

The influence of condom use during the first-time anal intercourse on the subsequent sexual behaviors among young men who have sex with men in China.

Chenchang Xiao^{1,2#}, Wei Wang^{1#}, Yue Cao³, Hong Yan^{1*}, Shiyue Li¹, Jingjing Li¹, Hanbo Wu⁴, Bin Yu⁵

¹Department of Epidemiology and Health Statistics, School of Health Sciences of Wuhan University, Wuhan, Hubei, PR China

²Wuhan University of Science and Technology City College, Hubei, PR China

³Center for Evidence-Based and Translational Medicine, Zhongnan Hospital of Wuhan University, China

⁴School of Demography, College of Arts and Social Sciences, the Australian National University, Australia

⁵Department of Epidemiology, University of Florida, Gainesville, USA

#These authors equally contributed to this work

Abstract

HIV infection rate within Chinese Young Men who have Sex with Men (YMSM) dramatically increased in recent years, and the major cause is widespread unprotected sexual behavior without using condoms. This study explored the influence of condom use during the first-time anal intercourse on subsequent homosexual behaviors among YMSM in China. Multivariate logistic regression analysis was used to identify correlated factors with condom use at the first time; Odd Ratios (OR) with 95% Confidence Interval (CI) were calculated. Of 371 YMSM, 50.7% used a condom during the first-time anal intercourse. YMSM were more inclined to neglect of using a condom during the first-time anal intercourse if they were younger (OR=3.262, P=0.001) or their first-time sexual partners were schoolmates (OR=3.543, P<0.001). Compared to YMSM who used a condom at first time, YMSM who did not use a condom during the first-time anal intercourse were more likely to neglect of using condoms during subsequent oral sexes (OR=2.992, P<0.001), anal sexes (OR=3.144, P<0.001) and sexes after drinking alcohols (OR=5.331, P=0.005). Findings suggest that YMSM who did not use a condom during the first-time anal intercourse were more likely to produce unprotected sexual behavior subsequently.

Keywords: YMSM, First-time anal sex, Condom use, Sexual behavior, HIV/AIDS.

Accepted on October 16, 2017

Introduction

HIV/AIDS incidence among Men who have Sex with Men (MSM) is one of the major contributions to AIDS epidemic in China. In recent years, as the proportion of young MSM (YMSM) population who aged under 25 y old to total MSM population became increasingly large, there has been an increase in the amount of HIV infections among YMSM, especially among students [1]. A Meta-analysis showed that HIV infection rate for Chinese YMSM was 3% (95% CI: 2.1%-4.2%) during 2003 to 2006, and sharply increased to 6.8% (95% CI: 4.7%-9.4%) during 2009 to 2012 [2].

Unprotected sexual behavior (without using condoms) is the major cause for HIV infections, and previous research indicated that the correct and consistent condom use can effectively reduce AIDS infection rate by 85%-90%, therefore

emphasizing the importance of condom use has been a top priority for the global AIDS prevention [3]. However, although the increased adoption of condoms, unprotected sexual behaviors are still widespread among Chinese MSM. Whether to use a condom during the first-time sexual behavior, as known as sexual debut, was found to be closely associated with the condom uses during subsequent sexual behaviors [4,5]. Those people who used a condom during the first-time sex had 10 times the possibility to use condoms during recent sexual intercourse and 20 times the possibility to use condoms over the course of their lifetime compared to those who did not used a condom at the first time [6]. At present, the research on the first-time sexual behavior are mainly focused on heterosexual adolescents rather than YMSM, [5,6]. Whereas YMSM indeed face more difficulties to carry out safe practice when they have their first-time anal intercourse [7].

Although the HIV infection rate for YMSM is rising yearly, there are extremely limited monographic studies on this topic in China, and there are few researches reporting on YMSM's first-time anal intercourse [8-10]. Thus this research intended to clarify the effects of condom use during YMSM's first-time anal intercourse on their future sexual behaviors, and the risk factors influencing condom use at the first time were discussed as well, which might provide a scientific basis for effective early-stage AIDS intervention among Chinese YMSM.

Methods

Sampling and data collection

The criteria of participants recruited: (1) aged 25 y or below; (2) had any homosexual behavior within the last 6 months prior to the study including those MSM reporting heterosexual orientation; (3) agreed to participate in this study. 403 eligible YMSM were recruited through outreach activities and AIDS voluntary counselling and testing services from April to December 2013.

Marked questionnaires were returned from 403 enrollees. All completed questionnaires were reviewed by research staff for completeness and consistency; 32 questionnaires were discarded because there were large amounts of missing data. The remaining 371 questionnaires represented 92.1% of the initial sample.

This study was approved by the Medical Ethics Committee of Wuhan University, and the written consents were obtained from all YMSM who participated in this study.

Measures

The questionnaire involved questions in 3 aspects: (1) demographic information; (2) information of the first-time anal intercourse, including condom use at the first time, age of the participant when the first-time intercourse occurred, age of the sexual partner at the first time, types of the sexual partner at the first time (schoolmate, friend, casual partner); (3) condom use during homosexual behaviors within the last 6 months.

Table 1. Information of the first-time anal intercourse among YMSM.

Measures	Condom use (n/(%))		Univariate analysis		Multivariate analysis	
	Used	Unused	OR (95% CI)	P	OR (95% CI)	P
Age when first-time intercourse (y)						
<18	24 (32.0)	51 (68.0)	3.517 (1.80~6.87)	0	3.262 (1.64~6.48)	0.001
18-21	111 (52.6)	100 (47.4)	1.491 (0.87~2.54)	0.143	1.391 (0.81~2.40)	0.237
>21	48 (62.3)	29 (37.7)	1 (ref)		1 (ref)	
Type of sexual partner						
Schoolmate	21 (28.8)	52 (71.2)	3.714 (2.00~6.88)	0	3.543 (1.89~6.64)	0
Friend	89 (53.0)	79 (47.0)	1.331 (0.84~2.11)	0.226	1.402 (0.87~2.26)	0.167

Statistical analyses

Data manipulations and statistical analyses were performed with statistical software SPSS 17.0. We conducted several univariate logistic regressions and a multivariate logistic regression which only included the significant predictors; The condom use situation was a binary variable which took value 1 for inconsistent condom use and 0 for consistent condom use, so all odds of condom use in this paper were calculated as probability of inconsistent condom use divided by probability of consistent condom use.

Results

Demographic information

The ages of participants ranged from 16 to 25, and the average was (22.05 ± 2.21) ; 96% of them were Han Chinese, and 42.6% were registered in Wuhan; 48% participants were students, and 77.9% had a college education level; overwhelming majority (98.9%) of them were unmarried, and the proportions of homosexuality, bisexuality and heterosexuality were 77.9%, 18.1% and 4.0% respectively; 81.7% participants often made homosexual friends on the internet.

Condom use at the first time

The ages of the first anal intercourses occurred ranged from 12 to 24, with an average of 18.98 ± 2.11 . Three percent sexual partners at the first time were friends, 35.0% were casual partners and 19.7% were schoolmates. Of participants, 50.7% reported using a condom during the first-time anal intercourse. Table 1 showed that ages when first-time anal intercourse occurred and the types of sexual partner at the first time were associated with condom use during the first-time anal intercourse. Those who were less than 18 y old ($OR=3.262$) or whose sexual partners were schoolmates ($OR=3.543$) were less likely to use a condom during first-time anal intercourse.

The influence of condom use during the first-time anal intercourse on the subsequent sexual behaviors among young men who have sex with men in China

Casual partner	78 (60.0)	52 (40.0)	1 (ref)		1 (ref)
Age of sexual partner					
Same age	43 (45.3)	52 (54.7)	1.401 (0.87~2.26)	0.168	—
Younger than the Participant	17 (50.0)	17 (50.0)	1.159 (0.56~2.38)	0.688	—
Older than the Participant	124 (53.7)	107 (46.3)	1 (ref)		—
Occurrence of sexual behavior					
Passive sexual behavior	16 (38.1)	26 (61.9)	1.814 (0.94~3.52)	0.078	—
Initiative sexual behavior	9 (45.0)	11 (55.0)	1.365 (0.55~3.39)	0.503	—
Consensual sexual behavior	163 (52.8)	146 (47.2)	1 (ref)		—

Condom use within recent 6 months

Table 2 indicated that participants using a condom at the first time were more likely to consistently using condoms during oral sexes, anal sexes and sexes after drinking alcohols within recent 6 months (consistent condom use rates for YMSM who used a condom at the first time vs. who did not used at the first time: oral sex 67.9% vs. 32.1%; anal sex 65.5% vs. 34.5%; sex after drinking alcohols 54.8% vs. 45.2%).

The first-time vs. recent 6 months

Table 3 showed that after adjusting for age, ethnic group, census registered location, education level and whether a student or not, the condom use situation at the first-time anal intercourse was strongly associated with the using situation within recent 6 months. In detail, YMSM who did not use a condom during their first-time anal intercourse had 2.992, 3.144 and 5.331 times the odds respectively of neglect of using condoms during oral sexes, anal sexes and sexes after drinking alcohols within recent 6 months compared to YMSM who used a condom at the first time.

Table 2. Information of homosexual behaviors within recent 6 months among YMSM.

Condom use within recent 6 months	Condom use at the first time				χ^2	P	
	Total	Used		Unused			
	n	%	n	%			
Oral sex	340				19.926	0.000	
Consistent use	112	76	67.9	36	32.1		
Inconsistent use	228	96	42.1	132	57.9		
Anal sex	358				24.326	0.000	
Consistent use	145	95	65.5	50	34.5		
Inconsistent use	213	83	39.0	130	61.0		
Group sex	21				0.444	0.505	
Consistent use	10	6	60.0	4	40.0		
Inconsistent use	11	5	45.5	6	54.5		

Sex after drinking alcohols	83					8.619	0.003
Consistent use	31	17	54.8	14	45.2		
Inconsistent use	52	12	23.1	40	76.9		
Sex after taking drugs	73					2.391	0.122
Consistent use	32	15	46.9	17	53.1		
Inconsistent use	41	12	29.3	29	70.7		

Table 3. Relationship of condom using situations between first time and recent 6 months*.

Condom use within recent 6 months	Condom use at the first Time			
	β	SE	OR (95% CI)	P
Oral sex	1.096	0.251	2.992 (1.83~4.89)	0.000
Anal sex	1.145	0.234	3.144 (1.99~4.98)	0.000
Group sex	-0.369	1.195	0.691 (0.07~7.19)	0.757
Sex after drinking alcohols	1.674	0.602	5.331 (1.64~17.35)	0.005
Sex after taking drugs	0.704	0.522	2.021 (0.73~5.62)	0.178

*adjusted for age, ethnic group, census registered location, education level and whether a student or not

Discussions

The condom using rate during the first-time anal intercourse among participants in our sample was 50.7%, which was higher than the using rate among heterosexual male college students in China (33.3%).[11]. This may be due to older ages when the first anal intercourse occurred [12]. Also, this study demonstrated that YMSM's ages when first anal intercourses occurred and types of YMSM's first-time sexual partner were the main factors associated with YMSM condom use during first-time anal intercourse. The ages of first-time sex occurrence tended to be smaller than before for all youths, and YMSM had no exception [13]. Chinese MSM's average ages of first-time homosexual behavior occurrence were 30, 23 and 20 during the period "before 1970", "1970-1980" and "after 1980" respectively [14]. Younger MSM may have insufficient

recognitions on the negative aftermaths of the unprotected homosexual behaviors and hence underestimate the aftermaths, in other words, a lot of younger MSM do not prepare well for the first-time anal intercourse, so they are easily to have unprotected homosexual behaviors [15,16]. A study asserted that among African American, the younger a MSM had his first anal intercourse, the less possible he would use condom, [17]. And this paper evaluated an analogous result, Chinese YMSM aged under 18 y had 3.262 times possibility of neglect of using a condom during first-time intercourses compared to YMSM aged above 21 y.

Some researches argued that there was a strong association between condom use and degree of familiarity with sexual partners during first-time anal intercourse. [18,19]. This study verified the argument as well. In our sample, YMSM whose first-time sexual partners were schoolmates had 3.543 times the odds of neglect of using a condom at the first time compared to YMSM who had first sex with casual partners. The possible reason may be that schoolmates were familiar with and trust each other, so they would not regard condoms as a necessary when they had anal intercourses at the first time.

The analyses of the correlation between condom use at the first time and within recent 6 months among YMSM suggested that condom use in the first homosexual experience is a predictor of the condom use in oral sexes, anal sexes and sexes after drinking alcohols. Participation who did not use a condom during first-time sex were respectively 2.992 times (oral), 3.144 times (anal) and 5.331 times (after drinking) more likely to engage in unprotected sexual behaviors within recent 6 months than that of condom users. However, we failed to find the relationship between condom uses at the first time and during recent 6 months' group sexual behaviors and sexual behaviors after taking drugs, this may be attributed to the uncontrollability of these 2 sexual behaviors, and this uncontrollability may weaken the effect of first-time condom use on subsequent sexual behaviors [20]. Considering the significance of condom use during the first sex on YMSM's future practice of safe sexual behaviors, it is of great importance to educate YMSM to understand the benefits of safe sexual practice and the risks involved in unprotected sex during first-time anal intercourse.

There were some limitations in this investigation: (1) this research was a cross-sectional study which was difficult to conduct casual analysis; (2) sampling bias might exist since participants were limited to those who were willing to participate in this study through the recruitment channels. (3) the data was self-reported by participants, hence recall bias may exist; and YMSM was a sensitive population which was against the main stream of Chinese culture, thus social desirability bias may occur.

Conclusions

Our data showed that compared to YMSM who used a condom at the first time, YMSM who did not use a condom during the first-time anal intercourse were more likely to neglect of using

condoms during subsequent sexual behaviors. And YMSM were more inclined to neglect of using a condom during the first-time anal intercourse if they were younger or whose first-time sexual partners were their schoolmates. These findings have important implications for practice and policy. Firstly, YMSM should be provided with sex educations at earlier stage to stress the importance of using a condom at the first time. Secondly, universities and schools in China should provide special educations on YMSM who are students to make them realize the correct and effective protecting method during anal intercourses. At last, it may be effective to conduct sex educations targeting at YMSM *via* internet.

Acknowledgments

This research was supported by a grant from the National Natural Science Foundation of China (NO. 81273135). We extend our appreciation to all study participants and to the Wuhan Xinyuan working group that collaborated on this study.

References

1. Guo Y, Li X, Stanton B. HIV-related behavioral studies of men who have sex with men in China: A systematic review and recommendations for future research. *AIDS Behav* 2011; 15: 521-534.
2. Li Y, Xu J, Reilly KH. Prevalence of HIV and syphilis infection among high school and college student MSM in China: a systematic review and meta-analysis. *PLoS One* 2013; 8: 69137.
3. Chow EP, Wilson DP, Zhang L. Patterns of condom use among men who have sex with men in China: a systematic review and meta-analysis. *AIDS Behav* 2012; 16: 653-663.
4. Senn TE, Carey MP. Age of partner at first adolescent intercourse and adult sexual risk behavior among women. *J Womens Health (Larchmt)* 2011; 20: 61-66.
5. Baldwin P, Shrestha R, Potrepka J, Copenhaver M. The age of initiation of drug use and sexual behavior may influence subsequent HIV risk behavior: A systematic review. *ISRN AIDS* 2013; 2013: 976035.
6. Miller KS, Levin ML, Whitaker DJ, Xu X. Patterns of condom use among adolescents: The impact of mother-adolescent communication. *Am J Public Health* 1998; 88: 1542-1544.
7. Robertson MA. How do I know I am gay? Understanding sexual orientation, identity and behavior among adolescents in an LGBT Youth Center. *Sex Cult* 2014; 18: 385-404.
8. Zheng JD, Pang L, Xu J, Rou KM, Xiao D, Wu ZY. Study on the prevalence of HIV and AIDS-related risky sexual behaviors among male university students who have sex with men In Beijing, China. *Chinese J Epidemiol* 2011; 32: 337-340.
9. Cheng GM, Lv JW, Fang YJ, He JG, Fan YG. Survey on the awareness of AIDS-related knowledge and behaviors among men who have sex with men in different colleges. *Chinese J Dis Contr Prev* 2010; 14: 487-489.

The influence of condom use during the first-time anal intercourse on the subsequent sexual behaviors among young men who have sex with men in China

10. Xu JJ, Reilly KH, Lu CM. A cross-sectional study of HIV and syphilis infections among male students who have sex with men (MSM) in northeast China: implications for implementing HIV screening and intervention programs *BMC Public Health* 2011; 11: 287.
11. Ma QQ, Cong LM, Pan XH. First sexual behavior and the correlated sexual behaviors among male college students. *Chinese J School Health* 2007; 28: 209-211.
12. Song Y, Ji CY, Xing Y, Hu PQ, Chen TJ, Zhang L. Association between age of early sexual debut and high risk sexual behaviors among college students in China. *Chinese J School Health* 2011; 32: 538-540.
13. Finer LB. Trends in premarital sex in the United States, 1954-2003. *Public Health Rep* 2007; 122: 73-78.
14. Li DL, Liang HY, Yang Y. A Survey of initial and factors of homosexual intercourse among men who have sex with men. *J Prev Med Info* 2008; 24: 428-430.
15. Salomon EA, Mimiaga MJ, Husnik MJ, Welles SL, Manseau MW, Montenegro AB. Depressive symptoms, utilization of mental health care, substance use and sexual risk among young men who have sex with men in EXPLORE: Implications for age-specific interventions. *AIDS Behav* 2009; 13: 811-821.
16. Wei S, Zhang H, Wang J. HIV and syphilis prevalence and associated factors among young men who have sex with men in 4 cities in China. *AIDS Behav* 2013; 17: 1151-1158.
17. Warren JC, Fernandez MI, Harper GW, Hidalgo MA, Jamil OB, Torres RS. Predictors of unprotected sex among young sexually active African American, Hispanic, and White MSM: the importance of ethnicity and culture. *AIDS Behav* 2008; 12: 459-468.
18. Darling CA, Davidson JK, Passarello LC. The mystique of first intercourse among college youth: the role of partners, contraceptive practices, and psychological reactions. *J Youth Adolesc* 1992; 21: 97-117.
19. Manlove J, Ryan S, Franzetta K. Patterns of contraceptive use within teenagers first sexual relationships. *Perspect Sex Reprod Health* 2003; 35: 246-255.
20. Liao M, Kang D, Tao X. Alcohol use, stigmatizing/discriminatory attitudes, and HIV high-risk sexual behaviors among men who have sex with men in China. *Biomed Res Int* 2014; 2014: 143738.

***Correspondence to**

Hong Yan

Department of Epidemiology and Health Statistics

School of Health Sciences

Wuhan University

PR China