Using social media to increase HIV testing among gay and bisexual men, other men who have sex with men, and transgender persons: outcomes from a randomized community trial

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Abstract:

We tested an intervention designed to increase human immunodeficiency virus (HIV) testing among men who have sex with men and transgender persons within existing and commonly used social media. At follow-up, intervention communities had significantly higher past 12-month HIV testing than the comparison communities. Findings suggest that promoting HIV testing via social media can increase testing.

Keywords: intervention | HIV testing | social media | MSM | community trial

Article:

The US National HIV/AIDS Strategy prioritizes “seamless” care across the HIV care continuum, including the identification of new infections, care linkage, initiation of antiretroviral therapy, care retention, and the maintenance of an undetectable viral load. Identifying new infections through testing is an initial step along the continuum, and failures at this step are associated with increased human immunodeficiency virus (HIV) transmission [1]. Men who have sex with men (MSM) continue to be disproportionately affected by HIV [2], and overall HIV testing rates remain low, despite recommendations for sexually active MSM to be tested annually [3].

Social media, such as Adam4Adam, BlackGayChat, Craigslist, and Gay.com, are important tools for social and sexual identity development, social support, meeting friends and sexual partners, and building community among some MSM and transgender persons [4–6]. Seeking sex through

social media has also been found to be a risk factor for HIV and sexually transmitted disease (STD) infection among MSM and transgender persons. Those who seek sexual partners via social media are more likely to report unprotected sex, more sex partners, alcohol and drug use during sex, a history of STD infection, and low HIV testing rates [4, 7–9].

However, some public health departments, clinics, and community-based organizations provide HIV prevention education via social media [6, 8]. To date, there remains a lack of evidence supporting the use of social media to increase HIV testing [7, 8]. We tested CyBER/testing, an intervention designed to promote HIV testing among MSM and transgender persons who use existing and commonly used social media designed for social and sexual networking.

METHODS

We used a repeated cross-sectional matched-pair randomized trial design with 2 intervention and 2 comparison communities to test whether HIV testing changed after 12 months of intervention implementation. Comparison communities received no intervention. The communities were matched based on population size and were geographically distinct; intervention and comparison communities were 322--531 kilometers apart. Thus, because the social media used are designed to facilitate meeting in person, contamination was unlikely. The intervention was implemented within 4 geographically focused social media sites: Adam4Adam, BlackGayChat, Craigslist, and Gay.com. Implementation of the intervention took place July 2013–June 2014.

The intervention was based on empowerment education, social cognitive theory, and natural helping, a concept that encompasses the way in which individuals offer social support to one another in informal, spontaneous, and everyday interactions [4]. The intervention was delivered 9 AM to 5 PM, Monday–Friday. We selected the implementation schedule to mirror common community-based HIV prevention practice. Evidence suggests that a majority of social media users who are online on Saturday and Sunday and after hours are also online during the weekday [4, 10].

The implementation protocol differed based on each social media site. Within Adam4Adam, BlackGayChat, and Gay.Com, the health educator created a public profile and posted triggers on his profile about HIV; the importance of testing; his availability to provide information and answer questions about testing, including where one can access testing services and what the processes are; and local nontraditional HIV testing events (eg, bar and club outreach). Each profile within each site was accessible to anyone who chose to read it. The health educator replied to users after they initiated communication through instant messaging. Within Craigslist, the health educator posted HIV testing information and triggers every 3–4 hours per day. This information and related triggers were similar to those used in the other social media sites. Users emailed messages to him to initiate communication.

Data Collection

Cross-sectional baseline and posttest data were collected from users from each site; data were not collected from the same users longitudinally. We used an online assessment that included 25 validated items that assessed the user's age, race/ethnicity, sexual orientation, past 12-month

testing history, and HIV status [4]. We assessed how often the user was drunk in a typical week [11] and the user's past 12-month drug use [4]. To assess possible contamination, we also assessed whether the user had seen and/or communicated with the health educator through social media. Response options used binary or drop-down lists to expedite completion and reduce burden. Those who completed the assessment were offered $10. Each participant could choose to collect the $10 via PayPal with no link to the data or the social media site used, donate the $10 to a nonprofit organization of choice, refuse compensation, or contact study staff to make arrangements to either pick up or have compensation mailed. More than 75% of those who completed the online assessments declined compensation.

Data Analysis

Differences in participant and site characteristics were assessed at baseline and posttest, and characteristics that were different in bivariate analyses were adjusted for in modeling change over time in past 12-month HIV testing (yes/no). Within-community clustering was accounted for using random effects for community and time period in mixed-effects logistic regression analyses. Because communities were matched, an adjusted analysis of covariance modeling approach using logistic regression accounting for the group-randomized repeated cross-section design with a priori matching was fit to evaluate changes in testing [12]. Results indicated that changes between the 2 groups over time were not modified by community matching ($P = .8$). Thus, remaining analyses were performed without matching adjustments but with the random effects for clustering adjustment and covariate adjustment. Social media site was additionally accounted for in all modeling as a fixed effect using indicator variables. Three-way interactions of community, time period, and indicator variables were tested for significance to investigate whether changes in testing differed by community. Analyses were performed with Stata software, version 13.1, using the GLLAMM package (StataCorp, College Station, Texas). A 2-sided P value <.05 was considered statistically significant.

Human subject review and oversight were provided by the Institutional Review Board of the Wake Forest School of Medicine.

RESULTS

A total of 1292 participants completed the assessments. Mean age of all participants was 40.9 years; 94% reported sex with at least 1 man and one-third reported sex with at least 1 women in the past 12 months; 36% identified as bisexual; and 13% identified as heterosexual/straight. Table 1 provides the description of characteristics of participants overall and by condition and time period.

Table 1. Characteristics of the Cross-sectional Samples of Social Media Using Men Who Have Sex With Men (N = 1292)

Characteristic	Overall	Baseline		*P*Value[a]	Posttest		*P*Value[a]
		Intervention (n = 353)	Control (n = 286)		Intervention (n = 339)	Control (n = 314)	
Community				NA			NA
1	390 (30)	228 (65)			162 (48)		
2	302 (23)	125 (35)			177 (52)		
3	281 (22)		136 (48)			145 (46)	
4	319 (25)		150 (52)			169 (54)	
Social media site				.1			.6
1	457 (35)	114 (32)	110 (38)		113 (33)	120 (38)	
2	305 (24)	80 (23)	72 (25)		83 (24)	70 (22)	
3	397 (31)	122 (35)	75 (26)		107 (32)	93 (30)	
4	133 (10)	37 (10)	29 (10)		36 (11)	31 (10)	
Age, y	40.9 ± 13.3 [18, 74]	42.1 ± 14.5 [18, 70]	42.9 ± 13.0 [18, 70]	.5	41.1 ± 12.7 [18, 65]	37.4 ± 12.3 [18, 74]	.3
Sexual orientation				.4			.03
Gay	657 (51)	199 (56)	162 (57)		176 (52)	120 (38)	
Bisexual	465 (36)	116 (33)	81 (28)		118 (35)	150 (48)	
Straight	162 (13)	37 (10)	42 (15)		39 (12)	44 (14)	
Other	8 (<1)	1 (<1)	1 (<1)		6 (2)	0	
Transgender identity	28 (2.2)	8 (2.3)	7 (2.5)	.9	7 (2.1)	6 (1.9)	.8
Race/ethnicity[b]				.05			.01
American Indian	31 (2)	13 (4)	9 (3)		5 (2)	4 (1)	
African American/Black	193 (15)	44 (12)	52 (18)		60 (18)	37 (12)	
Asian/Pacific Islander	26 (2)	14 (4)	9 (3)		2 (<1)	1 (<1)	
Native Hawaiian	43 (3)	0	2 (<1)		4 (1)	37 (12)	
Latino	69 (5)	26 (7)	31 (11)		10 (3)	2 (<1)	
White	930 (72)	256 (73)	183 (64)		258 (76)	233 (74)	
Sex with men, past 12 mo	1214 (94)	338 (96)	263 (92)	.05	317 (94)	296 (94)	.7
Sex with men and women, past 12 mo	421 (33)	126 (36)	99 (35)	.8	103 (30)	93 (30)	.9
HIV positive[c]	117 (9)	19 (5)	28 (10)	.06	43 (13)	27 (9)	.2
New HIV positive infection, past 12 mo	87 (6.7)	15 (4)	14 (5)	.5	41 (12)	17 (5)	.04
Drunk in a typical week[d]	520 (40)	101 (29)	83 (29)	.8	169 (50)	167 (53)	.6
Drug use, past 12 mo[a]							
Tobacco	419 (32)	95 (27)	90 (31)	.9	121 (36)	113 (36)	.9
Marijuana	18 (1)	0	0	NA	8 (2)	10 (3)	.5
Cocaine	31 (2)	16 (5)	4 (1)	.7	7 (2)	4 (1)	.4
Crack	20 (2)	16 (5)	4 (1)	.7	0	0	NA
Alkyl nitrites (poppers)	193 (15)	49 (14)	37 (13)	.6	49 (14)	58 (18)	.2
Methamphetamine	0	0	0	NA	0	0	NA
Ecstasy	14 (1)	0	0	NA	10 (3)	4 (1)	.2
GHB	0	0	0	NA	0	0	NA
Oxycodone	10 (<1)	0	0	NA	5 (1)	5 (1)	.9
Viagra, Levitra, Cialis	210 (16)	65 (18)	45 (16)	.9	49 (14)	51 (16)	.9
Seen the health educator within any social media site	348 (27)	12 (3.0)	9 (3.0)	.2	327 (96.5)	6 (1.9)	<.01
Communicated with the health educator with any social media site	299 (23)	0 (0.0)	2 (0.7)	.5	297 (88)	0 (0)	<.01

Data are presented as No. (%) or mean ± SD [min, max].

Abbreviations: GHB, γ-hydroxybutyric acid; HIV, human immunodeficiency virus; NA, not available; SD, standard deviation.

[a] No significance testing performed due to low prevalence/nonconvergence.

[b] Grouped into African American/black, white, and other for significance testing.

[c] Of those reporting past 12-month HIV testing, positive vs negative differences tested for significance.

[d] Being drunk at least once in a typical week.

At baseline, there was no difference in HIV testing rates between the intervention and comparison participants; 34.6% of intervention participants reported past 12-month HIV testing compared with 38.5% of comparison participants. At posttest, 63.7% of intervention participants reported past 12-month HIV testing compared with 42.0% of comparison participants. After adjusting for sexual orientation, race/ethnicity, social media, and within-community clustering, the odds of past 12-month HIV testing at posttest compared to baseline for intervention participants was 2.9 times as high as the odds of testing at posttest compared with baseline for comparison participants (95% confidence interval, 1.8–4.7).

DISCUSSION

A need exists for innovative strategies to identify infections and link persons with HIV to care. This is the first randomized community trial of an intervention designed to increase HIV testing among MSM and transgender persons, who are considered to be at increased risk, within existing and commonly used social media designed for social and sexual networking.

Our social media intervention increased testing within intervention communities. The intervention has several positive characteristics that deserve highlighting. First, the intervention was implemented among users "where they are," at a time when many of them may be thinking about sex. The health educator had a presence within social media and was available as needed. He "intervened upon" users with tailored messages based on their priorities when they wanted information, resources/referrals, and guidance.

Second, we also reached MSM who may be more difficult to reach in physical spaces. Given that nearly half of the sample self-identified as bisexual or heterosexual/straight, we reached those who may not be reached through traditional outreach, such as in gay bars, because they may be less likely in gay-oriented venues.

Finally, this intervention may be scalable; it was easy to implement, and only required a trained health educator with internet access. The intervention did not require recruitment to, enrollment in, or implementation of a standardized intervention. Other types of interventions typically require antecedent behaviors before the target behavior can be intervened upon. For example, a participant must enroll in an intervention and then actively participate; participation may include a variety of behaviors such as attending the intervention, which requires having time during implementation, arranging transportation, and so forth. Furthermore, no incentives for participation were needed.

Findings from this intervention study may be transferable to current and future advances in technology including established GPS-based mobile "hookup apps" (eg, A4A/Radar, Grindr, Jack'd, and SCRUFF) and the next generation of global messaging applications (eg, WhatsApp and WeChat), which are predicted to have advertising capabilities that potentially may be harnessed for health promotion. However, further research is warranted to replicate these findings, better assess scalability, and determine whether harnessing emerging social media innovations can increase HIV testing and improve linkage to and retention in care and health outcomes [10]. To reduce health disparities, we must use innovative, culturally congruent approaches to reach MSM and transgender persons at risk. This study highlights the value of

using existing social media to address the unique challenges faced by the communities to increase HIV testing and support sexual health.

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