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Feasibility and Willingness of Using E-technologies for HIV Prevention and Research Targeting Chinese MSM

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Abstract

This pilot study examines the feasibility and willingness for three types of e-technologies for HIV prevention and research among a sample of men who have sex with men (MSM) in Chengdu, China. A total of 605 self-identified MSM (200 HIV seropositive, 405 HIV negative) were recruited through a community-based HIV/AIDS service organization and completed a cross-sectional survey. The majority used cell phones for voice and text (99% and 95%), used e-mail (53%), and Tencent QQ (an Instant messaging technology) (83%); (54%) indicated they would participate in future research studies; and (77%) provided contact information for at least one e-technology. In multivariate analyses, those who were not official city residents, those better educated, and those who were HIV seropositive were more likely to provide contact information. This research indicates that MSM in China would be likely to engage in e-technology research and studies should explore these innovative communication methods.

Keywords

Chinese MSM; HIV Prevention; e-technologies; Internet; Mobile Phone

Introduction

Communication about HIV with MSM in China has been limited by several factors. These include macro-level barriers such as many having unofficial migrant status (or hukou), social contextual and ideological limitations, and personal issues such as being married to women and family responsibilities. These difficulties have resulted in a labeling of “hard-to-reach” and public health efforts often being relayed through word of mouth or community groups. This is unfortunate, as MSM make up the majority of Chinese HIV incidence and prevalence and are seen as key to the epidemic (Guo, Li, & Stanton, 2011).

However, an exciting avenue for HIV efforts among MSM in China has been emerging e-technologies. Although some argue that Government surveillance may limit their effectiveness, longstanding grass-roots efforts by Chinese MSM Internet groups and a recent study of female sex workers (FSW) would seem to contradict these fears (Hong, Li, Fang, Lin, & Zhang, 2011; Zhang et al., 2007). Additionally, the Chinese government has taken a pragmatic approach to HIV prevention among MSM, with a recently completed national HIV surveillance project and prevention efforts.

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Although a number of studies (primarily Western) have examined Internet-based HIV prevention/interventions (Noar, 2011), there may be drawbacks to Internet-only approaches in China. Studies suggest higher STI risks in MSM over 30 years old (Xu et al., 2010), a group with lower rates of Internet access and poor computer literacy (China Internet Network Information Center, 2008; Zhang et al., 2007), and Internet only samples may be different than those collected by other methods (Zhang, Bi, Lv, Zhang, & Hiller, 2008; Zou et al., 2010). Second, China's restrictions on sex education sites (Juan, 2009) and social networking (Mackey, 2009) may limit sustainability. Among the few studies on mobile phone-based interventions in China, their messages have been demonstrated as feasible, effective and economical for reducing absenteeism from outpatient appointments (Z. W. Chen, Fang, Chen, & Dai, 2008) and increasing medication adherence (Mao, Zhang, & Zhai, 2008). However, there have been virtually no mobile phone interventions for sexual health promotion in China. This is regrettable as mobile phones are ubiquitous in China, with approximately 930 million having mobile phone access (Ministry of Industry and Information Technology of the People's Republic of China, 2011).

Public health researchers have tried to use the strengths of e-technologies as HIV prevention tools. Although they have been demonstrated to be efficacious in Western countries, little is known about how e-technologies work for Chinese MSM. Therefore, this pilot study examined the feasibility (purpose 1) and willingness (purpose 2) of e-technologies for HIV prevention targeting a sample of MSM in China.

Methods

Design: Recruitment and Enrollment of Participants

Using a cross-sectional convenience sampling design, 605 self-identified MSM were recruited between July 2010 and June 2011by a non-governmental organization in Chengdu, China for a confidential 15 minute paper-and-pencil survey. Eligibility included: (1) being a male; (2) aged 18 and above; (3) able to give verbal or written consent; (4) ever had sex with men (oral, anal, or both). Participants were not required to participate and did not receive compensation; however all completed the survey. Study materials underwent translation and back-translation and were approved by the Fudan University Institutional Review Board.

Measures

The instrument captured: (1) socio-demographics such as age, sexual orientation, hukou, etc.; (2) self-reported HIV serostatus; (3) mobile phone usage (voice and text messaging); and (4) e-mail and Tencent QQ instant messaging usage. For each, participants were asked if they would be willing to be contacted (yes, no, or it depends) after 3 months and reasons they would or would not participate. Finally, they were asked if they would participate in a study about HIV prevention after 3 months (yes, no, or it depends) and reasons they would or would not participate. Those responding "it depends" were coded "no" to provide conservative estimates of willingness.

Statistical Analyses

Descriptive statistics were used to characterize socio-demographics and e-technologies. Univariate and multiple logistic regressions were conducted to address the research questions (i.e., willingness and feasibility). Qualitative reasons for and against participation were categorized and ranked for interpretation.

Results

Socio-Demographic Characteristics

As can be seen from Table 1, of the 605 participants, 200 (33%) reported being HIV seropositive. The mean age was 29 years old, 57% had residency (hukuo) in Chengdu, 64% received a college education or higher, 11% were currently married to women, and 74% were closeted gay or bisexual.

Feasibility

The majority (97.5%), regardless of HIV serostatus, reported having a cell phone. The bulk of these phones could text (98.6%) were used to text (99.1%), could connect to the Internet (78.1%) and were used for such (68.0%). Those HIV seropositive were more likely to have a phone with Internet service (83.6% vs. 75.3%; $x^2(1) = 5.01$, $p = 0.03$) and used their phone for the Internet (75.4% vs. 64.4%; $x^2(1) = 6.72$, $p = 0.01$). The average reported time per day talking on their phone was 35.4 minutes (SD = 37.8) with an average of 16 text messages (SD = 21.6) sent per day. Surprisingly, only 52.7% had and used email. Reasons for email use were work (79.0%), friends (49.0%), shopping (28.7%), and pornography (8.9%). Last, 83.0% used QQ, with differences by HIV serostatus (95.5% HIV+ vs. 76.8% HIV−; $x^2(1)$ 33.18, $p < .01$).

Willingness

Over half (53.7%) would participate in a HIV research study after 3 months; with differences by HIV serostatus (63.0% HIV+ vs. 49.1% HIV−; $x^2(2) = 10.35$, $p < .001$). Interestingly, 32.4% of the participants responded “it depends”. Unfortunately the results did not inform what would motivate those “it depends” to be willing to participate. However, the top motivations for participation were to learn to protect themselves and others from HIV (n = 217) and to be supportive of HIV research (n = 70). Top reasons for non-participation were being busy or work commitments (n = 83), the research schedule (n = 64), and simply not wanting to participate (n = 40).

Over half of those with phones (51.9%), regardless of HIV serostatus, provided contact numbers. Of these, 87.8% indicated that they could be reached by both a call and text. Similarly, a majority of those with email (53.0%) and with QQ accounts (69.9%) indicated that those were agreeable for contact. However, both differed by HIV serostatus, with those HIV seropositive more likely to provide an email address (64.0% vs. 47.1%; $x^2(1) = 8.25$, $p < 0.01$) and QQ number (75.9% vs. 66.2%; $x^2(1) = 5.27$, $p < 0.05$). The top reasons for not providing contact information were privacy concerns, convenience, and not wanting to be troubled / not willing.

Main Analyses

Univariate (in Table 2 only) and multivariate logistic regressions were used to explore the main purposes of the study. As can be seen in Table 2, multivariate analyses revealed that older men, with lower incomes, and who were HIV seropositive were more likely to agree to participate in HIV research after 3 months. Overall, those without local Hukuo were more likely, while those who with lower education, married, and HIV negative were less likely to provide contact information. By type, those HIV seropositive were more likely to provide both email and QQ contacts. For phones, men who were older and with a high school education were more likely, while those who were never married were less likely to provide contact information.

Discussion

This study explored the feasibility and willingness of e-technologies for HIV prevention among MSM in China. This study is the first of HIV seropositive Chinese men to query the use of multiple e-technologies in HIV prevention research. This was made possible through collaboration with a community-based partner which offers HIV prevention and management services. Overall, as with Chinese FSW and MSM over the Internet (Hong et al., 2011; Zhang et al., 2007; Zhang et al., 2008; Zou et al., 2010), findings illustrate that communication with MSM in China over e-technologies is feasible. Results also showed that MSM were found to be willing and suggest that these avenues should be explored in future studies. Those HIV seropositive were especially willing to participate and had strong sentiments of wanting to learn to protect themselves or others and wanting to support HIV research.

Limitations

Several limitations need to be addressed. First, this study used self-reported measures. MSM in this study completing the current survey lends credence to the idea of repeat participation. However, contacting over e-technologies is a different technique than used in this study. Second, this study was in Chengdu, an urban city of roughly 14 million. It is plausible that results would be different across China and even by type of MSM community. Finally, the brief cross-sectional nature used was appropriate given the exploratory nature of the study. Future studies should include repeated in-depth measurements of health constructs to predict e-technology use and health behaviors.

Conclusions and Practice Implications

This study highlights the importance of new technologies and being responsive to research and intervention audiences. Continued research will be important to determine personal and social factors (such as social network characteristics) that may play a role in e-technology use for MSM in China. We must also determine culturally specific e-technology messages for the Chinese MSM community. These technologies can be used to complement existing strategies and can offer wide spatial impact. They also offer the ability to present messaging immediately in a personal way and cost relatively little through low costs for production, maintenance and scalability. This being said, we need to ensure that such messages are delivered and evaluated to prove the strategy. Overall, this study indicates that MSM in China are interested in guiding the future of HIV research and prevention and that these efforts are likely to be successful.

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Table 1

Personal Demographic Characteristics by HIV Status

Variable	Overall (N=605)	HIV Positive (n=200)	HIV Negative (n=405)	Significance
	M (SD)	M (SD)	M (SD)	
Age	28.8 (7.8)	28.1 (5.7)	29.1 (8.6)	$F = 1.91$, $p = .17$
Age first MSM sex	20.0 (4.2)	20.0 (3.8)	20.0 (4.4)	$F = .09$, $p = .77$
Age first WSM sex	20.5 (3.9)	20.2 (3.6)	20.7 (4.0)	$F = .77$, $p = .38$
Age first realized attraction to men	17.1 (4.1)	17.6 (4.0)	16.8 (4.1)	$F = 4.4$, $p = .04$
Hukou				
Chengdu	342 (56.5)	107 (53.5)	235 (58.0)	$x^2(1) = 1.12$, $p = .29$
Other	263 (43.5)	93 (46.5)	170 (42.0)	
Ethnic group				
Han	593 (98.3)	196 (98.5)	397 (98.3)	$x^2(1) = .04$, $p = .84$
Other	10 (1.7)	3 (1.5)	7 (1.7)	
Education				
Illiterate-middle school	49 (8.1)	17 (8.5)	32 (7.9)	$x^2(2) = .16$, $p = .92$
High school	172 (28.4)	55 (27.5)	117 (28.9)	
College	384 (63.5)	128 (64.0)	256 (63.2)	
Marital Status				
Never married	492 (81.3)	180 (90.0)	312 (77.0)	$x^2(2) = 16.63$, $p < .001$
Married	66 (10.9)	15 (7.5)	51 (12.6)	
Other-divorced, widowed, cohabitating	47 (7.8)	5 (2.5)	42 (10.4)	
Monthly income (Yuan)				
<1000	98 (16.2)	24 (12.0)	74 (18.3)	$x^2(3) = 9.54$, $p = .02$
1000–2999	283 (46.8)	109 (54.5)	174 (43.0)	
3000–4999	161 (26.6)	52 (26.0)	109 (26.9)	
>=5000	63 (10.4)	15 (7.5)	48 (11.9)	
Orientation (out or closeted)				
Out	155 (25.7)	41 (20.6)	114 (28.3)	$x^2(1) = 4.12$, $p = .04$
Closeted	447 (74.3)	158 (79.4)	289 (71.7)	

Table 2

Associations Between Sociodemographic Characteristics and E-technology Communication Methods among MSM in China.

	Would you participate in a HIV research study after 3 month			Will you give 3 month contact combined?			Will you give us your cell phone number so we can contact you after 3 months			Will you give us your email so we can contact you after 3 months			Will you give us you QQ number so we can contact you after 3 months?		
Predictors	Yes (%)	OR[a]	OR[b] (95% CI)	Yes (%)	OR[a]	OR[b] (95% CI)	Yes (%)	OR[a]	OR[b] (95% CI)	Yes (%)	OR[a]	OR[b] (95% CI)	Yes (%)	OR[a]	OR[b] (95% CI)
Age		1.04***	1.04** (1.01–1.07)		1.02	1.02(0.99–1.06)		1.06***	1.04* (1.01–1.07)		0.97	0.99(0.94–1.03)		1.04*	1.02(0.98–1.06)
Hukou															
Chengdu	52	1.00 (referent)		74	1.00 (referent)		50	1.00 (referent)		49	1.00 (referent)		64	1.00 (referent)	
Other	56	1.2	1.23(0.87–1.72)	81	1.44	1.55* (1.03–2.34)	55	1.24	1.29(0.91–1.82)	58	1.45	1.37(0.85–2.21)	77	1.95***	1.88** (1.24–2.84)
Education															
College+	49	1.00 (referent)		76	1.00 (referent)		45	1.00 (referent)		53	1.00 (referent)		68	1.00 (referent)	
Illiterate-middle school	65	1.98*	1.53(0.79–2.98)	66	0.63	0.49* (0.24–0.99)	71	3.06***	1.93(0.94–3.96)	40	0.6	0.48(0.16–1.48)	79	1.84	1.40 (0.53–3.71)
High school	62	1.69**	1.42(0.94–2.13)	83	1.59*	1.40(0.84–2.31)	63	2.13***	1.55* (1.03–2.35)	57	1.21	0.86(0.45–1.66)	74	1.37	1.24(0.76–2.01)
Marital Status															
Other-divorced, widowed, cohabitating	70	1.00 (referent)		89	1.00 (referent)		82	1.00 (referent)		47	1.00 (referent)		89	1.00 (referent)	
Never married	52	0.46*	0.61(0.29–1.30)	76	0.38*	0.41(0.15–1.16)	47	0.19***	0.34* (0.14–0.80)	54	1.34	0.76(0.24–2.36)	68	0.26*	0.30 (0.09–1.09)
Married	53	0.48	0.44(0.19–1.02)	72	0.31*	0.30* (0.10–0.90)	67	0.43	0.51(0.20–1.33)	42	0.83	0.57(0.14–2.37)	75	0.36	0.32(0.08–1.37)
Orientation (out or closeted)															
Closeted	54	1.00 (referent)		78	1.00 (referent)		50	1.00 (referent)		55	1.00 (referent)		68	1.00 (referent)	
Out	55	1.06	1.09(0.74–1.60)	75	0.85	0.84(0.54–1.31)	56	1.25	1.18(0.80–1.75)	47	0.74	0.71(0.41–1.22)	75	1.38	1.35(0.83–2.20)
Monthly income (Yuan)															
>=5000	40	1.00 (referent)		76	1.00 (referent)		44	1.00 (referent)		50	1.00 (referent)		74	1.00 (referent)	
<1000	54	1.79	2.25* (1.13–4.47)	73	0.84	0.96(0.44–2.09)	48	1.19	1.50(0.75–3.00)	56	1.29	1.31(0.55–3.13)	61	0.56	0.68 (0.31–1.51)
1000–2999	57	1.98*	1.68(0.93–3.03)	78	1.13	0.96(0.48–1.92)	56	1.66	1.54(0.84–2.80)	59	1.43	1.36(0.63–2.93)	70	0.85	0.77(0.38–1.57)
3000–4999	54	1.79	1.63(0.88–3.00)	77	1.05	0.93(0.46–1.90)	50	1.30	1.17(0.63–2.18)	43	0.76	0.64(0.29–1.40)	74	1.01	0.94(0.45–1.98)
HIV Status															
Positive	63	1.00 (referent)		83	1.00 (referent)		51	1.00 (referent)		64	1.00 (referent)		76	1.00 (referent)	
Negative	49	0.57***	0.54*** (0.38–0.78)	74	0.58*	0.57* (0.37–0.89)	52	1.04	0.95(0.66–1.37)	47	0.50**	0.47** (0.28–0.79)	66	0.62*	0.61* (0.40–0.94)

Note:

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[a]Odds Ratio for univariate analysis,

[b]Odds Ratio for multivariate analysis,

*Odds Ratio is significant at the 0.05 level.,

**Odds Ratio is significant at the 0.01 level.,

***Odds Ratio is significant at the 0.001 level.