

Developing a Web Site for Human Immunodeficiency Virus Prevention in a Middle Income Country: A Pilot Study from Thailand

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Abstract

The Internet has often been used to reach men who have sex with men (MSMs) in developed countries. However, its use has not been as widespread in middle income countries because of a perceived lack of access to the web by residents of these countries. However, over half of the Internet users in the world now live in middle income countries. This article describes the development of web-based human immunodeficiency virus (HIV) prevention program that can serve as a model for middle income countries. Thai nursing faculty worked with MSMs to create and evaluate a Web site that provided HIV prevention messages directed toward MSMs. The steps for creating the site are described. Forty-one MSMs used the site and provided feedback to the site developers. The group was young (median = 19 years), low income (median income was ~170 US\$ per month). The users demonstrated that they had access to the Internet and that they could utilize the site. They also reported moderate-to-high levels of satisfaction with site design, content, ease of use, information obtained, and benefits obtained from using the site. A previous article in the Thai language also showed that they reduced risk behaviors. They also made many useful suggestions for improving the content of the site. In conclusion, the study showed that the combination of nurses and MSMs from a middle income country could develop a usable HIV prevention Web site that instructed and changed behavior.

Introduction

THE WORLD HEALTH ORGANIZATION says that the risk of human immunodeficiency virus (HIV) infections among men who have sex with men (MSMs) in Asia was 18.7 times higher than the general population.¹ These high rates are also found in Thailand. A 2007 survey showed that the prevalence of HIV infection among MSMs in Bangkok and Chiang Mai was 30.7 percent and 17 percent, respectively.²

HIV infection is not likely to be limited to MSMs because many MSMs in middle income countries are bisexual.²⁻⁵ Without effective prevention among MSMs, HIV infection will rise among all segments of the population.⁶ However, contacting MSMs in order to do HIV prevention can be difficult because many MSMs do not wish to be identified because of discrimination and violence against HIV infected persons and MSMs. This has been found in Thailand.⁷⁻¹¹ Traditional, written, HIV prevention messages may not reach MSMs because possessing or looking at such materials may reveal their sexual orientation.

Web-based prevention messages allow MSMs to obtain relevant information in an anonymous fashion and have been used in developed countries where Internet access is widely available.¹²⁻¹⁵ Recently, Internet access has greatly expanded with over half of Internet users living in middle income countries in Asia and Latin America.¹⁶ These countries could now use web-based HIV prevention for MSMs. This article reports on the development, implementation, acceptability, and effectiveness of such a program in Thailand.

Methods

This intervention was conducted by five nursing faculties in Chiang Mai, Thailand, in 2010-2011. The subjects were 41 MSMs who were (a) not HIV infected, (b) Chiang Mai province residents, (c) literate in the Thai language, and (d) had Internet literacy and access. At entry to the study, all participants completed questionnaires from the study Web site. Access to the site was restricted to study participants. The

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questions were asked about demographics, Internet access and literacy, and HIV knowledge and risk behaviors.

Development of the Web site was a multistep process. The first step was to create a draft of the potential Web site. This was done by (a) analyzing and identifying content to be presented on the Web site, and (b) creating a story plot for producing cartoons animation and video clips. Every webpage expressed the messages for learners to read, view, and/or hear. The draft Web site comprised seven areas: (a) the content covering HIV prevention included facts about HIV/AIDS, that is, HIV transmission, risk behaviors, condom use, appropriate lubricant use, HIV testing, sexually transmitted infections, and an HIV knowledge test; (b) a collection of news for MSM; (c) a collection of photographs and posters about HIV prevention; (d) a 4-minute-long animation regarding anal sex and HIV transmission and four video clips showing appropriate condom and lubricant use; (e) a forum for users to make suggestions regarding the site; (f) links to interesting Web sites related to HIV/AIDS; and (g) contact information for webmaster. While the content of these sections was regularly altered, this framework was retained.

Because the goal of the study was to create an accurate, attractive, and pertinent education program, MSMs were continuously involved in the design of the site. The first draft of the instructional material was reviewed by an MSM volunteer who suggested changes, including (a) having more links with MSM-related sites and (b) changing banner illustrations to be photos of MSMs expressing affection, such as holding hands, flirting, and so on. During the second phase, 10 MSM volunteers reviewed the revised Web site and made suggestions for improvement, including suggestions on making the Web site more attractive, such as using a brighter color and adding more illustrations. They also said that some topics contained too much content making them boring and unattractive and others were difficult to understand due to ambiguous wording. They suggested more content about sexually transmitted diseases be added. Finally, they recommended that the site can provide the names and contact phone numbers of the organizations offering HIV counseling and testing services. The draft was modified as suggested by the group.

Finally, a group of 30 additional volunteers was given access to the revised site. These 30 and the previous 11 users were allowed to use the site for a period of 2 months. Then, all 41 participants completed a user satisfaction questionnaire that queried about Web site content, word usage, design, overall fondness for the Web site, knowledge acquisition of HIV prevention, overall benefits gained from the Web site, and whether they had changed any behaviors as a result of using the site. In addition the group was asked to make suggestions for improving the Web site.

All participants were informed that their Internet usage would be monitored and that they would be asked to complete knowledge and risk prevention questionnaires at the end of the study. The research project was reviewed and approved by the Ethics Committee, Faculty of Nursing, Chiang Mai University.

Results

Demographic data

The mean age of the 41 men was 20.6 years (range was 15–34). Most of them were students (68 percent) and 65.9 percent had current income of <5,000 baht/month (~160 US\$).

Accessibility

The majority of the participants (69 percent) reported having good or very good computer literacy, 49 percent indicated that they had good to very good skills in seeking information on the Internet, and 51 percent with moderate skills. All stated that they had moderate or easy access to the Internet, and 39 subjects accessed the Internet daily or 3–4 times per week and 2 used it 1–2 times per week (Table 1). The participants accessed the site an average of 4.6 times.

User satisfaction with the Web site

Ninety percent of the sample said that the Web site content was practical, over 80 percent of MSMs reported medium to high levels of satisfaction regarding the Web site design and wording, 82.9 percent of the sample group showed medium to high levels of fondness for the Web site, 87.8 percent expressed high to very high levels regarding acquiring knowledge of HIV prevention, and 70.8 percent presented high to very high levels of satisfaction about the benefits gained from the Web site (Table 2).

Change in knowledge and behavior

An article about this study in a Thai language journal reported that users gained a significant amount of knowledge and reported behavior changes. Participants scored an average of 11 on a 20-point HIV knowledge scale at entry to the study and this improved to 16 at the end ($p < 0.01$). The mean score of the scale measuring the practice of HIV prevention activities improved from 63.33 points to 76.52 points on a 99-point scale ($p < 0.001$).¹⁷

Final feedback from the MSMs

At the study's end, the participants met with the research team and made additional suggestions to improve the site, which are as follows: (a) add more "safe sex" content and they provided examples of activities to include, (b) illustrations should be used more than text, and (3) make the

TABLE 1. NUMBERS AND PERCENTAGE OF THE SAMPLE STRATIFIED BY COMPUTER AND INTERNET ACCESS AND LITERACY

Data	Numbers (n=41)	Percentage
Computer and Internet use		
Computer literacy		
Very good	2	4.9
Good	26	63.4
Moderate	13	31.7
Internet literacy in seeking information and knowledge		
Very good	1	2.5
Good	19	46.3
Moderate	21	51.2
Internet access (in terms of difficulty/easiness)		
Easy	6	14.6
Moderate	35	85.4
Frequency of Internet use		
Every day	8	19.5
3–4 times a week	31	75.6
1–2 times a week	2	4.9

TABLE 2. NUMBERS AND PERCENTAGE OF USER SATISFACTION WITH THE WEB SITE <http://rakplodpai.com> (N=41)

Evaluation items	Satisfaction levels				
	Very high number (percent)	High number (percent)	Medium number (percent)	Low number (percent)	Very low number (percent)
1. Web site content					
1.1 Easy to understand	0 (0)	14 (34.1)	27 (65.9)	0 (0)	0 (0)
1.2 Diverse and interesting	4 (9.8)	14 (34.1)	22 (53.7)	1 (2.4)	0 (0)
1.3 Useful	4 (9.8)	26 (63.4)	11 (26.8)	0 (0)	0 (0)
1.4 Practical	16 (39.0)	21 (51.2)	4 (9.8)	0 (0)	0 (0)
2. Correct word usage, expressed ideas clearly and appropriately	3 (7.3)	24 (58.6)	14 (34.1)	0 (0)	0 (0)
3. Web site design					
3.1 Ease of use	1 (2.4)	20 (48.8)	18 (43.9)	2 (4.9)	0 (0)
3.2 Nice interface/screen design	5 (12.2)	18 (43.9)	15 (36.6)	3 (7.3)	0 (0)
3.3 Appropriate font attributes (size and color)	15 (36.6)	20 (48.8)	6 (14.6)	0 (0)	0 (0)
3.4 Appropriate graphic images congruent with the content	15 (36.6)	17 (41.4)	9 (22.0)	0 (0)	0 (0)
3.5 Correct links	7 (17.1)	29 (70.7)	5 (12.2)	0 (0)	0 (0)
3.6 Interesting Web site	9 (22.0)	21 (51.2)	11 (26.8)	0 (0)	0 (0)
3.7 Appropriate sound and music	4 (9.8)	14 (34.1)	21 (51.2)	2 (4.9)	0 (0)
3.8 Appropriate videos	27 (65.9)	14 (34.1)	0 (0)	0 (0)	0 (0)
3.9 Appropriate web board	0 (0)	9 (22.0)	26 (63.4)	6 (14.6)	0 (0)
4. Overall fondness for the Web site	7 (17.1)	20 (48.8)	14 (34.1)	0 (0)	0 (0)
5. Overall knowledge acquisition of HIV prevention	14 (34.1)	22 (53.7)	5 (12.2)	0 (0)	0 (0)
6. Overall benefits gained from the Web site	9 (22.0)	20 (48.8)	12 (29.2)	0 (0)	0 (0)

HIV, human immunodeficiency virus.

wording easier to understand. They also suggested that the Web site be a channel for MSMs to receive specific news about gay activities and events so as to increase the likelihood that the site would be regularly accessed.

Discussion

This study demonstrated that MSMs in a middle income country had access to the Internet and used it on regular basis. The study also showed that nurses could form the bridge between web construction experts and the MSM community. Using their traditional roles as health educators they could use a new medium and to assist a hard-to-reach community in protecting and preserving its health.¹ MSMs were also key players in developing the site. They provided feedback that improved the utility and attractiveness of the site.^{1,18} Their feedback at the end of the study has led to a revised Web site that is being field tested with MSMs from a primarily urban area in Thailand.

Study Limitations

The sample participated in this study was HIV negative MSMs who were willing to reveal their sexual identity and were "out" in the sense that they were members of Mplus, a gay service organization. They also knew that their identity was known and this may have affected their responses. This was a small sample in one location in Thailand and the results may not be applicable in other locations or with MSMs who are not open about their sexual orientation or are HIV positive. These nurse researchers have a study underway that will involve less open MSMs and in different locations in Thailand.

Conclusions

The findings have indicated that a Web site regarding HIV prevention among MSMs in a middle income country has great potential for increasing knowledge and changing reported unsafe behavior. However, it needs to be recognized that it is crucial for MSMs to be involved in the development of the educational materials and the Web site. They provided a real world experience that is vital in designing a usable and used Web site.

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Author Disclosure Statement

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