

Electronic and Online Innovations in Respondent-Driven Sampling Methodology

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Background

- HIV research has increasingly employed Respondent-Driven Sampling (RDS) to access and recruit "hidden" populations, such as gay bisexual, and other men who have sex with men (MSM).
- Traditional RDS selects "seeds" (initial participants) in-person and provides participants with a limited number of paper coupons for onward recruitment.

Objectives

The objectives of this study were to explore the impact of online and electronic RDS innovations on differences between:

- MSM in recruitment chains of online VS offline seeds
- MSM who redeemed electronic VS paper coupons

Methods

Eligibility Criteria:

- Aged 16 years or greater
- Gender identify as male
- Had sex with another man in the past 6 months
- Residing in Metro Vancouver (population of ~2.5 million)
- Understand and complete questionnaires written in English

Study Details

- Used respondent-driven sampling
- Seeds were selected online (e.g., Grindr, social media) or offline (e.g., community agency, social group)
- Recruitment coupons were electronic or paper.
- Participants completed a self-administered computer-based survey followed by a nurse-administered clinical questionnaire

Outcomes of Interest:

- In recruitment chain of online seed VS offline seed
- Redeemed electronic coupon VS paper coupons

Explanatory Variables:

- Demographics, sexual practices and preferences, and social and community connection

Data Analysis

- All analyses were weighted given use of RDS
- Manual backward-stepwise multivariate logistic regression was used to examine independent associations with each of the two outcomes of interest (p<0.05 considered significant)

Results: Objective 1 "Online Seeds"

- Of 719 MSM recruited from 119 seeds (85 online, 34 offline), 23.4% were HIV-positive, 68.0% were White, and median age was 33 (Q1-Q3: 26-47)
- Of the 600 non-seeds, 283 MSM (47.2%) were in recruitment chains started by online seeds, which had smaller network sizes than offline seeds (OR=0.99, p<0.01).
- Few demographic factors were significant at the univariate level (e.g., sexual identity, race/ethnicity, county of birth, formal education, annual income, housing status). Age was only significant at the univariate level (OR=0.96, 95%CI: 0.95-0.98). HIV status remains in the final model.

Table 1. Multivariable model for being in a recruitment chain of an online VS offline seed

	AOR	95% CI
HIV Test Result		
Negative	Ref	
Positive	0.25	0.16 – 0.40
Year Out as "Gay"		
1-4	Ref	
5-10	1.30	0.75 – 2.26
11-21	2.22	1.27 – 3.88
22+	0.93	0.50 – 1.72
Bisexual-identified	1.49	0.74 – 3.02
Not out	2.18	0.66 – 7.19
# of Facebook Friends		
501+	Ref	
201-500	1.69	1.02 – 2.80
31-200	1.43	0.86 – 2.37
0-30	0.91	0.54 – 1.54
Anal Sex Position Preference		
Bottom	Ref	
Versatile	0.56	0.35 – 0.88
Top	0.71	0.46 – 1.09
No anal	0.55	0.23 – 1.35
Common Law (lived together 1 year)		
No	Ref	
Common Law/Married	0.71	0.40 – 1.26
No regular partner	0.61	0.39 – 0.94

AOR = Adjusted Odds Ratio, CI = Confidence Interval

Results: Objective 2 "Electronic Coupons"

- Of 596 participants recruited from seeds within the study, 93 redeemed electronic coupons (15.6%) and the remaining redeemed paper coupons.
- Men who redeemed online coupons were more likely to have been within a recruitment chain started by an online seed (91.4%) compared with men who redeemed paper coupons (84.4%; OR=1.97 95% CI:1.18,3.27).
- Few demographic factors were significant at the univariate level (e.g., age, sexual identity, race/ethnicity, immigration status, formal education, housing status). Two variables were only significant at the univariate level: annual income >\$30,000/year (OR=1.70, 95%CI: 1.00-2.89) and HIV-positive vs. HIV-negative status (OR=0.36, 95%CI: 0.18-0.72)

Table 2. Multivariable model for redeeming an electronic coupon VS paper coupon

	AOR	95% CI
Currently Employed		
No	Ref	
Yes	3.10	1.46 – 6.59
Current Housing		
House/residence	Ref	
Temporary housing	1.70	0.61 – 4.79
Homeless	6.48	1.39 – 30.25
In-care	0.44	0.03 – 6.07
Year Out as "Gay"		
1-4	Ref	
5-10	0.48	0.20 – 1.13
11-21	0.40	0.17 – 0.91
22+	0.10	0.03 – 0.31
Bisexual-identified	0.54	0.17 – 1.70
Not out	4.31	0.72 – 25.77
Out to workplace		
No	Ref	
Yes	3.88	1.44 – 10.45
Out to father (or male guardian)		
No	Ref	
Yes	2.53	1.14 – 5.62
Read Gay-Specific News, P6M		
No	Ref	
Yes	2.61	1.18 – 5.75
Anal Sex Position Preference		
Bottom	Ref	
Versatile	0.82	0.36 – 1.89
Top	1.69	0.82 – 3.50
No anal	4.97	1.37 – 18.01
Common Law (lived together 1 year)		
No	Ref	
Common Law/Married	3.00	1.12 – 8.00
No regular partner	2.19	0.93 – 5.17
Asks Partner's HIV Status		
<50% of time	Ref	
>50% of time	0.47	0.23 – 0.97
100% of time	0.78	0.37 – 1.62
HIV Test, ever		
No	Ref	
Yes	5.88	0.93 – 37.17

AOR = Adjusted Odds Ratio, CI = Confidence Interval, P6M = past six months

Conclusions

- Innovative use of online seed selection and recruitment e-coupons may assist in reaching MSM who are often omitted in such studies
- While offline seeds were more productive recruiters, electronic innovations in RDS produce a diverse set of seeds that recruit chains that differ between in-person and offline recruited seeds.
- Participants recruited through electronic vouchers vary on some socio-demographic factors and appear to have different connections to gay identities and communities than those recruited in person. This electronic recruitment innovation parallels changes in online gay communities and MSM networking, and allows for a more diverse sample.

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