The Relationship Between Self-Reported Sexually Explicit Media Consumption and Sexual Risk Behaviors Among Men Who Have Sex With Men in China

Yin Xu, MSc;1,2 Yong Zheng, PhD;1 and Qazi Rahman, PhD2

ABSTRACT

Introduction: Previous studies have indicated that viewing sexually explicit media (SEM) might be associated with sexual risk behaviors in men who have sex with men (MSM). However, most prior research has not explored this association cross-culturally or the potential influence that important covariates might have on the association.

Aim: To explore the association between self-reports of viewing SEM depicting various sexual risk behaviors and engagement in sexual risk behaviors after controlling for relevant covariates in MSM in China.

Methods: Three hundred fourteen Chinese MSM participated in a web-based survey.

Main Outcome Measures: SEM consumption, sexual risk behavior, and measurements of covariates.

Results: SEM consumption was frequent in MSM in China. Viewing a larger proportion of SEM depicting sexual risk behaviors was associated with a larger number of regular partners with whom MSM reported engaging in sexual risk behaviors, but not with the number of casual partners, after controlling for covariates. HIV-related knowledge and seeking male sex partners were associated with the number of regular partners with whom MSM had engaged in sexual risk behaviors. Seeking sexual sensation, HIV-related knowledge, and seeking male sex partners were associated with the number of casual partners with whom MSM had engaged in sexual risk behaviors.

Conclusion: Future research exploring the relation between SEM use and sexual health risk behaviors should consider theoretically important psychological and behavioral covariates.

INTRODUCTION

Meta-analyses have indicated that the prevalence of HIV in men who have sex with men (MSM) in China is substantial, with an estimated prevalence ranging from 2.5% to 5.3% and increasing.1–5 Further research has suggested that unprotected anal intercourse (UAI) is a major risk factor for HIV infection in MSM and that the prevalence of UAI in MSM is high in China (the estimated prevalence of UAI was 50% from 2008 through 2012).6–9 Further studies are needed to explore the factors associated with UAI and other sexual risk behaviors in MSM in China to better target behavioral prevention strategies.

Prior studies have described many factors associated with UAI in MSM in China, including the venues where MSM meet sex partners, substance use, number of sex partners, levels of impulsivity, education, and intentions to use condoms.10–13 However, the potential association of another factor, sexually explicit media (SEM) consumption, with sexual risk behaviors in MSM in China has not been examined until the present study.

SEM CONSUMPTION IN MSM

In China, sex education in schools on topics considered socially taboo (eg, sexuality, HIV, and same-sex sexual orientation) is very limited.14 Research also indicates that very few parents provide education or knowledge about sex.15 Thus, men attracted to men or MSM might seek out alternative sources of sexual information, including SEM. Although no studies have explored SEM consumption in MSM in China, prior studies have indicated that the SEM consumption is common and...
frequent in MSM in Western countries.\textsuperscript{16,17} Thus, SEM consumption also might be frequent in MSM in China.

\section*{SEM Consumption and Sexual Risk Behaviors in MSM}

Viewing SEM can have positive influences on the sexual health of MSM.\textsuperscript{18,19} For example, viewing SEM can aid in the learning of performing same-sex sex,\textsuperscript{20,21} promote self-recognition of same-sex attractions,\textsuperscript{20,22} and clarify sexual self-labels.\textsuperscript{23} However, SEM depicting male same-sex acts often contain several potentially risky sexual behaviors associated with the risk of contracting sexually transmitted infections, including UAI, ejaculation in the mouth (EM), and ejaculation in or on or rubbed into the anus (EA).\textsuperscript{24} Some studies have associated the viewing of SEM with sexual risk behaviors in MSM.\textsuperscript{25,26} Naturally, without the benefit of longitudinal designs, such studies (including the present study) cannot test for causality and necessarily rely on self-report. However, cross-sectional survey studies can help to clarify definitions of the relevant factors (eg, SEM use) and lend plausibility to hypotheses on the origins of the association between SEM and sexual risk behavior. Cross-sectional survey methods also are often the only way to access under-represented or sexual minority populations, especially in cultural contexts in which certain sexual behaviors or sexual identities are highly stigmatized (eg, China). Critically, they can guide future prospective empirical work by identifying the kinds of factors that might be important to focus on.

It is important to note that many prior studies have yielded inconsistent results. Some studies have failed to show an association between SEM consumption and safer sex practice beliefs, or interests in having UAI.\textsuperscript{27,28} One study reported that more attention or exposure to condom-less SEM was associated with decreased safe-sex intentions.\textsuperscript{29} Another study observed a marginal association between condom-less SEM consumption and engaging in UAI in MSM who viewed SEM longer than 1 hour per day.\textsuperscript{16} Some studies also have associated greater SEM consumption with greater odds of engaging in UAI\textsuperscript{26,30--33} or serodiscordant UAI,\textsuperscript{35} having more male sexual partners,\textsuperscript{34} and more interest in group sex.\textsuperscript{35}

\section*{Limitations of Prior Research}

Some limitations of prior research require comment. Although several studies used the total time spent viewing SEM as a measurement of SEM consumption, they did not differentiate the time spent viewing SEM depicting safer sexual behaviors (eg, anal sex with condom) from sexual risk behaviors (eg, UAI).\textsuperscript{27,28} For example, compared with MSM who viewed SEM depicting safe sex or conventional sex, MSM who watched a greater range of sex acts tended to specifically view UAI more frequently, have greater SEM consumption, and have lower condom use self-efficacy (CUSE).\textsuperscript{36} Thus, individuals with the same SEM viewing times might view SEM depicting diverse sexual behaviors. Research also has suggested that total time spent viewing SEM is not associated with engagement in sexual risk behaviors. Instead, viewing a larger proportion of SEM depicting UAI has been associated with engagement in more UAI.\textsuperscript{16,20} Thus, it could be important to make a distinction between the times spent viewing SEM depicting safer sexual behaviors and SEM depicting sexual risk behaviors. Prior studies also have tended to focus on UAI as the sexual risk behavior or the behavior of interest as depicted in the SEM.\textsuperscript{25,26} However, SEM depicting male same-sex acts often contain several potentially high-risk sexual behaviors including exchange of semen, EM, and EA, which require further study.\textsuperscript{24}

Almost all prior studies have focused on ethnically white men. Given the potential implications for global sexual health in MSM, especially those from developing nations, the association between SEM consumption and sexual risk behavior also should be tested in non-Western samples. Replication of the hypothesized associations in such samples lends plausibility to the proposed mechanisms underlying any associations in Western samples.

Previous research has focused mainly on UAI with casual partners\textsuperscript{16,27} or has not differentiated UAI with regular partners from UAI with casual partners.\textsuperscript{30,31} Research has suggested that UAI with regular partners occurs frequently in MSM.\textsuperscript{37,38} Findings from MSM in five US cities estimated that 68\% of HIV transmissions were from regular partners.\textsuperscript{39} A meta-analysis also showed that the estimated prevalence of UAI with regular male partners is 45\% in MSM in China.\textsuperscript{9} Thus, examining reports of UAI with regular partners is important for further research.

Most prior research has not explored the potential influence that relevant covariates (eg, those reviewed earlier) have on the association between SEM consumption and sexual risk behaviors. CUSE could be an important mediating factor,\textsuperscript{32,33} but the role of other covariates, including the degree of sexual arousal when viewing SEM, socio-sexual orientation (SOI), seeking sexual sensation (SSS), internalized homophobia (IH), HIV-related knowledge, and seeking male sex partners, is poorly studied. Sexual arousal could be an important covariate because prior research has indicated that MSM who find SEM depicting various sexual risk behaviors sexually arousing might be more likely to engage in those behaviors than MSM who are not as sexually aroused.\textsuperscript{40}

SOI is a trait that refers to an overall preference for short-term or uncommitted sexual relationships.\textsuperscript{41} One study in China reported that SOI behavior and desire subscale scores were associated with online sexual activity (including viewing SEM).\textsuperscript{42} Other studies have associated unrestricted socio-sexuality with a greater odds of engagement in unprotected sexual intercourse\textsuperscript{43} and a larger number of lifetime sex partners.\textsuperscript{44,45} Importantly, these relations have been reported in studies focusing on heterosexual individuals and not on MSM.
SSS is defined as “the propensity to attain optimal levels of sexual excitement and to engage in novel sexual experiences.”

Prior research has suggested that exposure to SEM can increase levels of SSS, thereby promoting sexual risk behaviors. Research also has speculated greater SSS could increase SEM consumption and, hence, more sexual risk behaviors. Studies appear to indicate that higher IH is associated with engagement in more sexual risk behaviors, although the evidence is somewhat mixed. However, no studies have explored the potential influences of SSS, IH, and seeking male sex partners on the association between SEM consumption and sexual risk behavior in MSM.

AIMS

The objectives of the present study were to explore the association between self-reports of viewing SEM depicting various sexual risk behaviors and subsequent engagement in such behaviors after controlling for potentially important covariates (outlined earlier) in MSM in China. We hypothesized that SEM consumption would be very frequent and that viewing SEM depicting various sexual risk behaviors would be associated with reported sexual risk behaviors even after controlling for covariates among MSM in China.

METHODS

Participants

All study procedures were approved by the ethics committee of a local university before data collection, and informed consent was obtained from all participants. Data were collected through a web-based survey hosted by Wenjuanxing (a Chinese survey website). Participants were recruited by notices placed on Chinese websites that serve MSM, including MSM forums and chat rooms. Participants were required to complete a questionnaire composed of measurements of sexual orientation, SEM consumption, sexual risk behavior, covariates, and demographic information. A total of 420 participants initially responded to the questionnaire. However, participants were eligible only if they identified as male and reported ever having had sex with men. Thus, the final sample consisted of 314 Chinese MSM from 29 provinces of China. Table 1 presents the demographic information of the participants. The mean age of this sample was 25.46 years (SD = 6.46 years, range = 15–56 years). Participants identified primarily as Han Chinese (94.27%), single (57.64%), and self-identified as homosexual or bisexual men (97.45%).

Measurements

Sexual Orientation

Sexual orientation was measured by three items pertaining to sexual attraction, sexual behavior, and sexual identity on a seven-point Kinsey-like scale. Participants were asked which sex they felt sexually attracted to (0 = exclusively opposite sex to 6 = exclusively same sex), the sex of their lifetime sexual partners (0 = exclusively opposite sex to 6 = exclusively same sex, 7 = no sexual experience), and their general sexual identification (“What is your sexual orientation?”; 0 = exclusively heterosexual to 6 = exclusively homosexual).

SEM Consumption

SEM consumption was measured by three subscales pertaining to the duration of viewing SEM, the proportion of SEM they viewed that depicted various sexual behaviors, and the degree of sexual arousal when viewing SEM depicting various sexual behaviors. Participants were asked to choose the duration they spent viewing SEM in a typical week during the past 3 months on a five-point scale (1 = 0 minute, 2 = 1 minute to 1 hour, 3 = 1–3.5 hours, 4 = 3.5–7 hours, 5 = >7 hours; as used by Traeen et al). Participants also were asked to choose

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<th>Table 1. Demographic information of participants (N = 314)</th>
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<td>Age (y), mean (SD)</td>
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<td>Educational level, n (%)</td>
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<td>Junior high school or less</td>
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<td>Sexual identity, n (%)*</td>
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<td>Bisexual</td>
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<td>Sexual attraction, n (%)*</td>
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<td>Sexual behavior, n (%)*</td>
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<td>Bisexual</td>
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<td>Homosexual</td>
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*Those with a score of 0 or 1 were classified as heterosexual, those with a score from 2 to 4 were classified as bisexual, and those with a score of 5 or 6 were classified as homosexual. When sexual orientation was measured by sexual behavior, individuals without any same-sex sexual experiences were excluded from analyses (n = 65).
the proportion of SEM they viewed that depicted UAI, EM, and EA on a five-point scale (1 = none, 2 = 1–24%, 3 = 25–49%, 4 = 50–74%, 5 = 75–100%). Participants were asked to report their degree of sexual arousal when viewing SEM depicting UAI, EM, and EA by one item, “How sexually aroused do you feel?” on a seven-point Likert-type scale (0 = no arousal at all to 6 = extremely sexually aroused). The one-item scale used in the present study is similar to those used and validated in previous studies on subjectively reported sexual arousal.52,53

Sexual Risk Behavior
Participants were asked to provide the number of regular (identiﬁed as “boyfriend” or “lover”) and casual male sex partners in the past 3 months with whom they had engaged in insertive UAI, receptive UAI, insertive EM, receptive EM, insertive EA, and receptive EA.

Socio-Sexual Orientation
SOI was assessed using the Revised Sociosexual Orientation Inventory.41 The scale has nine items that examine past sexual behavior experiences, attitudes toward uncommitted sex, and desire for casual or uncommitted sex. Studies have provided evidence for the validity of the scale’s construct.41 An example item is, “I can imagine myself being comfortable and enjoying ‘casual’ sex with different partners.” Items were rated on a nine-point scale. The Chinese version of the SOI scale was translated from the original and back-translated. The Cronbach α values of the three subscales in the present sample were 0.83, 0.65, and 0.89, respectively.

Seeking Sexual Sensation
SSS was measured with the Sexual Sensation Seeking scale.54 This scale has 11 items that measure an individual’s propensity to seek sexual excitement and to engage in novel sexual experiences. Studies have provided evidence for validity of the scale’s construct.54 An example item is, “I am interested in trying out new sexual experiences.” Items were rated on a four-point scale (1 = not at all like me to 4 = very much like me). The Chinese version of the SSS scale was translated from the original and back-translated. The Cronbach α of the scale in the present sample was 0.88.

Condom Use Self-Efficacy
CUSE was measured with the Condom Use Self-Efficacy Scale.55 This scale has 15 items that measure individuals’ conﬁdence in their capacity to use a condom in various situations. Studies have provided evidence for validity of the scale’s construct.55,56 An example item is, “I feel conﬁdent in my ability to suggest using condoms with a new partner.” Items were rated on a ﬁve-point scale (1 = strongly disagree to 5 = strongly agree). The Chinese version of the CUSE scale was translated from the original and back-translated. The Cronbach α of the scale in the present sample was 0.90.

Internalized Homophobia
IH was measured with the Internalized Homobia Scale.57 This scale has nine items that measure gay men’s dissatisfaction with their same-sex sexual orientation and desire to avoid it. Studies have provided evidence for the validity of the scale’s psychometric properties.58,59 An example item is, “I tried to become more sexually attracted to women.” Items were rated on a ﬁve-point scale (1 = strongly disagree to 5 = strongly agree). The Chinese version of the IH scale was translated from the original and back-translated. The Cronbach α of the scale in the present sample was 0.90.

HIV-Related Knowledge
HIV-related knowledge was assessed by ﬁve questions adopted from a prior study.60 An example item is, “Can using condoms reduce the risk of HIV transmission?” Participants were asked to choose from “yes,” “no,” and “don’t know” in reply to ﬁve questions. For each question, response was classified as 1 (correct answer) or 0 (incorrect answer or unknown). The scale for HIV-related knowledge was constructed as a sum of the scores for all ﬁve questions, with a total score ranging from 0 to 5.

Perceived Risk of HIV Infection
Perceived risk of HIV infection was assessed by one question adopted from a prior study, “What is the possibility for you to catch HIV?”61 Items were rated on a four-point scale (1 = completely impossible to 4 = very possible).

Seeking Male Sex Partners
Participants were asked to choose the frequency of using each of ﬁve kinds of venue for ﬁnding male sex partners on a nine-point scale (1 = never, 2 = very seldom, 3 = approximately once every 2 or 3 months, 4 = approximately once a month, 5 = approximately once every 2 weeks, 6 = approximately once a week, 7 = several times per week, 8 = nearly every day; 9 = at least once a day). The ﬁve venues included bars, clubs, discos, and tearooms; bathhouses, saunas, and massage parlors; parks or other public areas; internet sites; and others.62 The scale for seeking male sex partners was constructed as an average score of all ﬁve questions, with a mean score ranging from 0 to 9.

Demographic Information
Demographic information included participants’ sex, age, education level (junior high school or less, senior high school, college, or postgraduate or higher), ethnicity (Han or ethnic minority), province of residence, HIV status (negative, positive, or unknown), and current relationship status (single and not dating, single and dating more than one person, in a relationship with a duration < 3 months, in a relationship with a duration 3–6 months, in a relationship with a duration 6–12 months, in a relationship with a duration 1–5 years, or in a relationship > 5 years).
Data Transformation

We created a composite sexual risk behavior outcome variable separately by partner type (regular partners and casual partners). This included the number of sexual partners and the type of sexual risk behavior (eg, UAI, EM, and EA). These were standardized within participants using z-scores. The composite sexual risk behavior outcome variable was computed by adding those z-scores within participants. We also created a composite proportion of SEM viewed (depicting different sexual risk behaviors) as a predictor. The proportion of SEM viewed separately by type of sexual risk behavior was standardized within participants using z-scores. Then, a composite proportion of SEM viewed was computed by adding those z-scores within participants. The same method was used to compute a composite proportion for sexual arousal when viewing SEM depicting different sexual risk behaviors. Tables 2 to 4 present untransformed data for clarity for the reader.

Data Analysis

A three-step hierarchical multiple regression was used to examine the relative importance of predictors entered in step 3 to predictors entered in steps 1 and 2 and to explore whether there were significant associations between predictors entered in step 3 and the dependent variable after controlling for the covariates entered in previous steps. This allowed us to test the associations between self-reports of viewing SEM depicting various sexual risk behaviors and engagement in those behaviors separately by partner type. This resulted in two different regression models (one for regular partner and one for causal partner). The multiple regressions used a composite sexual risk behavior index as the dependent variable. In the first step, covariates, including age, HIV status, ethnicity, education, degree of sexual arousal when viewing SEM, SSS, IH, CUSE, SOI, perceived risk of HIV infection, HIV-related knowledge, and seeking male sex partners, were entered. In the second step, the time they spent viewing SEM was entered. In the third step, the composite proportion of participants who viewed SEM that depicted sexual risk behaviors was entered.

RESULTS

SEM Consumption

Table 2 presents SEM consumption. Most participants reported having viewed SEM (93.63%), SEM that depicted UAI (80.89%), SEM that depicted EM (80.25%), and SEM that depicted EA (83.76%) in the past 3 months.

Associations Between SEM Consumption and Sexual Risk Behaviors

Table 3 presents mean and SD values of partners (regular vs casual) with whom participants engaged in different sexual risk behaviors. Table 4 presents the results of the hierarchical multiple regressions for regular partners. The analysis showed that HIV-related knowledge and seeking male sex partners were significantly associated with the number of regular partners with whom MSM had engaged in sexual risk behaviors. Time spent viewing SEM was not a significant predictor. The proportion of SEM viewed depicting sexual risk behaviors was significantly associated with the number of regular partners with whom MSM had engaged in sexual risk behaviors after controlling for covariates. The proportion of SEM viewed accounted for a small amount of the variance ($R^2$ for change = 0.10).

Table 4 also presents the results of the hierarchical multiple regressions for casual partners. The analysis showed that SSS, HIV-related knowledge, and seeking male sex partners were significantly associated with the number of casual partners with whom MSM had engaged in sexual risk behaviors. Neither time spent viewing SEM nor the proportion of SEM viewed depicting sexual risk behaviors after controlling for covariates was a significant predictor.

DISCUSSION

The present study produced three tentative findings. First, SEM consumption is frequent in MSM in China.
viewing SEM depicting sexual risk behaviors was associated, to a small degree, with engagement in sexual risk behaviors with regular partners after controlling for some important covariates. Third, viewing SEM depicting sexual risk behaviors was not associated with engagement in such behaviors with casual partners after controlling for covariates.

We found that most participants (93.63%) reported having viewed SEM and 46.81% of them reported having spent more than 1 hour per week viewing SEM in the past 3 months. This result suggests that the SEM consumption is common and frequent for MSM in China. Not only does this result support the findings of previous research, but it also extends those findings to a sample of Chinese MSM for the first time.\(^{16,17}\)

The results showed that viewing a larger proportion of SEM depicting sexual risk behaviors was associated with a larger number of regular partners with whom MSM had engaged in sexual risk behaviors after controlling for covariates. However, the total time MSM spent viewing SEM was not a significant predictor. This result further indicates that it is the proportion of SEM depicting sexual risk behaviors MSM viewed instead of total time spent viewing SEM that appears to be important, consistent with prior studies.\(^{16,30}\)

Although the cross-sectional design of the present study clearly precludes any comment on causation or the chronology of the association between SEM consumption and engaging in sexual risk behaviors, several theories have been offered to explain the

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<th>Table 3. Mean (SD) of partners (regular vs casual) with whom participants engaged in different sexual risk behaviors</th>
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EA-I = insertive ejaculation in or on or rubbed into the anus; EA-R = receptive ejaculation in or on or rubbed into the anus; EM-I = insertive ejaculation in the mouth; EM-R = receptive ejaculation in the mouth; UAI-I = insertive unprotected anal intercourse; UAI-R = receptive unprotected anal intercourse.

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<th>Table 4. Regression models for demographic factors, covariates, and SEM consumption variables predicting number of sexual partners with whom participants engaged in sexual risk behaviors (separately by partner type)</th>
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<td><strong>Step 1</strong></td>
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<td>Age</td>
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<td>Seeking male sex partners</td>
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<td>Time spent viewing SEM</td>
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<td>Proportion of SEM depicting sexual risk behaviors</td>
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CUSE = condom use self-efficacy; IH = internalized homophobia; SEM = sexually explicit media; SOI = socio-sexual orientation; SSS = sexual sensation seeking.

*P < .05; †P < .01; ‡P < .001.
relation. Some researchers have suggested that viewing SEM depicting sexual risk behaviors can lead MSM to perceive that engagement in such behaviors is common and acceptable, which then can increase their possibility of initiation and engagement in corresponding sexual risk behaviors. Alternatively, others have suggested that MSM might choose to view SEM depicting certain sexual risk behaviors because they already have a preference for those behaviors or previously initiated the corresponding sexual behaviors.

It is important to note that viewing SEM depicting sexual risk behaviors accounted for only a small portion of the variance after controlling for covariates ($R^2$ for change = 0.008–0.10). This suggests that other factors must contribute to engagement in sexual risk behaviors by MSM and those factors loom much larger than SEM consumption.

Although the variance in sexual risk behaviors explained by SEM consumption was small, the potential influence of SEM consumption on engagement in sexual risk behaviors should not be interpreted as unimportant. Prior research has suggested that the association between SEM consumption and engagement in sexual risk behaviors might be mediated by other factors (eg, CUSE) and the interaction of these factors might have strong predictive utility. This is important because some explanations have posited that "third variables" might mediate between SEM use and sexual risk behaviors, including personality or trait-based factors (such as seeking sensation or SOI). The present results also suggest that future research should consider partner type. Research has suggested that whether MSM adopt new sexual risk behaviors viewed in SEM also might depend on duration and trust in a partnership. The trust between MSM and their regular partners might be strengthened with the duration of the relationship and cascade into engagement in sexual risk behaviors with a regular partner from familiarity, trust, perceived lower risk, or overconfidence in managing risk behaviors. This could explain the association between viewing SEM depicting sexual risk behaviors and engagement in such behaviors with regular partners, but not with causal partners, reported in this study. Some MSM in the present sample who were in a relationship also reported having engaged in sexual risk behaviors with casual partners. For example, 30 MSM (23.43%) who were in a relationship reported having engaged in receptive UAI with casual partners. Those MSM could have higher risk for acquiring sexually transmitted infections and could pass these infections to their regular partners. Thus, engaging in sexual risk behaviors with regular partners also could pose potential threats to the health of MSM.

In contrast, multiple regressions showed that SSS and HIV-related knowledge were significantly associated with the number of casual partners with whom MSM had engaged in sexual risk behaviors. Prior work has theorized that exposure to SEM can increase levels of SSS, thereby promoting sexual risk behaviors. Greater SSS could increase SEM consumption, thereby creating an association with more sexual risk behaviors. MSM who have knowledge about HIV prevention could have a better understanding about the risks of such behaviors, which might prevent them from engaging in such behaviors.

The present study had several important limitations. First, the cross-sectional design precludes the determination of causal association and the chronology of SEM consumption and engagement in sexual risk behaviors. Second, the convenience sample used in this study was recruited through the internet, and the sample was small. Importantly, individuals who use the internet might not necessarily be representative of all MSM, especially in a cultural context with high levels of social stigma against sexual minorities. Thus, the results might not easily be generalizable to the population at large or MSM who did not use the internet. Third, we relied on self-report methods, which can be subject to social desirability and recall bias. Fourth, the variation of the number of regular or causal partners with whom participants reported engaging in sexual risk behaviors was limited, causing range restriction. Future studies should address these limitations to ascertain whether the present results can be replicated in similar populations and across different sociocultural groups.

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REFERENCES


