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Perceived importance of five different health issues for gay and bisexual men: Implications for new directions in health education and prevention

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Abstract

This study assessed the perceived importance of five health issues for gay and bisexual men ($N=660$) using time-space sampling in gay bars/clubs and bathhouses in New York City: “HIV & STDs,” “Drugs & Alcohol,” “Body Image,” “Mental Health,” and “Smoking.” This study compared ratings based on demographic differences, recent substance use, recent sexual risk behavior, and whether or not participants owned a smart device (e.g., “smart” phone, iPad, iPod touch). Contrary to research indicating that gay and bisexual men may be experiencing HIV prevention fatigue, this study identified that HIV and STIs were perceived as most important. Drugs and alcohol and mental health were also rated high, suggesting that providers may be well served to include mental health and drugs and alcohol as part of their comprehensive approach to HIV prevention. A majority of participants (72%) owned a smart device. Smart device owners rated health issues similarly to those who did not, suggesting that such devices may be a useful platform to reach gay and bisexual men for health education and prevention.

Keywords

Gay and bisexual men; HIV; Sexually Transmitted Infections; Drugs and alcohol; Mental health; Smoking

INTRODUCTION

Gay and bisexual men, particularly younger gay and bisexual men, are disproportionately impacted by HIV (CDC, 2009, 2011) and sexually transmitted infections (STIs) (CDC, 2010a; Pathela et al., 2011). In 2009, men who have sex with men (MSM) accounted for 61% of all new HIV diagnoses, and 75% of HIV diagnoses among males (CDC, 2010b; Prejean et al., 2011). One study in New York City (NYC) reported that, compared with men who have sex with women, MSM had a 140-fold higher risk for being newly diagnosed with HIV and/or syphilis (Pathela et al., 2011). Another NYC study of 1,065 gay and bisexual

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men found high lifetime exposure to STIs: 20% gonorrhea/Chlamydia/urinary tract infections, 15% anal/genital warts, 9% syphilis, and 6% anal/genital herpes (Groves, Parsons, & Bimbi, 2010). With the advent of effective anti-retroviral treatments, HIV is now considered a manageable disease (Elford, 2006). Meanwhile, after more than three decades of the epidemic, some have suggested gay and bisexual men may be experiencing HIV prevention fatigue (Rowniak, 2009; Stockman et al., 2004), and HIV/AIDS complacency (Mackellar et al., 2011). It has been suggested that current HIV interventions may be unappealing for many gay and bisexual men, negatively impacting acceptability, adherence, and completion of intervention programs (Herrick et al., 2011; Stall et al., 2009a).

In addition to HIV, researchers have noted that gay and bisexual men experience disparities in a host of related health issues. Drug use, specifically club drugs (ketamine, MDMA-methylenedioxymethamphetamine, GHB-gamma hydroxybutyrate, cocaine, and methamphetamine), nitrate inhalants (i.e., “poppers”) (Darrow et al., 2005; Fernandez et al., 2005; Groves, Kelly, & Parsons, 2009; Kipke et al., 2007), and alcohol (CDC, 2010c; Cochran, Keenan, Schober, & Mays, 2000; Parsons et al., 2004) have been identified as of significant concern for gay and bisexual men. Gay and bisexual men are also more likely to experience a variety of mental health problems including sexual compulsivity, depression, anxiety, internalized homophobia, and affective disorders (Berg, Mimiaga, & Safren, 2008; Cochran, Sullivan, & Mays, 2003; Dew et al., 1997; Mustanski, Garofalo, & Emerson, 2010; Newcomb & Mustanski, 2011; Parsons, Groves, & Golub, 2012; Reisner et al., 2009).

Compared to heterosexuals, gay and bisexual men are more likely to smoke tobacco (Lee, Griffin, & Melvin, 2009; Tang et al., 2004). Ryan et al. (2001) estimated 50% of adult gay and bisexual men smoke, compared with national rates at approximately 28%. Gay and bisexual men are more likely than heterosexual men to experience a range of body image disorders (Duggan & McCreary, 2004; Feldman, Torino, & Swift, 2011; Kaminski, Chapman, Haynes, & Own, 2005; Levesque & Vichesky, 2006). Peplau et al. (2009) reported that many gay men were dissimilar from heterosexual men in body satisfaction in their study of over 57,000 adults. Specifically, 42% of gay men reported that their feelings about their bodies had negative effects on the quality of their sex lives. For HIV-positive men, body image issues can manifest as a preoccupation with HIV-associated weight loss or a desire to appear healthy (Blashill & Vander Wal, 2011; Kelly, Langdon, & Serpell, 2009; Tate & George, 2001).

Researchers have highlighted that disparities in HIV are often directly associated with other negative social and health issues. With the exception of tobacco smoking, each of the aforementioned health issues have singly been connected to HIV and STI transmission risks: drugs (Darrow et al., 2005; Fernandez, 2005; Jerome, Halkitis, & Siconofli, 2009; Nanín & Parsons, 2006) and alcohol (Heath, Lanoye, & Maisto, 2012; Maisto, Palfai, Venable, Heath, & Woolf-King, 2012; Stall et al., 2001; Woolf & Maisto, 2009); mental health (Frost, Parsons, & Nanín, 2007; Parsons et al., 2012; Safren, Blashill, & O’Cleirigh, 2011); and body image (Allensworth-Davies, Welles, Hellerstedt, & Ross, 2008). Notably, there is some debate about the role of alcohol in HIV risk (c.f., Colfax et al., 2004; Weinhardt & Carey, 2000). The syndemics model may be a useful framework through which to understand how other negative social and health issues interact to compound the risk for HIV transmission among gay and bisexual men. (Mustanski, Garofalo, Herrick, & Donenberg, 2007; Parsons et al., 2012; Stall et al., 2003; Wolitski, Stall, & Valdisem, 2008). A syndemic describes a situation in which multiple epidemics and risk factors interact and connect with one another, synergistically compounding the risk and consequences of disease (Senn, Carey, & Venable, 2010; Singer, 2009; Singer & Clair, 2003; Singer et al., 2006). Such a model posits that efforts targeted to prevent onward transmission of HIV must also address other health disparities. Emerging research has called for more comprehensive

approaches toward HIV prevention (Grossman et al., 2011; Herrick et al., 2011; Safren, Reisner, Herrick, Mimiaga, & Stall, 2010; Stall, Herrick, Guadamuz, & Friedman, 2009b).

Stall et al. (2009b) proposed that a multifaceted approach, termed an “HIV prevention cocktail,” that addresses HIV from multiple angles and also addresses factors that compound risk for HIV would be more effective in improving the lives of gay and bisexual men (c. f., Safren et al., 2010). Interestingly, while it is well documented that the aforementioned health issues are of significant concern for the wellbeing of gay and bisexual men, there is little inquiry into how gay and bisexual individuals rate these issues for their own community. Such information would be paramount for community-based groups seeking to provide outreach to gay and bisexual men, as it may be a preliminary indicator of receptivity to seeing prevention activities in their communities. It may also be useful for informing current theoretical models whose components approximate individual perceptions regarding the importance of a given health issue for his/her community. For example, the Theory of Planned Behavior (Ajzen, 1991) and the Theory of Reasoned Action (Ajzen & Fishbein, 1980) both include subjective norms (i.e., individual's perception of what other people think about a behavior). The Health Belief Model (Becker, 1976; Rosenstock, 1966) includes perceived severity and perceived susceptibility of a given health outcome/behavior. Taken together, evaluating perceived importance of *multiple* health issues may be a useful precursor to inform multifaceted approaches (Stall et al., 2009b) while also building on established theoretical models.

Finally, researchers have noted that smart devices (e.g., smart phones, tablets) are emerging as platforms to connect to the Internet and for social and sexual networking (Grossman et al., 2011; Lewis, Uhrig, Ayala, & Stryker, 2011; Riley et al., 2011). Smart devices are likely to be an integral part of prevention and education in the near future. A Pew Research Center study of U.S. adults estimated 35% own smart phones (Smith A. for the Pew Research Center, 2011). However, there is little available data on how many gay and bisexual men actually own these devices. Such information would be useful for providers who are planning to implement prevention and education via smart devices.

Current Study

The purpose of this study was to explore how gay and bisexual men perceived the importance of five different health issues for the gay and bisexual community—“HIV & STDs,” “Drugs & Alcohol,” “Body Image,” “Mental Health,” and “Smoking.” Because there is little known about smart device ownership in this population, and because smart devices are likely to be an integral part of new health and prevention campaigns, this study also sought to determine the proportion of gay and bisexual men who owned smart devices, in addition to how device ownership was associated with the perceived importance of the five aforementioned health issues. This study draws from a sample of 660 men surveyed in bars/clubs and bathhouses in NYC. This study examined how issues ranked when compared against each other (i.e., What was perceived as the most important and least important? What were rated equally?). Next, this study compared ratings based on demographic characteristics (e.g., age, sexual identity, race or ethnicity), as well as recent behavior (e.g., sexual behavior with new male partners, drug use), current ownership of a smart device (e.g., smart phone, iPod touch, iPad), and the venue where participants were recruited (bathhouses *v.* bars/clubs). The goal of this study was to inform comprehensive approaches to health education and outreach for gay and bisexual men in urban settings.

METHOD

Data for this study are taken from *Project Score*, a pilot study investigating the various places where sexually-active MSM meet their sex partners. The present manuscript reports

on data that were collected during field recruitment in gay bars/clubs and bathhouses. Between January and June of 2011, the research team conducted a brief, anonymous survey of men in gay bars/clubs and bathhouses in NYC. Following the principles of time-space sampling (Jenness et al., 2011; MacKellar, Valleroy, Karon, Lemp, & Janssen, 1996; Parsons, Groves, & Kelly, 2008; Stueve, O'Donnell, Duran, Sandoval, & Blome, 2001), the research team adopted a two-tier numeric randomization approach to recruitment (described elsewhere, see Parsons et al., 2008). First, the research team generated an exhaustive list of gay bars/clubs and bathhouses. Then, using a random digit generator, the research team selected a bar/club or bathhouse to attend on a randomly selected day of the week. Parsons, Groves, and Kelly (2008) evaluated the difference between a two-tier numeric randomization and three-tier numeric randomization and found very few differences in terms of patron characteristics. However, the two-tier approach resulted in higher response rates which are likely to reduce sampling bias and provide larger samples which result in greater power.

Recruitment teams consisting of two staff members were sent to venues for 3-hour shifts. Using a recruitment script, project staff approached patrons to take part in the survey, "Hi. My name is [name], and I am with the Center for HIV/AIDS Educational Studies and Training. We are doing a brief survey today. Do you mind if I ask you a few questions?". Recruitment teams were diverse in age, race and ethnicity, gender, and sexual orientation; however, bathhouses permitted only male recruitment staff in those venues. Participants were invited to complete the survey if they were biologically male and over the age of 18. Those not meeting these criteria were thanked for their time and not asked to complete the survey.

Forty shifts were completed during the study period. In bars/clubs, 68% ($n = 657$ of 968) of those approached consented to complete the survey, and 44.8% ($n = 224$ of 500) consented in bathhouses. This response rate is on-par with similar studies of MSM (Groves, 2012; Jenness et al., 2011; Parsons et al., 2008). After they provided verbal consent, participants were handed a device (i.e., iPod Touch) equipped with survey software to enter their own responses. The survey took 3-5 minutes to complete, and there was no incentive. Data were exported into an SPSS v.17.0 database for analyses. All procedures were approved by the Brooklyn College Institutional Review Board.

Of the 881 men who participated, the following cases were excluded from analyses: 167 (19.0%) indicated they did not reside in NYC or visit NYC at least weekly and automatically skipped questions on the perceived importance of health issues for NYC gay and bisexual men; 22 (2.5%) who said no to the question, "Do you have sex with men?"; 17 men (1.9%) who provided inconsistent or incomplete responses; and 15 men (1.7%) who did not self-identify as gay or bisexual. The final sample was $N = 660$.

Measures

Demographic characteristics and behavior—Participants indicated their age (in years), race or ethnicity (coded into White, Black, Latino, and all other), HIV status (HIV-positive, HIV-negative, unknown), and sexual identity (gay, bisexual). Participants indicated if they currently "owned a 'smart phone,' iPod Touch, or iPad," ("Yes," "No," and "No, but I plan to buy one in the next 12 months"). Participants were asked, "Outside of a primary partner (e.g. boyfriend, lover), how many new male sex partners have you had sex with in the last 30 days? ('New' partners are people you never had sex with before)," with ordinal response options (None, 1, 2-3, 4-5, 6-10, 11-20, and 21+). The survey assessed any recent drug use (yes or no) by asking participants if they had used any of the following drugs in the last three months: ketamine, MDMA/ecstasy, GHB, cocaine, methamphetamine, heroin, or nitrate inhalants (poppers).

Perceived importance of health issues for NYC gay and bisexual men—Finally, the survey asked participants to rate their perceived importance on five “health issues for NYC gay and bisexual men.” These health issues were, “HIV & STDs,” “Drugs & Alcohol,” “Body Image,” “Mental Health,” and “Smoking.” Response options for each were on a Likert-type scale (1–Least Important, 5–Most Important). Participants were allowed to rate equally more than one health issue. Although health researchers often prefer the term “STIs” (sexually transmitted infections) over “STDs,” the research team’s measure used STDs because of its widespread colloquial use and recognition within gay and bisexual communities.

Analytic Plan

First, this study used a series of paired Wilcoxon signed ranks tests to determine significant differences *across* perceived importance of health issues (HIV & STIs *v.* Drugs & Alcohol, Drugs & Alcohol *v.* Body Image, HIV & STIs *v.* Body Image, etc.). The Wilcoxon signed rank test is a non-parametric test used when comparing repeated measurements in single sample in order to estimate whether their population means differ. Next, *within* each issue, responses to the perceived importance of health issues were compared based on demographic characteristics (e.g., age, race or ethnicity, sexual identity), venue of recruitment (bathhouses *v.* bars/clubs), recent drug use (yes *v.* no), new male sexual partnerships (i.e., whether participants reported a new male partner in the last 30 days (yes *v.* no)), whether participants reported *multiple* new male partners the most recent 30 days (yes *v.* no), and whether they currently owned a smart device. As appropriate, this study used Mann-Whitney *U* (a non-parametric equivalent to a *t*-test) and Kruskal-Wallis tests (a non-parametric equivalent to ANOVA). Lastly, in the case of a significant Kruskal-Wallis omnibus test, this study used paired Mann-Whitney *U* tests as a post-hoc.

RESULTS

Sample Characteristics

The sample was diverse, with 46.2% being men of color. Mean age was 34.5 (*SD* = 10.0, Range 18-70), and most men identified as gay (90.3%) with the remainder identifying as bisexual (see Table 1). Most men (86.4%) were HIV-negative, 10.0% were HIV-positive, and 3.6% did not know their status. Nearly one third of men (32.7%) had recently used at least one of the aforementioned drugs in the last 3 months. A majority of participants (59.1%) reported having had sex with at least one new male sex partner in the last 30 days, and 39.9% of participants reported multiple new male partners (i.e., two or more) in previous 30 days. Most men (71.8%) owned a smart phone, iPod Touch, or iPad, and an additional 8.6% said they planned to buy one within the next 12 months.

Comparative Ratings on the Perceived Importance of Health Issues

On average, participants rated HIV and STIs highest (*Md* = 5, IQR = 4 - 5), followed by mental health (*Md* = 3, IQR = 2 - 4), drugs and alcohol (*Md* = 3, IQR = 2 - 4), and body image (*Md* = 3, IQR = 1 - 4). Smoking was rated as the least important, on average (*Md* = 2, IQR = 1 - 3). Drugs and alcohol and mental health were not significantly different from one another; however, all other values were significantly different from each other. Results are shown in Table 2.

Association Between Demographic Characteristics and the Perceived Importance of Health Issues

HIV status was not associated with participants’ ratings for HIV and STIs, drugs and alcohol, or body image. It was, however, related to ratings for mental health, with HIV-

positive men rating mental health higher than HIV-negative men. Similarly, smoking was rated higher by men who were unsure of their HIV status than by HIV-negative men. See Table 3. For ease of interpretation, Table 3 reports the mean ranks as the median (*Med*) and interquartile range (IQR).

Categorical age groups were not associated with participants' ratings for HIV and STIs, body image, or mental health. Age group was, however, related to ratings for drugs and alcohol with 18 to 24 year olds rating it lower than those over age 30 and 25 to 29 year olds rated it lower than those over 40. Similarly, smoking was rated higher by those aged 40 to 49 than younger groups. Neither sexual identity (gay *v.* bisexual), nor currently owning a smart phone, iPod Touch, or iPad (*v.* not), were significantly associated with ratings on any of the health issues.

Race/ethnicity was not related to participants' ratings of HIV and STIs or drugs and alcohol. It was, however, related to ratings of body image, with Latino men rating body image lower than White men and those coded into the "all other" category. Mental health was rated higher by Latino men than by White men. Finally, smoking was rated higher by White men than by men coded into the "all other" category.

The venue where participants were recruited was significantly associated with ratings across all five health issues. There was a consistent pattern such that men surveyed in bathhouses rated issues higher than men surveyed in bars/clubs.

Associations Between Recent Behavior and the Perceived Importance of Health Issues

Having recently had a new male sex partner (past 30 days) was not associated with ratings on any health issues. Related, having had multiple new male sex partners in the past 30 days was associated only with one of the five health issues. Those with multiple new partners in the past 30 days rated smoking higher than those without multiple new male sexual partners in the past 30 days. Having used drugs in the past 3 months was associated with only one of the five health issues—those who had used drugs rated mental health significantly higher than those who had not.

DISCUSSION

Some research has suggested that gay and bisexual men are experiencing HIV prevention fatigue (Rowniak, 2009; Stockman et al., 2004); however, this study identified that HIV and STIs were perceived as a very important health issue for NYC gay and bisexual men. Further, this was unassociated with HIV status, sexual identity, race and ethnicity, being recently sexually active with new partners, recent drug use, or owning a smart device, which has important implications for HIV and STI prevention and education in urban settings. For example, epidemiologists have highlighted the growing age and racial disparities in HIV and STI transmission, particularly for younger MSM and MSM of color (CDC, 2009, 2011). Some have proposed that younger gay and bisexual men experience more apathy toward HIV and STIs due to perceived invulnerability inherent among younger adults (Hays, Kegeles, & Coates, 1990), combined with a lack of lived experience during the early days of the HIV epidemic (Mustanski, Newcomb, Du Bois, Garcia, & Groves, 2011). Yet this study identified that age and race were unrelated to the perceived importance of HIV and STIs as a health issue for NYC gay and bisexual men. Thus, the challenges that providers face when conducting outreach to younger men and/or men of color for the prevention of HIV and other STIs may not be getting these individuals to "recognize" them as important. Instead, it may be related to identifying the most acceptable mode for delivery, in addition to effective content.

As a caveat, it is recognized that these data are limited in that participants' unique ratings for HIV distinctively from STIs cannot be determined, which is relevant given that stigma associated with HIV is different from STIs. However, among gay and bisexual men, sexual behavior is the primary mode of transmission for both. As such, the research team combined HIV with STIs in an effort to emphasize the sexual aspects of transmission for both HIV and STIs and to tap into the general construct of "sexual health." Similarly, the primary strategy recommended to reduce HIV transmission (e.g., condom use) will concurrently reduce risk for STI transmission (CDC, 2012). Thus, in spite of this limitation, the researchers believe these findings are useful for providers seeking to reduce HIV and STIs among gay and bisexual men.

Although HIV and STIs were rated highest, drugs and alcohol and mental health were also rated relatively high and were not statistically distinct from each other. This indicates that the men surveyed perceive these as important health issues for gay and bisexual men and suggests providers may be well served to include mental health and drugs and alcohol as part of their comprehensive approach to HIV prevention (i.e., addressing several health issues within a single approach). In essence, these data provide further support for the need to develop an "HIV prevention cocktail," (Grossman et al., 2011; Safren et al., 2010; Stall et al., 2009b) whereby services in arenas like HIV testing, STI screening, mental health screening, and substance abuse treatment are integrated for MSM, (c.f., Blank, Gallagher, Washburn, & Rogers, 2005).

Although NYC has many policies to reduce tobacco use such as bans on smoking (in many indoor and some outdoor environments) and high taxes on tobacco sales, smoking remains a top health issue for NYC residents (Summers, Cohen, Havusha, Sliger, & Farley, 2009). In addition, researchers have noted nationwide disparities in rates of smoking for gays, lesbians, and bisexuals (Lee et al., 2009; Tang et al., 2004). This study identified that participants rated smoking lowest as a health issue for NYC gay and bisexual men. There are a variety of factors that may have influenced these lower ratings. For example, it would be important to know if these individuals smoked themselves or were close to someone who experienced negative health consequences as a result of smoking. On one hand, these data suggest there may be some complacency toward smoking, and perhaps this speaks to some of the challenges facing tobacco cessation programs. On the other, low ratings may be a direct result of successful bans on indoor smoking such that participants did not perceive smoking to be as important an issue. Future research should explore these issues more closely.

This study also identified consistent differences in how men rated health issues based on where they were surveyed; men in bathhouses rated all issues higher. Unlike bars and clubs, bathhouses are venues where gay and bisexual men are in the process of negotiating sexual encounters, including condom use—these men were surveyed at a time in which they may just have been, or were just about to, engage(d) in behaviors and thoughts around HIV and STI transmission. One possibility is that these factors (actively negotiating risks) result in men having a greater salience about health issues more generally. Alternatively, it could just be that men who go to bathhouses are different from men who go to bars/clubs (Groves, 2012). Differential ratings in health issues based on venues might serve as an indicator of receptivity to prevention and education messages. Future research might consider investigating variations in the acceptability of prevention, education, and interventions across different venues.

Smart devices are emerging as platforms to connect to the Internet and for social and sexual networking and are likely to be an integral part of prevention and education in the near future (Grossman et al., 2011; Lewis et al., 2011; Riley et al., 2011). In this study urban sample, a vast majority of participants reported owning a smart device or planned to own

one soon, which was markedly higher than the 35% estimated in a Pew Research Center study of U.S. adults (Smith A. for the Pew Research Center, 2011). Men who owned smart devices did not significantly differ from men who did not with regard to perceived importance of health issues, and these data may be useful for providers and researchers seeking to conduct research, prevention, and education via smart platforms. However, more research would be needed to determine if there are characteristic differences in device ownership. For example, it may be that younger, technologically savvy, and better educated individuals were more likely to have adopted newer technologies. It would also be necessary to evaluate if there are socioeconomic or racial and ethnic differences in device ownership. Providers seeking to use smart devices as a platform for the delivery of HIV/STI prevention and education would need to be aware of potential populations that would be reached, or excluded (Lewis et al., 2011).

Limitations

In an effort to rapidly engage men within venues, this study utilized a brief survey with closed-ended responses. Gay bars, clubs, and bathhouses are venues that providers continue to use for outreach to large segments of urban gay and bisexual communities (Blank et al., 2005); however, not all gay and bisexual men visit these venues, limiting the generalizability of these findings. Due to an insufficient number of cases, men who did not identify as gay or bisexual ($n = 15$) were excluded from analyses; however, this is not to suggest data from non-gay and nonbisexually identified MSM are less important. In addition, the wording of some questions may be less than ideal. For example, analyses focused on participants' perceived importance for health issues for NYC gay and bisexual men, which is a useful proxy by which to gauge concern about various health issues. However, the survey did not collect in depth data on behavior, which would have further contextualized the results, nor do these results necessarily reflect how participants felt about health issues for themselves.

Similarly, the research team's measure combined drugs and alcohol given that both can have similar sets of effects on users (e.g., impaired judgment, potential for abuse) in order to tap into the general category of substance use. Although cigarettes may also be considered in the category of substance use or addiction, the research team assessed it separately due to the different constellation of health outcomes that are typically associated with smoking. Given the brief nature of the survey, this study was limited in the number of items that could be posed to participants.

Although the term "smart phone" is rapidly becoming part of colloquial lexicon, it is uncertain if participants interpreted this term universally. Given the brief intercept nature of the survey, the study was limited in the number of items it could assess. One result of this was that the measures grouped drugs with alcohol and HIV with STIs, thus the study cannot disentangle participant's unique ratings for each of these items. In addition, the myriad health issues facing MSM are not limited to the five that were investigated in this study.

Number of new male sex partners was captured as an ordinal variable. This study dichotomized number of new male sex partners in analyses to compare those who were recently sexually active with a new male partner versus those who were not, and to compare those who were recently sexually active with multiple new male partners versus those who were not. This study identified these dichotomizations resulted in only one significant finding (smoking). Given the exploratory nature of this study, the researchers did not approach the data with a priori hypotheses. The researchers have no hypotheses to explain this one significant finding, which may be a statistical artifact; however, more research is needed. It is worth noting that other ways of configuring the variable for number of partners resulted in virtually identical findings.

Participants were recruited using adapted methods of time-space sampling, which is a systematic approach for capturing location-based populations, particularly in urban settings. However; it has the potential to oversample patrons who frequently attend the venues being studied (Jenness et al., 2011). Furthermore, data are restricted to gay and bisexual men who chose to participate. Although the response rate in bars/clubs and in bathhouses was on par with similar research using venue-based time-space sampling (Groves, 2012; Jenness et al., 2011), the research team does not have data on those who declined participation. Finally, all limitations of self-report data apply (e.g., recall bias, social desirability).

Conclusion

The findings that HIV and STIs, along with substance use and mental health, were perceived as important health issues for gay and bisexual men might be a key starting place for providers to develop innovative multifaceted prevention and education programs. The finding that a majority of men owned a smart device is promising news for researchers and providers that are already developing mobile-based technologies targeted at gay and bisexual men. More research is needed to provide insight about the utility and feasibility of technologically innovative and comprehensive approaches to health education and outreach for this population. Future research might consider evaluating perceived importance of health issues within existing theoretical models (such as the Health Belief Model), or expanding the existing constructs of perceived susceptibility and perceived severity to include perceived importance. These results provide further support for research that has called for comprehensive prevention and education approaches that address other health issues in addition to HIV/AIDS.

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Table 1Demographic characteristics, New York City, 2011, *N* = 660

	<i>n</i>	%
HIV status		
HIV-positive	66	10.0
HIV-negative	570	86.4
Unknown	24	3.6
Sexual identity		
Gay	596	90.3
Bisexual	64	9.7
Race or Ethnicity ¹		
White	355	53.8
Black	77	11.7
Latino	129	19.5
All other	98	14.8
Age ²		
18 to 24	92	13.9
25 to 29	179	27.1
30 to 39	202	30.6
40 to 49	118	17.9
50 and older	69	10.5
Venue of recruitment		
Bathhouse	138	20.9
Bar	522	79.1
Participant owns a "smart" phone, iPod Touch, or iPad		
Yes	474	71.8
No and I don't plan to buy one within 12 months	129	19.5
No but plan to buy one within 12 months	57	8.6
Number of new male sex partners, < 30 days		
None	270	40.9
One	127	19.2
2 to 3	151	22.9
4 to 5	60	9.1
6 to 10	35	5.3
11 to 20	10	1.5
More than 20	7	1.1
Participant has used drugs ³ , < 3 months		
No	439	66.5
Yes	216	32.7

¹ *n* = 1 missing data for race or ethnicity² Original measure was continuous

³Drugs include ketamine, MDMA, GHB, cocaine, methamphetamine, heroin, or nitrate inhalants (“poppers”). $n = 5$ were missing data on drug use

Table 2

Comparative ratings on perceived importance of health issues for NYC gay and bisexual men, 2011, *N* = 660

	HIV & STDs		Drugs & Alcohol		Body Image		Mental Health		Smoking	
	Z	<i>p</i>	Z	<i>p</i>	Z	<i>p</i>	Z	<i>p</i>	Z	<i>p</i>
Item's overall Median (IQR)	5	(4-5)	3	(2-4)	3	(1-4)	3	(2-4)	2	(1-3)
Item's mode response, % endorsing mode	5	60.0%	4	28.5%	1	26.2%	3	32.3%	1	44.5%
	Z	<i>p</i>	Z	<i>p</i>	Z	<i>p</i>	Z	<i>p</i>	Z	<i>p</i>
HIV & STDs	--	--								
Drugs & Alcohol	-13.98	***	--	--						
Body Image	-14.47	***	-5.52	***	--	--				
Mental Health	-10.04	***	-0.95	0.34	-5.54	***	--	--		
Smoking	-17.78	***	-14.40	***	-9.06	***	-14.31	***	--	--

Paired comparisons using Wilcoxon signed rank tests.

* *p* < .05

* *p* < .01

Significant values indicate that ratings differed from each other

p < .001

Table 3

Differential ratings of perceived importance on five health issues for NYC gay and bisexual men, 2011, N = 660

	How would you rate the following health issues for NYC gay and bisexual men? Range: 1 - Least Important, 5 - Most Important														
	HIV & STDs			Drugs & Alcohol			Body Image			Mental Health			Smoking		
	Md	IQR	Mean Rank	Md	IQR	Mean Rank	Md	IQR	Mean Rank	Md	IQR	Mean Rank	Md	IQR	Mean Rank
HIV Status															
a. Negative	5	4-5	330.2	3	2-4	325.0	3	1-4	329.7	3	2-4	319.5	2	1-3	324.3 a c
b. Positive	5	3.75-5	319.2	3.5	2-5	353.9	3	2-4	345.3	4	3-5	403.2	2	1-3	351.6
c. Unknown/unsure	5	4-5	368.7	4	3-5	396.3	3	1-4	308.8	4	3-5	391.5	3	2-3	418.6
Age															
d. 18-24	5	4-5	338.3	3	2-4	278.0 d f, g, h	3	1-4.75	343.5	3	2-4	297.1	1	1-3	301.4 g d, e, f
e. 25-29	5	3-5	311.1	3	2-4	306.2 e g, h	3	1-4	315.4	3	3-4	328.7	1	1-3	305.8
f. 30-39	5	4-5	326.8	3	3-4	341.0	3	2-4	355.5	3	2-3	326.0	2	1-3	324.6
g. 40-49	5	4-5	350.5	4	3-5	363.7	3	1-4	314.4	4	3-5	363.9	3	1-4	391.7
h. 50+	5	4-5	347.3	4	3-4	376.2	3	1-4	306.8	3	2-4	335.7	2	1-3	346.1
Sexual Identity															
Gay	5	3.25-5	326.9	3	2-4	330.7	3	1-4	331.3	3	2-4	326.4	2	1-3	327.8
Bisexual	5	4-5	364.1	3	3-4	328.4	3	1-4	322.9	4	3-5	368.5	2	1-3.75	355.2
Race or Ethnicity ¹															
i. White	5	4-5	335.6	3	2-4	327.6	3	2-4	339.6 k i, l	3	2-4	308.0 i k	2	1-3	316.5 i l
j. Black	5	4-5	332.3	3	3-4	346.0	3	1-4	324.6	3	2-5	337.1	2	1-3	330.3
k. Latino	5	3-5	315.2	3	2-4	318.9	2	1-4	289.5	4	3-5	373.0	2	1-3	342.5
l. All other	5	3-5	327.4	3	3-4	340.7	3	2-4	352.7	3	2-5	347.5	2	1-3	362.3
Venue of recruitment															
Bathhouse	5	4-5	370.4 ***	4	3-5	378.0 ***	3	2-4	363.4 *	4	3-5	373.1 **	3	1-4	407.5 ***
Bar/Club	5	3-5	319.9	3	2-4	317.9	3	1-4	321.8	3	2-4	319.2	2	1-3	310.2
Participant owns a "smart" phone, iPod Touch, or iPad															
No	5	3.75-5	332.7	3	2-4	331.4	3	1-4	315.3	3	2-4	339.5	2	1-3	330.7
Yes	5	4-5	329.6	3	2-4	330.2	3	1-4	336.5	3	2-4	327.0	2	1-3	330.4
Participant is recently sexually active with a new male partner															

How would you rate the following health issues for NYC gay and bisexual men? Range: 1 - Least Important, 5 - Most Important

	HIV & STDs			Drugs & Alcohol			Body Image			Mental Health			Smoking		
	<i>Md</i>	IQR	Mean Rank	<i>Md</i>	IQR	Mean Rank	<i>Md</i>	IQR	Mean Rank	<i>Md</i>	IQR	Mean Rank	<i>Md</i>	IQR	Mean Rank
No	5	4-5	343.1	3	3-4	341.4	3	1-4	332.7	3	2-4	320.4	2	1-3	318.8
Yes	5	3-5	321.8	3	2-4	323.0	3	1-4	329.0	3	2-4	337.5	2	1-3	338.6
Participant reports multiple new male sex partners, < 30 days															
No	5	4-4	336.4	3	2.5-4	332.2	3	1-4	333.4	3	2-4	320.8	2	1-3	317.2 *
Yes	5	3-5	321.6	3	2-4	327.9	3	1-4	326.2	3	3-4	345.1	2	1-3	350.6
Participant has used drugs ² , < 3 months															
No	5	4-5	329.0	3	2-4	325.6	3	1-4	326.2	3	2-4	317.8 *	2	1-3	326.8
Yes	5	3.25-5	326.0	3	2.25-4	332.9	5	1.25-4	331.6	3	3-4	348.8	2	1-3	330.5

Paired comparisons using Mann-Whitney *U*

Omnibus tests for items with k = 3 groups using Kruskal-Wallis tests ($p < .05$). As a post-hoc, group comparisons using paired Mann-Whitney *U* ($p < .05$). Significant group differences shown with letters (a, b, c, etc.)

* $p < .05$

** $p < .01$

*** $p < .001$

¹ $n = 1$ missing data for race or ethnicity

² Drugs include ketamine, MDMA, GHB, cocaine, methamphetamine, heroin, or nitrate inhalants (poppers). $n = 5$ were missing data on drug use