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HealthMpowerment.org: Building Community Though a Mobile-Optimized, Online Health Promotion Intervention

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Abstract

Background—Both young Black men who have sex with men as well as young Black transgender women (YBMSM/TW) continue to experience a significant increase in HIV incidence. HealthMpowerment.org (HMP) is a mobile phone-optimized, online intervention for both YBMSM/TW to build community and facilitate supportive relationships.

Methods—To assess the feasibility, acceptability, and preliminary outcomes, a 1-month pilot trial of HMP among 15 YBMSM/TW was conducted.

Results—Retention was 100%. Mean age was 26 years, 60% were HIV-infected, 87% earned < $21,000, and 67% were uninsured. Despite the small sample size and limited intervention length, statistically significant improvements were seen in social support (p = .012), social isolation (p = .050), and depressive symptoms (p = .045).

Conclusion—The HMP pilot trial demonstrated feasibility and acceptability. Given the burden of the epidemic among YBMSM/TW, there is an imperative to develop, test, and scale up culturally appropriate interventions to both prevent HIV acquisition and limit onward transmission.

Keywords

African American; men-who-have-sex-with-men (MSM); mobile and wireless interventions; new media and social media interventions; tailored or targeted interventions

Young Black men who have sex with men (YBMSM) are the only risk group in the United States experiencing a significant increase in HIV incidence (Prejean et al., 2011), and Black men who have sex with men (MSM) are less likely than other MSM to know they are HIV-infected be linked and retained in care and experience optimal benefits of antiretroviral

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Declaration of Conflicting Interests

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therapy (Millett et al., 2012). Recent studies have concluded that transgender women who have sex with men (TW) are a very high burden population for HIV and are in urgent need of prevention, treatment, and care services (Baral et al., 2013; Herbst et al., 2008). HIV prevalence and incidence among TW may parallel that of MSM, with the highest rates found among those of color.

Widespread mobile phone ownership among YBMSM (Muessig et al., 2013) provides a unique platform for delivering tailored, engaging sexual health interventions. Online social networking tools have altered communication, including opening new venues for searching for health information/advice and discussing health issues with others. Virtual communities provide peer support and experience sharing—forms of social support that can facilitate behavior change (Gustafson et al., 1999).

HealthMpowerment.org (HMP) is a mobile phone-optimized, online intervention for YBMSM and TW aged 18 to 30 designed to reduce risky sexual behaviors and promote health and wellness. HMP aims to facilitate an online community that encourages positive norms, reflective appraisals, and supportive relationships between HIV-positive and HIV-negative YBMSM and TW (Ramirez-Valles, Kuhns, Campbell, & Diaz, 2010). This approach is particularly relevant for YBMSM/TW, many of whom face reduced social support and less exposure to positive health behavior norms, factors associated with participation in unhealthy behaviors, including HIV risk behaviors (Ayala, Bingham, Kim, Wheeler, & Millett, 2012; Myers, Javanbakht, Martinez, & Obediah, 2003). While it is recognized that there are some differences in terms of psychosocial factors and risk behaviors between YBMSM and TW, these groups face similar challenges due to their racial and sexual minority status (Bockting, Huang, Ding, Robinson, & Rosser, 2005; Sanchez, Finlayson, Murrill, Guilin, & Dean, 2010). Furthermore, the lack of interventions designed to meet the needs of TW motivated us include content to address the unique needs of TW within HMP.

HMP extends the work of previous web-based HIV interventions (Blas et al., 2010; Bull, Levine, Black, Schmiege, & Santelli, 2012; Rhodes et al., 2010) through its explicit design to build community and create positive norms around HIV prevention and care uptake for YBMSM/TW. The goal of this 1-month pilot trial was to test HMP in a small sample of YBMSM/TW for overall levels of intervention acceptability and satisfaction and initial effect sizes of outcomes known to be associated with sexual risk behaviors.

Method

Intervention Development

HMP was created through a multistage process based on iterative feedback from multiple rounds of usability testing. End user evaluations of the initial desktop version supported the use of the Internet to deliver risk reduction messages to YBMSM but emphasized the need to provide community networking features and a mobile design (Hightow-Weidman et al., 2011; Hightow-Weidman et al., 2012). Focus groups with YBMSM/TW yielded recommendations to increase interactive features such as discussion forums; a space to upload and share personal videos, audio, pictures, or prose; the availability of an online

doctor for questions; and decision support tools for assessing risk behaviors (Muessig et al., 2013).

Participants

Fifteen YBMSM/TW in central North Carolina enrolled in a 1-month pilot trial between February 12 and March 28, 2013. Study inclusion criteria were (a) age 18 to 30; (b) born biologically male; (c) self-identify as Black; (d) currently reside in North Carolina; (e) self-report lifetime oral or anal sex with another man; and (f) currently have access to a mobile device to text, browse the Internet, or use phone apps.

Recruitment

Study recruitment fliers were posted in infectious disease clinics, health departments, other HIV testing facilities, bars, college campuses, and online through Craigslist and Facebook. Individuals were screened by phone and, if eligible, registered for an in-person appointment.

Procedures

Participants were asked to spend at least 1 hour on the site per week for four consecutive weeks. This requirement aimed to mimic time spent in face-to-face interventions and increase users' opportunities to explore multiple areas of the site. Site usage was tracked through a separate, password-protected administrative portal including time stamps for each user's activity on the site. These data were supplemented with Google Analytics, which captures aggregate data on page views and average time spent, and hardware devices, browsers, and operating systems used to access the site. Detailed information regarding website utilization is presented separately (Baltierra et al., 2014).

Remuneration

Participants received up to $100 in gift card remuneration: $25 at baseline appointment, $25 at 4-week follow-up, and a $50 bonus for spending at least 1 hour per week using HMP for all four weeks.

Measures

Surveys were administered at baseline and 1-month follow-up (i.e., after intervention completion) using computer assisted self-interview (CASI) software. Both surveys lasted approximately 90 minutes and were administered using Qualtrics software. Validated measures from prior studies with YBMSM were used wherever possible. Survey domains included sociodemographic characteristics, risk behaviors, HIV status, Internet usage patterns and typical access platforms (laptops, mobile devices), condom use self-efficacy, attitudes toward condom use and safe sex norms, social support, social isolation depressive symptoms (Center for Epidemiologic Studies Depression Scale [CES-D]), and internalized homophobia. In addition, evaluation and satisfaction with the website was measured with 17 questions on a 4-point Likert-type scale from *strongly disagree* (1) to *strongly agree* (4).

Data Analysis

SPSS version 19 statistical software was used to perform each analysis where statistical significance was determined at the $p < .05$ level. Distributions and ranges for variables were assessed across participants. The outcome variables of interest were continuous. As a result, paired *t* tests were used to examine differences in outcome variables between baseline and follow-up. Wilcoxon signed rank tests were used to assess the acceptability of the sections of HMP in ease of use, usefulness, and visual appeal. Given the distributions of these variables, they were treated as categorical. The median score of each feedback variable (Likert scale 1 to 4) was compared with a score of 2 (which corresponds to response of disagree) to determine whether or not participants responded favorably to the intervention.

The institutional review board at the University of North Carolina at Chapel Hill approved this study.

Results

Description of Sample

Fifteen men were enrolled in the study; retention was 100%. Mean age was 26.1 years, 60% were HIV-positive, 84% identified as gay or bisexual, 87% earned less than $21,000 in the past year, and 67% were uninsured (Table 1). Two participants identified as transgender or transitioning. Smartphone ownership was not a study entry requirement. Thirteen out of 15 men owned smartphones, 53.3% of whom used the Android operating system. About half used their phone as their primary means of Internet access (53.3%; Table 1). Sixty percent of participants had searched for health/medical information online, 27.7% utilized online health discussion groups, and 20.0% received text message updates or alerts about health/medical issues.

Site Usage

The website was visited 544 times during the trial; the average time spent was 9:21 minutes per visit, and there were over 10,800 page views with an average of 20 pages viewed per visit. After the study closed at Week 4, seven of the participants continued to use the site until their usernames expired 1 week later.

Outcomes at Intervention Completion

Follow-up data for all participants ($n = 15$) are presented in Table 2. Findings from the paired *t* tests suggest that the intervention may have increased social support (total, emotional, and tangible) and improved mental health indicators (depression, social isolation). Also, there was a marginally significant effect on safe-sex norms. Statistically significant effects were not found for other variables (Table 2). Effect sizes (Cohen's *d*) for significant variables were small to medium, ranging from 0.15 to 0.30, demonstrating the potential effectiveness of the intervention.

Process Evaluation

Participants provided positive feedback for the website overall (Table 2) with most favorable ratings of the forums and quizzes. Sections including reviews of local venues,

Q&A with a sexual health/HIV doctor, and user-submitted videos, audio, or text about topics of interest (e.g., HIV/sexually transmitted disease testing, disclosure) were also highly rated.

Discussion

This 1-month pilot trial demonstrated acceptability and feasibility of HMP as measured by self-reported user satisfaction, 100% participant retention, and engagement with multiple features of the intervention. Despite the short follow-up and small sample size, we found promising statistically significant improvements on key mental health and social support indicators. While not statistically significant, other variables of interest moved in the expected directions.

Consistent with other studies of Black MSM and TW of all races, participants in this study presented with high levels of depressive symptoms (Bockting, Miner, Swinburne Romine, Hamilton, & Coleman, 2013; Cochran & Mays, 1994). At baseline, 12 out of 15 men (80%) scored ≥16 of the CES-D suggesting a clinically significant amount of depressive symptoms (*data not shown*). Among HIV-negative MSM, including Black MSM, depressive symptoms are associated with engagement in behaviors that increase risk for HIV including unprotected anal intercourse and unprotected anal intercourse with a serodiscordant partner (Houston, Sandfort, Dolezal, & Carballo-Dieguez, 2012). Among HIV-positive persons, depression is associated with unsafe sex, substance abuse, and nonadherence to antiretroviral therapy (DiMatteo, Lepper, & Croghan, 2000). We are optimistic that HMP can positively influence mental health among YBMSM/TW at least in the short term, ultimately reducing risk-taking behavior.

Social isolation and lack of support was common among participants at baseline, with statistically significant improvements found postintervention. Poor social support is associated with participation in risky sexual situations and less HIV testing among YBMSM (Lauby et al., 2012). For TW, social ostracism has been associated with risky sexual behavior (Kosenko, 2011). In contrast, peer support is associated with lower levels of psychological distress among TW (Bockting et al., 2013). HMP was designed specifically as a safe space in which HIV-positive and HIV-negative YBMSM/TW can explore their opinions, feelings, and perhaps even prejudices in dialogue with their peers. HMP's social networking features allow users to provide and receive emotional support, which may enhance understanding and feelings of belonging among YBMSM/TW.

Studies of peer support among YBMSM suggest that supportive peer norms for condom use predict less frequent risky behavior (Jones et al., 2008). Peer support and engagement have also been recognized as important components of HIV prevention interventions for TW (Reisner et al., 2009). The most popular areas of the site were those that allowed for interaction with other participants or with the HIV/sexually transmitted infection (STI) doctor. Through these spaces HMP seeks to reinforce, facilitate, and help sustain healthy behaviors.

Use of the Internet to search for health information was common. However, smaller numbers of participants had previously engaged in online activities that included two-way information exchange such as participating in an online forum or receiving messages from health care providers. HMP was designed to appeal to those YBMSM/TW who are looking for tailored messages and information as well as those who had been reluctant or never afforded the opportunity to communicate with peers or health care providers.

HMP is intentionally designed to expand traditional discussion of high-risk behaviors to situate HIV/STI prevention within the broader context of health promotion and wellness for YBMSM/TW. Formative work during the development and testing of HMP guided the design of an intervention that emphasizes the larger contexts in which YBMSM/TW live and promotes the existing strengths within their communities. This strategy is consistent with recent calls for the development of interventions designed to promote resilience rather than concentrate on traditional deficit-based approaches (Herrick, Stall, Goldhammer, Egan, & Mayer, 2014).

As a pilot trial this study has several limitations. First, the 1-month follow-up was chosen to achieve two primary goals: assess implementation challenges and test proof of concept of the directionality of study variables prior to conducting a full randomized controlled trial (RCT). This relatively short follow-up time did not allow for an optimal recall period to examine changes in sexual behaviors attributable to HMP. Second, the sample size is small and no control group was used. Finally, our findings represent YBMSM/TW in one local area and cannot be broadly generalized. HMP's full RCT will include larger, more representative samples, a control group, and longer intervention exposure and follow-up periods as well as separate analyses for both MSM and TW given possible differences in risk behaviors and social support networks.

The HMP pilot trial demonstrated feasibility and acceptability when delivered to a small group of YBMSM/TW. Moreover, statistically significant improvements were seen in areas of social support and mental health. This pilot trial followed numerous iterative rounds of formative research. These intervention development elements are indispensable to identifying challenges and demonstrating intervention satisfaction prior to implementing HMP's full RCT. Given the burden of the epidemic among YBMSM/TW there is an imperative to develop, test, and scale up culturally appropriate interventions to both prevent HIV acquisition and limit onward transmission. If proven effective in the context of an RCT, HMP is a highly scalable behavioral intervention.

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Table 1

Baseline Characteristics and Technology Use of 15 Young Black Men Who Have Sex With Men and Transgender Women Participating in HMP Pilot Trial.

Continuous variables	*M* [*SD*], (range)
Age (years)	26.1 [3.3], (20–30)
Average use of Internet in past month (hours/day)	5.8 [2.9], (1–14)
Categorical variables	***n*** **(%)**
Education	
High school or GED	3 (20.0)
Professional, technical, or trade school	1 (6.7)
Some college	8 (53.3)
College degree	2 (13.3)
Completed or incomplete graduate degree	1 (6.7)
Currently employed	9 (60.0)
Income last year ($)	
Less than 10,999	6 (40.0)
11,000–20,999	7 (46.7)
21,000–30,999	2 (13.3)
Sexual identity	
Gay	6 (40.0)
Bisexual	4 (26.7)
Other (transgender, queer, same gender loving, MSM, agnostic)	5 (33.3)
HIV status	
Positive	9 (60.0)
Negative	6 (40.0)
Substance use, last 3 months	
Alcohol	12 (80.0)
Marijuana	7 (46.7)
Cocaine	3 (20.0)
Other (inhalants, ecstasy, opiates)	4 (26.7)
In the past 30 days …	
Sent or received e-mail?	14 (93.3)
Accessed Internet using a mobile device	15 (100.0)
In the past 30 days which devices did you use most often to access the Internet?	
Laptop/desktop	7 (46.7)
Mobile phone/smartphone	8 (53.3)
Smartphone ownership	13 (86.7)
Mobile phone operating system (*n* = 13)	
Apple (iOS)	4 (26.7)
Android	8 (53.3)
Blackberry	1 (6.7)

In the last 6 months, has your primary mobile phone been disconnected/cut off	2 (13.3)
Ever used phone to …	
Search for information about HIV or other STDs	7 (46.7)
Search for other health or medical information	9 (60.0)
Participate in an online discussion, listserv, or group that helps people with personal issues or health problems	4 (26.7)
Receive text message updates or alerts about health or other medical issues, such as from a doctor or pharmacist	3 (20.0)
Current use of social networking sites	10 (66.7)
For the social networking site with the profile or account that you use most often, about how often do you visit? (n = 10)	
Several times a day	5 (50.0)
About once a day	3 (30.0)
1–2 days/week	1 (10.0)
3–5 days/week	1 (10.0)

Note. HMP, HealthMpowerment.org; STD, sexually transmitted disease.

Table 2

Pilot Trial Outcomes Among 15 Young Black Men Who Have Sex With Men and Transgender Women Participating in HMP Pilot Trial.

Variable	Baseline mean (*SD*)	Follow-up mean (*SD*)	*t*	*p*	Cohen's *d*
Condom use self-efficacy	44.2 (15.1)	44.6 (14.3)	0.141	.890	0.015
Attitudes toward condom use	42.4 (9.6)	43.7 (8.8)	1.299	.215	0.074
Safe sex norms	20.1 (4.7)	18.5 (4.5)	−1.966	.069	−0.177
Social support					
Total	69.7 (17.3)	77.4 (16.0)	2.871	.012	0.242
Emotional	28.9 (8.0)	32.9 (6.8)	2.619	.020	0.293
Tangible	14.3 (5.0)	15.7 (4.9)	2.323	.036	0.152
Affectionate	10.9 (4.4)	11.7 (3.9)	1.247	.233	0.101
Positive social interaction	11.8 (3.7)	12.9 (2.9)	1.481	.161	0.178
Social isolation	13.7 (6.4)	15.5 (6.0)	2.141	.050	0.151
Depressive symptomatology	22.8 (6.7)	18.9 (8.1)	−2.205	.045	−0.298
Internalized homophobia	18.5 (7.3)	18.8 (7.4)	0.294	.733	0.020

Intervention acceptability[a]	% Agree/strongly agree	*Mdn* (*SD*)
The information content on this site met my needs	86.7	3.3 (0.7)
This site provided the precise information I needed about getting HIV care	100.0	3.5 (0.5)
The site provided the precise information I needed about my overall health	100.0	3.5 (0.5)
The site provided the precise information I needed about safer sex	100.0	3.6 (0.5)
The information I found on the site was accurate	100.0	3.7 (0.5)
The information I found on the site was up-to-date	100.0	3.7 (0.5)
The site information was presented in a useful format	93.3	3.3 (0.6)
The site information was clearly presented	80.0	3.3 (0.8)
The site content and activities were interesting	93.3	3.1 (0.9)
The site was easy to use	100.0	3.4 (0.5)
I found the information I needed quickly	100.0	3.3 (0.5)
The overall site was visually appealing	93.3	2.9 (0.9)
The language used on the site was clear	100.0	3.5 (0.5)
I would be likely to use this website in the future	100.0	3.4 (0.5)
I would be likely to recommend this website to someone else	86.7	3.3 (0.7)

Intervention acceptability[a]	% Agree/strongly agree	*Mdn* (*SD*)
I learned something new by using the site	86.7	3.6 (0.7)
I would share information I learned from using the site with others	100.0	3.7 (0.5)

Note. 1 = Strongly disagree; 2 = Disagree; 3 = Agree; 4 = Strongly agree (H0: W ⇐ 2.0).

[a] All *p* values <.01.