



ORIGINAL ARTICLE

Knowledge, Attitudes, and Sexual Behaviors in HIV/AIDS and Predictors Affecting Condom Use among Men Who Have Sex with Men in South Korea

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Abstract

Objectives: In South Korea, men who have sex with men (MSM) are rather understudied, but are known to be at high risk for human immunodeficiency virus infection (HIV)/acquired immunodeficiency syndrome (AIDS). This study was to access HIV/AIDS knowledge, attitudes, and risk behaviors, and to identify the factors of condom use in HIV prevention.

Methods: We recruited 1070 MSM in Korea, using the Internet to maximize the confidentiality of the MSM.

Results: The prevalence of self-reported and sexually transmitted infections and HIV in the total sample was 10.7% and 2.7%, respectively. Factual knowledge and phobias regarding HIV/AIDS and self-efficacy were relatively high among the MSM. After controlling for age, education, marital status, and sexual identity, predictors of condom use at most recent anal sex included knowledge (OR = 1.25; $p < 0.0001$); self-efficacy (OR = 1.33; $p = 0.02$), additionally, having HIV testing (OR = 1.45; $p = 0.02$); and having a regular partner (OR = 0.53; $p < 0.0001$) were also positively associated with condom use.

Conclusion: The intervention programs for MSM in Korea may need to take the idiosyncratic societal and cultural pressures of the region into consideration in order to reduce infection risk.

1. Introduction

Across the Asian continent, issues centered on the sexual behavior of men who have sex with men (MSM)

have become a subject of significant interest and concern to society, along with an increasing recognition of the heightened risk of human immunodeficiency virus infection (HIV) infections among the MSM population.

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MSM are now considered one of the main target groups for HIV prevention programs. In 2009, the World Health Organization found that the global prevalence of HIV was falling, while the prevalence of HIV among the MSM population continues to rise, particularly in certain parts of Asia [1,2].

In Korea, as of March 2011 there have been 7835 cumulative reported cases of HIV/acquired immunodeficiency syndrome (AIDS), according to data compiled by the Ministry of Health and Welfare of Korea [3]. The actual number of HIV/AIDS-infected persons is expected to be larger than is reported in the Ministry's data [4]. Intercourse (homosexual and heterosexual) is the principal cause of HIV/AIDS transmission. In 2009, among 771 newly infected HIV cases, the homosexual sex route of HIV infection accounted for 42% and heterosexual sex accounted for 58% [5]. These figures, however, are based on infected people's self-reported sexual identities as either homosexual or heterosexual. Owing to the social discrimination and stigma attached to homosexuality within Korean society, it stands to reason that many of these infected individuals might have concealed their homosexuality. Therefore, the proportion reported above can be reasonably surmised to be inaccurate, and the balance almost certainly favors homosexual transmission [6]. In Korea, as well as many other societies, it is culturally difficult or taboo to discuss these sexually explicit topics; they may not be taught in school or talked about even between close friends [7–9].

Generally, these factors result in low or inconsistent condom use and high optimism bias overall. For the sexually active, condom use provides the greatest protection against HIV/AIDS. For this reason, many previous studies have focused on MSM and their condom use throughout the Southeast Asian region. Although the reported numbers vary, several studies have shown that approximately half of MSM in Southeast Asia engage in unprotected sex [10,11].

Overall, MSM who engaged in unprotected sex were more likely to have low levels of HIV/AIDS knowledge or education, and were relatively likely to be misinformed about HIV/AIDS [11–13]. Possibly due to rampant misinformation regarding condoms and sexually transmitted infections (STIs), most MSM do not consistently use condoms, and often feel uncomfortable asking their partners to do so [12]. Cultural barriers may also make it difficult to talk about sexual issues [7]. This leads to lower self-efficacy, which is a highly significant predictor of unprotected anal sex [13]. Condom use is likely to be associated with differential attitudes, beliefs, and self-efficacy with regard to condom use. Although Korean Youths readily perceived the benefits of condom use, many of them perceived barriers to condom use, including the need for a partner's support, reduced sexual pleasure, the annoyance and awkwardness associated with condom use, and a lack of excitement or romance, in addition to the embarrassment and shame

inherent to purchasing them [14]. Self-efficacy is a salient determinant of HIV-related risky behaviors.

In one of the more disturbing findings of studies into this subject, 17% of the MSM surveyed in Thailand were HIV-positive, yet between 21% and 44% reported inconsistent condom use. The researchers found HIV-positive status, self-identifying as gay, and lack of HIV knowledge were associated with inconsistent condom use [15]. Testing for HIV/AIDS status can, in itself, often prove difficult. In some countries, a positive test result will result in unemployment and denial of medical services by scared hospital staff. As MSM already face discrimination, this can exponentially complicate the situation. Some MSM in more stigmatized areas—regardless of HIV/AIDS status—have reported verbal, physical, and sexual harassment and assault, not only from the general population, family, and friends, but even from the police [16]. Those MSM who were victims of personal experiences with this stigma were more likely to engage in sexually risky behavior [17], as were those who were less involved in the gay community and perceived higher levels of discrimination [18]. Lack of family and social ties—symptoms of discrimination and perceived discrimination—have been linked to both inconsistent condom use and HIV prevalence [19,20]. Individuals with HIV/AIDS can feel more stigmatized and isolated than those with other severe illnesses [21]. Health care providers may also discriminate against MSM through refusal of service, direct harassment, or poor quality service.

Unfortunately, information about HIV/AIDS in South Korea is largely unknown outside of Korea, although many studies have been conducted and published within the country. However, even research within the country is not viewed favorably, largely because—as is the case in many other Southeast Asian countries [7]—HIV/AIDS is an uncomfortable and disfavored topic. As homosexuality is also regarded as difficult and uncomfortable to discuss, research into HIV/AIDS and MSM is in a relatively underdeveloped state. It is important to carry out behavioral surveillance surveys to understand future trends in HIV prevalence and to evaluate the efficacy of prevention programs [14]. In South Korea, behavioral surveillance surveys for the general population have been reported seven times since 2002 by the Korea Center for Disease Control, but have not been conducted among the MSM population. Therefore, there is currently little information available with regard to HIV/AIDS-related knowledge, attitudes, and HIV prevalence, and the associated risk behaviors and predictors that affect condom use among the MSM population in South Korea. This may be attributable, at least in part, to difficulties in identifying and contacting MSM. Therefore, the principal objective of this study was to establish the feasibility of carrying out studies of MSM in Korea, which would clearly be useful and important. This study is one of the first major studies

to evaluate the MSM population in South Korea, focusing on HIV/AIDS knowledge, attitudes, and risk behaviors, and to identify the factors of condom use in HIV prevention.

2. Materials and Methods

2.1. Study population

The eligibility criteria for this study were MSM aged 20 to 59 years, who reported ever having had insertive or receptive anal intercourse with another man. *Men who have sex with men* is an inclusive public health construct used to define the sexual behavior of males who have sex with other males, regardless of the motivation for engaging in sex or identification with any or no particular “community”.

2.2. Sample and data collection

In South Korea, homosexuality is heavily stigmatized, which makes it difficult to contact, much less survey, the homosexual subpopulation. Many homosexuals or bisexuals ‘come out’ to very few people, if any, thus leading to an almost nonexistent gay community in which identities are frequently kept hidden. One of the few ways to approach the gay community is through the anonymity of Internet clubs and membership-driven websites.

One such website (<http://www.ivancity.com/>) for homosexuals was chosen for the recruitment of a survey sample. Participants were MSM between the ages of 20 and 59 years from South Korea. The website has a membership list of 237,220 people (September 1, 2010). Dormant accounts (inactive for six months), redundant users, those outside of the specified age range, and those with typographical errors in their account ID information were removed, leaving 64,155. A stratified random sample of 5000 was ultimately selected. The sample population was then stratified by age into four categories: 29–29, 30–39, 40–49, and 50–59. The age ratio of the population of 64,155 was found and probability-proportional-to-size stratifying was applied to the sample of 5000. The target sample size was 1300, but low response rates were expected, so 5000 participants were included in the initial mailing.

These 5000 were emailed a short letter about the survey and a link to take the survey as well as a consent form to participate in the survey. The survey period was from August 18 to September 9, 2010: 23 days in total. Respondents were provided with a small monetary compensation: 7500 Won for use online. Within the age groups of 20–29 and 30–39, the desired number of subjects was achieved. Additional reminder messages were sent to those within the 40–49 and 50–59 age groups on August 24 and September 1, 2010. After this, the 50–59 age group remained underrepresented, so an additional 500 individuals in this age group were sent

the survey invitation emailing, and the survey was extended until September 9 for this age group. The ethical considerations of this research study were approved by the Seoul National University Institutional Review Board and a number to conduct the study was issued. The final number of respondents was 1278. Of that number, 208 were excluded (missing ID, duplicate ID/IP, etc), leaving the final number of subjects enrolled in this study at 1070.

2.3. Instruments

A short and structured survey instrument was developed in consultation with a variety of key informants, including community members of HIV/AIDS professionals, the Ministry of Health and Social Welfare, and lesbian, gay, bisexual, and transgender organizations. The questionnaire took subjects an estimated 7 to 8 minutes to complete. The questions and answers, although translated to English for this presentation, were in Korean on the questionnaire. The domains of this instrument included baseline demographics, HIV/AIDS knowledge, HIV/AIDS stigma and discrimination, HIV/AIDS phobia scale, optimism bias, self-efficacy for condom use, and sexual practices. The question and answer styles varied, and were similar to questions used previously within the HIV/AIDS research field; many questions were derived from the National HIV/AIDS knowledge, attitudes, and practices survey questionnaire [22].

2.3.1. Demographics and contextual variables

Respondents were asked about their age, education, marital status, and sexual identity, and whether or not other people knew about their sexual identity. The 1,070 respondents who reported ever having had sexual intercourse with another man were asked whether they considered their sexual identity to be homosexual, bisexual, or heterosexual. For further analysis, those who responded “other” or “don’t know” were combined with bisexual into a new “other” category.

2.3.2. Self-reported STIs and HIV prevalence

The respondents were asked whether they had been diagnosed with STIs in the last year, and also whether they were infected with HIV.

2.3.3. HIV/AIDS knowledge

We used three-item questions to measure HIV/AIDS knowledge with the answers “True,” “False”, and “Don’t know.” Participants who answered “Don’t know” were coded together with incorrect answers on the scale questions. Some questions included in the survey were, “Mosquito bites can transmit HIV” and “Kissing an HIV-infected person can give you HIV.” One point was given for every correct answer, and 0 for every wrong answer (including the “Don’t know” answer).

2.3.4. HIV/AIDS phobia

To create the HIV/AIDS phobia scale, three questions were taken from the Multicomponent AIDS Phobia Scale [23] and translated into Korean. These questions were also graded on the same five-point Likert scale, ranging from “strongly agree” to “strongly disagree.” Scores ranged from 1 (strongly disagree) to 5 (strongly agree). Answers to each item were combined to generate the HIV/AIDS phobia scale, wherein higher values would indicate a higher level of phobia. Reliability as measured by Cronbach’s α was 0.66, which indicates moderate reliability.

2.3.5. Self-efficacy

Four questions were asked of subjects to indicate their degree of agreement regarding the self-efficacy of safer sex. Scores ranged from 1 (strongly disagree) to 5 (strongly agree). The question regarding whether it was difficult to talk about condom use with one’s partner was coded reversely. Answers to each item were combined to generate the scale toward self-efficacy for safer sex, wherein higher values would indicate a higher level of self-efficacy. Cronbach’s α was 0.67, which indicates moderate reliability.

2.3.6. HIV-related sexual behavior

Subjects were asked about anal sex behavior, condom use, and multiple partnership in the past 6 months. All of them were also asked whether they had engaged in sexual intercourse and condom use with sex workers and female sexual partners (FSPs) in the past 6 months. Multiple sexual partnership was measured by the percentage of sexually active single respondents who had engaged in sex with two or more partners in the past 6 months. A regular partner was

defined as somebody with whom the respondent had engaged in regular sexual intercourse or for whom the respondent had felt an emotional bond. The frequency of condom use in the previous 12 months and condom use at most recent sexual encounter were also assessed. The condom use at most recent (dependent variable) sexual incidence was later recorded as a dichotomous variable (1 = condom use; 0 = no condom use).

2.4. Statistical analysis

Data were analyzed using PASW 18.0 software. First, reliability analyses were employed to measure the subject’s HIV/AIDS knowledge, discrimination, phobia, optimistic bias, and self-efficacy for safer sex. Second, the data analysis employed proportion, mean, and standard deviations to describe the characteristics of the study sample. Third, bivariate, and multivariable logistic regressions were employed to analyze factors affecting condom use at most recent anal sex with a male sexual partner (MSP). Variables that were statistically significant were retained in the bivariate regression analyses in the multivariable logistic regression models. The final multivariable model controlled for age, education, marital status and sexual identity variables that are significantly ($p < 0.05$) associated with the outcome of interest are reported by presenting the adjusted odds ratios (ORs) and p values.

3. Results

3.1. Demographics and HIV prevalence (Table 1)

The mean age of the respondents was 33.2 years (SD = 10.1), and most respondents were younger,

Table 1. Selected characteristics of MSM respondents in South Korea ($n = 1070$)

Characteristic		<i>n</i>	%
Age (y)	Mean (SD)	33.2 (10.1)	
	20–29	446	41.7
	30–39	301	28.1
	40–49	227	21.2
	50–59	96	9.0
Education level	Secondary or less	365	34.2
	2 years college or more	705	65.8
Current marital status	Never married	865	80.8
	Married	154	14.4
	Divorced/separated/widowed	51	4.8
Sexual identity	Heterosexual	23	2.1
	Gay/homosexual	631	59.0
	Bisexual	374	35.0
	Not sure/don’t know	42	3.9
Status of coming out	Voluntarily	179	16.7
	By others	34	3.2
	Haven’t come out	857	80.1
STIs in the last 12 months		114	10.7
HIV positive		29	2.7

between the ages of 20 and 39 (69.8%). The majority of the respondents had finished studying in a 2-year college or higher (65.9%). The majority of the respondents were single (80.8%) and unmarried (14.4%). Most respondents self-identified as homosexual (59.0%), or bisexual (35.0%). Only a small number identified as heterosexual (2.1%). The number of subjects who selected “other” or “don’t know” was very small ($n = 42$), and it was suspected that these subjects were most probably bisexual. Only 13.5% of participants had come out voluntarily. Approximately 11% reported that they had been diagnosed with STIs in the past 12 months. The prevalence of self-reported HIV in the total sample was 2.7% (29/1070).

3.2. HIV-related knowledge and attitudes

The perceived phobia and self-efficacy are summarized in Table 2. On the knowledge test, subjects correctly answered an average 2.1 ($SD = 0.9$) of 3 items. More than 75% of the respondents knew that if HIV is treated appropriately, an HIV-infected person can live >20 years. About 73% of the respondents knew that HIV cannot be transmitted via kissing, and 55% knew that HIV cannot be transmitted via mosquito bites (Table 2).

About one-third of the respondents were neutral in attitude and agreed that they attributed their aches and

pains to HIV/AIDS. About 30% of the population were neutral, and agreed that they avoided watching TV programs about HIV/AIDS. Approximately 44% were neutral or agreed that they frequently checked their body for signs of HIV/AIDS. Respondents’ mean phobia score toward HIV/AIDS was 6.8 ($SD = 2.5$) of a maximum possible score of 15. The overall perceived self-efficacy of the respondents was high. The perceived self-efficacy was 15.4 ($SD = 2.9$) of a maximum possible score of 20. A few respondents (15.7%) disagreed that they could say no to sex when their partner wanted sex and they didn’t. Less than 15% disagreed that they had confidence in their ability to use condoms when they were excited, and when their partner did not wish to use them. Only about one-tenth of the respondents agreed that it was difficult to talk about condom use with their partner.

3.3. HIV sexual risk practices among MSM

Table 3 shows key sexual practices among MSM in South Korea. Only 33.1% of study participants ($n = 1070$) currently have a steady homosexual partner. Approximately 60.1% had anal sex with male sex partners (MSP) in the past 6 months; about 66.7% ($n = 448$) of those who engaged in anal sex with MSP ($n = 643$) had two or more sexual partners in the last 6 months; 16.1% had more than 6 male anal sex partners.

Table 2. HIV-related knowledge, phobia and self-efficacy

Knowledge	True	False	Don’t know		
If HIV is treated properly, an average HIV-infected person can live more than 20 years (T)	78.2	6.2	15.6		
HIV could be transmitted via kissing (F)	20.8	72.7	6.4		
HIV could be transmitted via mosquito bites (F)	27.7	55.0	17.3		
<i>Total knowledge score: Mean (SD) = 2.1 (0.9)</i>					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Phobia					
When I feel an ache or pain, I assume it is due to HIV/AIDS.	31.0	34.9	18.2	12.6	3.3
I avoid watching TV programs about HIV/AIDS.	29.3	40.9	18.7	8.7	2.3
I frequently check my body for signs of HIV/AIDS.	23.5	32.5	26.3	13.5	4.3
<i>Total phobia scale: Mean (SD) = 6.8 (2.5)</i>					
Self-efficacy					
I can say no to sex when my partner wants sex and I don’t	2.7	13.0	23.8	38.3	22.1
It’s difficult to talk about condom use with my partner. ^a	36.1	42.6	11.6	6.5	3.2
Confidence in ability to use condoms when I am excited	2.7	9.8	16.4	39.1	32.1
Confidence in ability to use condoms when partner doesn’t want to use them.	2.5	7.0	18.2	41.7	30.6
<i>Total self-efficacy: Mean (SD) = 15.4 (2.9)</i>					

^aReverse code.

Table 3. HIV-related sexual behaviors among MSM in South Korea ($n = 1070$)

Characteristic		<i>n</i>	%
Had regular partner		354	33.1
Had anal sex in last 6 months		643	60.1
Number of MSPs in last 6 months ($n = 643$)	2	214	33.3
	2–5	326	50.7
	≥6	103	16.0
Paid for sex in last 6 months		79	7.4
Had HIV testing among not HIV infected persons ($n = 1041$) ^a		623	59.8
Had sex with FSP in last 12 months		249	23.3
Number of FSP in last 12 months		Mean (SD)	2.62 (6.28)
Condom use at last anal sex ($n = 643$)		429	66.7
Frequency of condom use during anal sex ($n = 643$)	Almost always	296	46.0
	Frequently	182	28.3
	Sometimes	79	12.3
	Seldom	77	12.0
	Don't know	9	1.4
Condom use at last sex with FSP ($n = 249$)		127	51.0
Frequency of condom use with FSP ($n = 249$)	Almost always	76	30.5
	Frequently	45	18.1
	Sometimes	30	12.0
	Seldom	91	36.5
	Don't know	7	2.8

^aExcluded HIV infected persons ($n = 29$).

FSP = Female Sex Partner; MSP = Male Sex Partner; SD = Standard Deviation

Only 7.4% reported that they had paid for sex in the past 6 months. The percentage that had taken an HIV test in the past 12 months was 59.8%.

A proportion of 23.3% of the respondents had sexual intercourse with FSPs within the past 12 months. More respondents used condoms during the most recent instance of sex, with condoms used for 66.7% of the most recent anal sex acts with MSPs, and only 51.0% of the most recent sex acts with FSPs. An identical pattern is observed generally in terms of the frequency of condom use in the past 12 months with MSPs as opposed to FSPs ('almost always' or 'frequently' for male = 74.3% and female = 48.6%).

3.4. Predictors that affect condom use at most recent sex with male partner

The demographic and contextual variables (age, education, marital status, sexual orientation, and status of coming-out), HIV-related knowledge, attitudes (HIV/AIDS phobia and self-efficacy), and sexual behavior (HIV test, regular partner, number of MSPs, paid for sex, and sex with FSPs) significantly associated with condom use at most recent anal sex in bivariate analyses were the knowledge, self-efficacy, HIV test, and regular partner variables. Table 4 summarizes the results. After controlling for age, education, marital status, and sexual identity, predictors of condom use at most recent anal sex included knowledge (OR = 1.25; $p < 0.0001$), such

that higher knowledge use was associated with more frequent condom use; self-efficacy (OR = 1.33; $p = 0.02$), such that higher self-efficacy was correlated with more frequent condom use. Having been tested for HIV (OR = 1.45; $p = 0.02$); and having a regular partner (OR = 0.53; $p < 0.0001$) were also positively associated with more frequent condom use.

4. Discussion and Conclusion

This study was conducted for the first time in South Korea by recruiting a large random sample of MSM. The methodology of Internet use in this study maximized the confidentiality of the MSM. However, there were concerns about representativeness due to Internet access and willingness. The demographics of this study sample had several interesting distinctions, including high education level. South Koreans tend in general to be highly educated. The average South Korean will go to college; this is especially true with the younger generations. Our data were gleaned from younger subjects in general; this could partially explain the high level of education. A previous study of Korean youths [14] found similarly higher levels of education among the young. Based on the results of this survey, it appears that MSM in Korea are more highly educated. These are all groups that are more likely to both have Internet

Table 4. Bivariate and multivariable logistic regression analyses of predictors of condom use at last anal sex ($n = 643$)

Characteristic		Odds Ratio (Unadjusted Bivariate Models)	p	Odds Ratio (Adjusted Multivariable Model) ^a	p
Age(y)	20-39	1.19	ns	1.18	ns
	40-59	1.00	-	1.00	-
Education	Secondary or less	1.19	ns	1.67	ns
	2 year college or more	1.00	-	1.00	-
Marital status	Married/Divorced/Widowed	0.77	ns	0.77	ns
	Never married	1.00	-	1.00	-
Sexual orientation of exclusively homosexual	Yes	1.20	ns	1.21	ns
	No	1.00	-	1.00	-
Status of coming out	Yes	0.77	ns	0.79	ns
	No	1.00	-	1.00	-
STIs	Yes	1.35	ns	1.41	ns
	No	1.00	-	1.00	-
HIV positive	Yes	2.73	ns	3.30	ns
	No	1.00	-	1.00	-
Knowledge	(continuous scale)	1.22	0.03 ^a	1.25	0.02 ^a
Phobia	(continuous scale)	1.00	ns	1.01	ns
Self-efficacy	(continuous scale)	1.33	<0.0001 ^b	1.33	<0.0001 ^b
Had regular partner	Yes	0.53	<0.0001 ^b	0.53	<0.0001 ^b
	No	1.00	-	-	-
Number of MSP	<2	1.00	-	1.00	-
	≥2	1.36	ns	1.34	ns
Paid sex in the last 6 months	Yes	0.92	ns	0.91	ns
	No	1.00	-	1.00	-
HIV test	Yes	1.47	0.03 ^a	1.45	0.03 ^a
	No	1.00	-	1.00	-
Had sex with FSP	Yes	1.29	ns	1.29	ns
	No	1.00	-	1.00	-

^a $p < .05$, ^b $p < .001$.

ns = not significant.

access and to use the Internet socially. This makes it difficult to clarify if the demographic differences are due to use of an Internet survey method or inherent to the MSM community. Internet sampling validity is still being studied. Numerous studies have found that sampling over the Internet instead of other traditional means can lead to a variety of differences. Further research using other, non-Internet based sampling should corroborate or disconfirm this demographic information.

Several studies have demonstrated that there is a great deal of variance by country in how many MSM are married, although in most Chinese studies, between 60 and 80% of participants are unmarried [24,25]. Approximately 29.2% of MSM respondents reported having ever been married, which is similar to the results (30%) found in the study of Lau et al [25]. Interestingly, Choi et al [10] determined that the majority of older men are married, whereas younger men were frequently single. Generally, those who are older, richer, and more educated have more social pressure to conform to traditional social values, which leads to their experiences with female sexual partners. Many of the MSM

respondents were bisexually active: 23.3% had had FSPs in the last 12 months. In our study, 51% of respondents did not use a condom in the last sex with a FSP and they had multiple FSPs (mean of the number of FSPs: 2.62). Only 30.5% of the respondents almost always used a condom with FSPs. Therefore, the MSM population in Korea can serve as an HIV bridge population to the general female population and to female sex workers. This study of MSM in South Korea found an HIV prevalence of 2.7%, which is much higher than the prevalence (0.1%) in the general Korean population [25]. According to Yang and Choi [26] estimated HIV prevalence among homosexuals was 4.5% to 5% with population size of 70,000 to 155,000. Further studies will be necessary to confirm this infection rate. The results of this study indicate that MSM are frequently referred to as a hidden population that contributes to HIV/AIDS infection in Korea.

We determined that the MSM in our study had higher levels of knowledge than the general population. While 78.2% of the MSM knew that if HIV is treated properly, an HIV infected person can live over 20 years, only 44.0% of the general population had this knowledge.

While approximately 73% of the MSM knew that HIV cannot be transmitted via kissing and 55% knew that HIV cannot be transmitted via mosquito bites, only 46.4% and 22.8% of the general population, respectively, knew this [22]. In our study, knowledge was a predictor of condom use. Previous research supports these findings [14]. Studies in China and Thailand have found the same association between HIV/AIDS knowledge, finding that more inconsistent condom use was associated with lower levels of knowledge [11,15]. Interestingly, Chandra et al [27], have determined that phobia and lower levels of HIV/AIDS knowledge are frequently connected. Taking steps to increase education among the groups most at risk will help increase the self-efficacy of condom use, reduce the incidence of risky sexual behavior, and reduce HIV infection rates.

The perceived AIDS phobia appears to be high. Approximately one-third of the respondents were neutral in attitude, and agreed that they attributed their aches and pains to HIV/AIDS. According to Chandra et al [27], AIDS phobia was linked mostly to MSM and IVD users, especially those who practiced risky sexual behaviors. In our study, phobia was not a predictor of condom use. Further studies will be necessary to confirm this result. High self-efficacy is one of the most important predictors of behavior change [14]. Self-efficacy was high overall (approximately 70%). The self-efficacy in our study was high in terms of an individual's confidence in the ability to use condoms when they were excited and when their partner did not wish to use them. Only 10% thought that it was difficult to talk about condom use with their partner. In our study, self-efficacy was a predictor of condom use after controlling for age, education, marital status, and sexual identity. These findings are similar to a recent study of condom-related attitudes in Korea using a sample of 1106 sexually experienced people aged 18 to 59 years [14, 28]. The results of this study indicated that HIV prevention and reproductive health programs should focus on increasing self-efficacy in condom use among the Korean MSM.

Although factual knowledge and phobias regarding HIV/AIDS and self-efficacy were high among MSM, we suspect that MSM in Korea encounter fewer social supports to ameliorate high-risk behaviors, and do not benefit from well-organized community social structures which permit efficient behavioral norm redefinition.

Although the numbers vary, numerous studies have demonstrated that approximately half of the MSM in Southeast Asia engage in unprotected sex [11]. Inconsistent condom use is also very common. The results of this study indicate that MSM in Korea have slightly higher levels of condom usage than in other similar countries. However, only 27.7% almost always use condoms during anal sex, meaning that approximately 75% of the survey participants use condoms inconsistently. This leaves the MSM community dangerously

vulnerable to STIs. Increasing regularity of condom use is a pressing need within this high-risk group. Additionally, respondents in our study used condoms less frequently with female partners than with male partners. One Chinese study found that condom use is generally lower with female partners, and that MSM are more likely to have extramarital partners and to engage in risky sexual behavior [29]. As Choi et al [24] have already found, this leaves women particularly vulnerable to the spread of HIV/AIDS from the higher-risk MSM community. Prevention programs should incorporate an awareness of the increased vulnerability of female partners. To maximize efficacy, efforts to reach hidden subpopulations of MSM in Korea remain necessary. Such intervention programs for MSM in Korea may need to consider societal and cultural pressure to reduce infection risk.

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