotected vaginal sex, number of male and female sex partners, and use of alcohol and non-prescription drugs (marijuana, crystal methamphetamine, crack, cocaine, heroin, amyl nitrites and 'club drugs' [Ketamine, Ecstasy, Gamma hydroxybutyrate]).

To generate weighted RDS estimates of the demographic, behavioral and HIV prevalence variables, participants were asked to provide the number of MSM in their social network. Specifically, to measure size of social networks, men were asked: "Approximately how many *men who have sex with men* in [City] do you know personally? That is, you know their name, who they are, and how to contact them; they also know you *and* you

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