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Earlier anal sexarche and co-occurring sexual risk are associated with current HIV-related risk behaviors among an online sample of men who have sex with men in Asia

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Abstract

Studies of heterosexual populations across the globe and men who have sex with men (MSM) in a few developed countries showed that earlier sexual debut (sexarche) was associated with higher levels of co-occurring and subsequent HIV risk behaviors. We examined the relationships between earlier anal sexarche, unprotected earlier anal sexarche and current HIV risks among MSM from Asia. A cross-sectional online survey was conducted among MSM (N = 10,826) in Asia in 2010. Bivariate and multivariable logistic regressions were used to identify co-occurring (i.e., sexual experiences during sexarche) and current HIV-related risk factors (i.e., past six months) associated with earlier anal sexarche (before the age of 18) and unprotected earlier anal sexarche, respectively. Earlier anal sexarche was significantly associated with lack of condom use, being anal receptive or both receptive and insertive, and having a partner who were older during sexarche. It was also associated with current HIV-related risk behaviors including having multiple male sexual partners, having been paid for sex, and increased frequencies of recreational drug use. Unprotected earlier anal sexarche was significantly associated with inconsistent condom use in the past the six months. Improved and culturally sensitive sex education at schools should be included in national and regional HIV/AIDS prevention programming and policies in Asia. Such sex education programs should incorporate curriculum that address sexuality, sexual orientation, and sexual behaviors beyond those related to reproductive health.

Keywords

sexual debut; men who have sex with men; sexual behaviors; HIV; Asia

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INTRODUCTION

Recent years have witnessed the rise of human immunodeficiency virus (HIV) infections among men who have sex with men (MSM) in Asian countries [1, 2]. While a large body of literature has examined MSM's recent sexual risk factors for HIV infection (e.g., unprotected anal intercourse with casual male partners or number of male sex partners in the past six months) in these countries [3–7], little attention has been given to these men's sexual experiences during their adolescence or pre-adulthood. One of such early sexual experiences that warrants more attention is earlier sexual debut (sexarche) and its co-occurring risk behaviors (i.e., sexual experiences during sexarche). A recent systematic review of 57 studies from diverse geographic locations and populations found that earlier initiation of sexual behavior was linked with higher levels of co-occurring health risk behaviors including unprotected intercourse [8]. Furthermore, results from these studies suggested that earlier sexarche might be associated with HIV risk behaviors at later points in life [8].

Of all published studies that examined the impact of earlier sexarche, only three focused on MSM and were conducted in high-income or developed countries [9–11]. A study of MSM in Switzerland found that across different birth cohorts of participants, earlier anal sexarche was associated with lack of condom use during that experience [9]. Data collected from a nationwide online survey of Australian gay men showed that men who had their first anal sex at a younger age were more likely to be HIV-positive and have more sexual partners in the past 12 months [10]. Finally, a study of young MSM living with HIV found that participants who were less than 16 at the time of their MSM sexarche were younger when they received their HIV diagnosis, more likely to engage in exchange sex and use drugs in the past 3 months [11]. These studies suggest that among MSM prone to risk taking, it starts early and continues into their adulthood. However, these findings may not be generalizable to Asian MSM due to socio-cultural and structural differences in norms and attitudes toward sex, higher stigmatization of same-sex behaviors in Asia, and more conservative approaches to sex education in the school systems in general.

Understanding HIV-related risk behaviors associated with earlier anal sexarche may have a critical role on the advocacy and development of effective HIV/STI prevention interventions and policies for adolescent and young MSM in Asia. Thus, this study examined the associations between earlier anal sexarche, its co-occurring sexual behaviors, and current HIV risks among an online sample of MSM from Asia. We hypothesized that earlier anal sexarche as well as unprotected earlier anal sexarche would, respectively, be associated with current HIV-related risk behaviors among participants.

METHODS

Study design and recruitment

We analyzed data from a convenience sample of MSM who participated in a cross-sectional online survey (AIMSS: Asian Internet MSM Sex Survey) between January 1st and February 28th, 2010. The survey was implemented by the Asia Pacific Coalition of Male Sexual Health (APCOM), a regional umbrella community-based organization. Participants were

recruited exclusively from two sources: 1) a popular gay-oriented social networking website (Fridae.asia) that has a large presence in Asia. The study advertised the survey through displaying banner advertisements on the website's homepage, pop-up windows and its chat rooms; and 2) more than 40 community partners from 12 different East and Southeast Asian countries, including China, Indonesia, Japan, Malaysia, the Philippines, Singapore, Taiwan and Thailand, emailed their listserv members by providing a link to the survey. Respondents had to be at least 18 years old and self-reported having ever had sex with another man to be eligible for participation. Eligible participants were asked to complete an online informed consent form before proceeding to the questionnaire, which was adapted from the Gay Community Periodic Survey, developed by the National Center in HIV Social Research of the University of New South Wales [12]. In the questionnaire, participants could choose their preferred language as English or nine other Asian languages. Due to the voluntary and anonymous nature of this survey study, no personal identifying information or IP addresses were collected. Also, the study did not provide any incentives for participation. During the two-month period, there were 24,742 MSM who entered the survey and 13,883 (56.15%) of them completed the survey.

Measures

Earlier anal sexarche and co-occurring sexual behaviors—Participants were asked, “At what age did you have anal sex with another male for the first time?” We operationalized earlier anal sexarche as first anal sex with another male before the age of 18. In addition, participants were asked about their experiences during first anal sex: whether their partners were older, about the same age, or younger; their anal sex role (“insertive/top,” “receptive/bottom,” or “both”); and if condom was used.

Current HIV-related risk behaviors—Participants were asked a series of questions about their HIV-related risk behaviors in the past six months, including number of male sex partners, primary place to seek sex partners, having been paid to have sex with other men, frequency of recreational drug use, and condom use during anal intercourse. Details of these measures have been published previously [13]. Socio-demographics and other risk factors

Participant reported their age, employment status, educational attainment, marital status, and sexual orientation. They also self-reported their HIV status and if they were ever tested for HIV.

Data analysis

After excluding participants who did not report anal sexarche with men ($N = 1,567$) and those who did not respond to questions related to their first anal sex experience ($N = 1,494$), the final analytical sample included 10,826 participants. We first tested bivariate association between earlier anal sexarche, a binary categorical variable, and each covariate using logistic regression. Variables that remained significant at 0.1 p -values were included in the multivariable model. To test for independent correlates of earlier anal sexarche, we then constructed a multivariable logistic regression model using a change in estimate backward elimination selection process; factors with greater than 0.1 p -values were dropped from the model. In a separate model, we analyzed the bivariate and multivariable correlates of

unprotected sex during anal sexarche among a subset of men ($N = 2,181$) who reported earlier anal sexarche (i.e., unprotected earlier anal sexarche). The same analytical procedures were used for the second model. All analyses were conducted in SAS version 9.3. The analysis was approved by the University of California – San Francisco’s Committee on Human Research.

RESULTS

Socio-demographic characteristics

Overall, 2,108 (19%) participants in the study reported having anal intercourse before the age of 18 (i.e., earlier anal sexarche). Table 1 shows the frequencies and percentages of socio-demographic and sexual behavioral factors among total participants and the subset of participants who reported earlier anal sexarche. The reported mean age of the total participants was 33.9 ($SD = 9.4$) and the mean age of those who had earlier anal sexarche were 30.5 ($SD = 10.2$), respectively. Their respective mean age at anal sexarche were 21.6 ($SD = 5.5$) and 15.6 ($SD = 1.49$). Trends in descriptive statistics were roughly similar in both sets of participants: a majority of them had university/tertiary education, were single and self-identified as gay. About half of the total participants reported not using a condom during their first anal intercourse. In addition, among those with earlier anal sexarche, 66% reported having not used a condom during anal sexarche and inconsistent condom use in the past six months.

Correlates of earlier anal sexarche

Table 2 presents bivariate and multivariable correlates of earlier anal sexarche. In the bivariate analysis, except for primary place to seek sexual partners, all variables were significantly associated with earlier anal sexarche. In the adjusted model, socio-demographic characteristics that were independently associated with higher odds of earlier anal sexarche were being 18 to 29 years old (AOR: 2.79, 95% CI: 2.33–3.36) as compared to those over 40 years old, and being a student (AOR: 2.51, 95% CI: 1.80–3.50) compared to those who were full time employed. Also, men with none to secondary education (AOR: 1.86, 95% CI: 1.55–2.24) had higher odds of earlier anal sexarche.

In terms of co-occurring sexual behaviors during anal sexarche, earlier anal sexarche was significantly associated with lack of condom use during sexarche (AOR: 2.68, 95% CI: 2.38–3.02), being anal receptive (AOR: 1.45, 95% CI: 1.24–1.68) or both receptive and insertive (AOR: 1.51, 95% CI: 1.25–1.83), and having a partner who were older (AOR: 1.51, 95% CI: 1.33–1.71). Independent current HIV-related risk behaviors (past six months) associated with higher odds of earlier anal sexarche included having six or more male sex partners (AOR: 1.78, 95% CI: 1.51–2.10) or having two to five male sex partners (AOR: 1.31, 95% CI: 1.13–1.52), having been paid for sex (AOR: 1.37, 95% CI: 1.09–1.73), and increased frequencies of recreational drug use (e.g., AOR: 1.85, 95% CI: 1.27–2.70 for “Weekly” use). Finally, self-reported HIV-positive status (AOR: 1.68, 95% CI: 1.28–2.19) was significantly associated with higher odds of earlier anal sexarche.

Correlates of unprotected earlier anal sexarche

Table 3 presents bivariate and multivariable correlates of unprotected earlier anal sexarche. In the bivariate analysis, factors associated with unprotected earlier anal sexarche included older age, being a student, being divorced/separated or married, having a postgraduate degree, having a male partner of older age during sexarche, and inconsistent condom use in the past six months. In the multivariable model, factors independently associated with lower odds of unprotected earlier anal sexarche were being 18 to 29 years old (AOR: 0.19, 95% CI: 0.12–0.29) or 30–39 years old (AOR: 0.31, 95% CI: 0.20–0.48), and having an older male partner during anal sexarche (AOR: 0.46, 95% CI: 0.36–0.48). Finally, inconsistent condom use in the past the six months (AOR: 2.59, 95% CI: 2.08–3.22) was significantly associated with higher odds of unprotected earlier anal sexarche.

DISCUSSION

To the best of our knowledge, this study was the first to examine the associations between earlier anal sexarche, its co-occurring sexual risks and current HIV-related risk behaviors among MSM in Asia. Consistent with previous findings from studies conducted in other countries or regions [8], we found that earlier anal sexarche was associated lack of condom use during anal sexarche and behaviors that conferred higher per contact risk of HIV infection (i.e., being the receptive or both the receptive and insertive partner) among our participants. In addition, earlier anal sexarche was associated with a range of current HIV-related risk behaviors including multiple sex partners, higher frequency of drug use, engagement in exchange sex, and inconsistent condom use with male partners. More importantly, our study provided the first evidence that condom use during earlier anal sexarche was independently associated with recent condom use among MSM. In the MSM literature on sexarche, only one study measured use of condom at first anal experience [9], but did not relate it to recent risk behaviors. On the other hand, the few studies that examined earlier sexarche and recent risk behaviors among MSM did not report use of condom at sexarche [10, 11].

Consistent with trends in sexarche in the general population and MSM in developed countries [9, 10, 14], we found that younger age was associated with earlier anal sexarche, which could be explained by the changing social and cultural norms toward sex in general [15, 16], and easier access for Asian MSM to meet sex partners at younger age (e.g., Internet and emerging gay venues) [17, 18]. Although younger Asian MSM tended to have sexarche at an earlier age, we also found that they were less likely to have unprotected sex during their anal sexarche compared to older participants. This suggests that these younger men may have better knowledge about HIV/AIDS than older MSM. They were more likely to have been exposed to safe sex messages through increased HIV prevention efforts in their respective region during the past several years such as increased access to information related to HIV/AIDS on the Internet. That said, a majority of participants who had earlier anal sexarche did not use condoms during their first anal intercourse. This is similar to current literature on young MSM's HIV vulnerability characterized by sexual-risk taking, substance use, and a range of other psychosocial issues [19–21]. Together, studies of sexarche among samples of older MSM and more recent studies of young MSM call for a

life-course approach to studying HIV vulnerability and intertwined “syndemic” conditions such as mental health and substance abuse that begin early in adolescent and young MSM lives [22, 23].

The present study had several limitations. First of all, our survey’s questions on sexarche was retrospective in nature, hence response was subject to recall bias, particularly among older participants. Secondly, we used a convenient online sample of MSM in Asia so they might not be representative of all Asian MSM populations, as reflected by the high proportion of those who were highly educated and self-identified as gay. Thirdly, no mechanism was implemented to ensure the unique response of each participant, but the lack of incentives should have discouraged multiple participations. Moreover, not all first time sexual experiences are consensual. One study among MSM populations in Thailand found that 54.8% of forced sex occurred before age 18 years and condoms were used only 43.4% of the time [24]. While we did not have this data available to determine the differences in condom use between consensual and forced sexual debut, future studies need to take this into account. Lastly, this was a cross-sectional study, and hence we could not make casual inferences of the observed associations.

In summary, our study showed that both earlier anal sexarche and unprotected sex during earlier anal sexarche might have significant contribution to Asian MSM’s current vulnerability for HIV. As the HIV epidemic among MSM populations in Asia continues to escalate, especially among young MSM [25–27], we advocate that, in addition to carrying out targeted HIV prevention activities at venues where adolescent and young MSM frequent, improved and culturally sensitive sex education at schools should be included in national and regional HIV/AIDS prevention programming and policies because schools provide an important platform to reach MSM at an early age. Such sex education programs should incorporate curriculum that address sexuality, sexual orientation, and sexual behaviors beyond those related to reproductive health. These are important knowledge that will enhance young MSM’s efficacy to determine when and with whom to have their first consensual and safe sexual experience. Furthermore, the World Health Organization have recently released official guidelines and standards on HIV testing and counseling (HTC) for adolescent, however, access to HTC remains a global challenge due to barriers such as parental consent and MSM related disparities [28, 29]. Harper *et al* highlighted that, in the US, only 5% of all HIV prevention and interventions focused on adolescents addressed gay or bisexual identified youth [21]. These individual, community and structural barriers to accessing HIV prevention services and programs for young MSM need to be identified and addressed with global efforts.

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Table 1

Socio-demographic and sexual behavioral characteristics among total MSM participants and those who had anal sexarche with a male partner before the age of 18 in Asia (N = 10,826)

	Total		Anal sexarche before 18 years old	
	N	(%)	N	(%)
Age	10826	--	2108	--
18–29	4055	(37)	1286	(61)
30–39	4355	(40)	502	(24)
40+	2436	(23)	320	(15)
Employment status				
Full time	7825	(72)	1188	(56)
Part-time/Retired	824	(8)	162	(8)
Student	1770	(16)	683	(32)
Unemployed	407	(4)	75	(4)
Education				
None to secondary	992	(9)	296	(14)
Postgraduate	2720	(25)	412	(20)
University/Tertiary	7114	(66)	1400	(66)
Marital Status				
Married to opposite sex partner	457	(5)	47	(2)
Married to same sex partner	962	(9)	204	(10)
Divorced/Widowed	225	(2)	30	(1)
Single	9182	(85)	1827	(87)
Sexual orientation				
Gay	9068	(84)	1747	(83)
Heterosexual/Bisexual	1758	(16)	361	(17)
# of male sex partners, past 6 months				
6+	2679	(25)	635	(30)
2–5	5020	(46)	989	(47)
1	3127	(29)	484	(23)
Primary place to find sex partners				
Internet	7628	(70)	1448	(69)
Bars/dance parties/friends	1482	(14)	302	(14)
Sex clubs/gay saunas/cruising spots	1716	(16)	358	(17)
Have been paid for sex, past 6 months				
Yes	608	(6)	179	(8)
No	10218	(94)	1928	(92)
HIV testing				
Ever	7094	(66)	1429	(68)
Never	3732	(34)	679	(32)
HIV status				
Don't know	4184	(39)	783	(37)

	Total		Anal sexarche before 18 years old	
	N	(%)	N	(%)
<i>Positive</i>	406	(4)	121	(6)
<i>Negative</i>	6236	(57)	1204	(57)
Frequencies of any recreational drug use, past 6 months				
<i>Weekly</i>	176	(2)	60	(3)
<i>Monthly</i>	311	(3)	98	(4)
<i>A few times</i>	1312	(12)	310	(15)
<i>Never</i>	9027	(83)	1640	(78)
Anal sex role during sexarche				
<i>Both insertive and receptive</i>	1731	(16)	357	(17)
<i>Receptive</i>	6111	(57)	1378	(66)
<i>Insertive</i>	2841	(27)	346	(17)
Partner's age during anal sexarche				
<i>Older</i>	6197	(58)	1458	(70)
<i>Same or younger</i>	4400	(42)	620	(30)
Condom use during anal sexarche				
<i>Yes</i>	5300	(51)	681	(34)
<i>No</i>	5042	(49)	1315	(66)
Condom use during anal intercourse, past 6 months				
<i>Always</i>	3843	(41)	640	(34)
<i>Not always</i>	5602	(59)	1262	(66)

Table 2

Bivariate and multivariable correlates of earlier anal sexarche (i.e., before the age of 18) among MSM participants in Asia (N=10,826)

	Unadjusted		Adjusted [†]	
	OR	95% CI	OR	95% CI
Age				
18–29	2.96**	2.56–3.44	2.79**	2.33–3.36
30–39	0.83**	0.70–0.98	0.93	0.78–1.11
40+	Reference		Reference	
Employment status				
Full time	0.78	0.58–1.03	1.14	0.83–1.56
Part-time/Retired	1.09	0.78–1.53	1.44	0.99–2.08
Student	2.62**	1.94–3.53	2.51**	1.80–3.50
Unemployed	Reference		Reference	
Education				
None to secondary	1.85**	1.57–2.18	1.86**	1.55–2.24
Postgraduate	0.72**	0.63–0.82	0.98	0.84–1.13
University/Tertiary	Reference		Reference	
# of male sex partners, past 6 months				
6+	1.69**	1.47–1.95	1.78**	1.51–2.10
2–5	1.28*	1.12–1.46	1.31**	1.13–1.52
1	Reference		Reference	
Primary place to find sex partners				
Internet	Reference			
Bars/dance parties/friends	1.11	0.96–1.30	--	--
Sex clubs/gay saunas/cruising spots	1.13	0.98–1.31	--	--
Being paid for sex, past 6 months				
Yes	1.84**	1.51–2.24	1.37**	1.09–1.73
No	Reference		Reference	
HIV testing				
Ever	1.19**	1.06–1.33	1.83**	1.38–2.42
Never	Reference		Reference	
HIV status				
Don't know	0.93	0.83–1.04	1.15	0.88–1.50
Positive	1.80**	1.42–2.29	1.68**	1.28–2.19
Negative	Reference		Reference	
Frequencies of any recreational drug use, past 6 months				
Weekly	2.22**	1.58–3.12	1.85**	1.27–2.70
Monthly	2.08*	1.60–2.69	1.80**	1.34–2.42
A few times	1.35*	1.16–1.56	1.30**	1.10–1.54

	Unadjusted		Adjusted [†]	
	OR	95% CI	OR	95% CI
<i>Never</i>	Reference		Reference	
Anal sex role during sexarche				
<i>Both insertive and receptive</i>	1.88**	1.58–2.24	1.51**	1.25–1.83
<i>Receptive</i>	2.00**	1.75–2.29	1.45**	1.24–1.68
<i>Insertive</i>	Reference		Reference	
Partner's age during anal sexarche				
<i>Older</i>	1.86**	1.66–2.08	1.51**	1.33–1.71
<i>Same or younger</i>	Reference		Reference	
Condom use during anal sexarche				
<i>Yes</i>	Reference		Reference	
<i>No</i>	2.38**	2.13–2.65	2.68**	2.38–3.02

Note:

*
 $p < .05$;

**
 $p < .01$.

[†]List-wise deletion was used for missing values in the final model iteration (N=8774).

Table 3

Bivariate and multivariable correlates of unprotected sex during earlier anal sexarche among MSM participants in Asia (N=2,181)

	Unadjusted		Adjusted [†]	
	OR	95% CI	OR	95% CI
Age				
18–29	0.20**	0.13–0.29	0.19**	0.12–0.29
30–39	0.34**	0.23–0.52	0.31**	0.20–0.48
40+	Reference		Reference	
Employment status				
Full time	0.89	0.50–1.57	0.84	0.46–1.56
Part-time/Retired	1.31	0.66–2.59	0.92	0.44–1.91
Student	0.52**	0.29–0.93	0.72	0.38–1.33
Unemployed	Reference		Reference	
Education				
None to secondary	1.18	0.89–1.57	1.20	0.88–1.64
Postgraduate	1.49*	1.15–1.93	0.98	0.73–1.31
University/Tertiary	Reference		Reference	
Marital Status				
Divorced/separated	6.45*	1.52–27.41	2.97	0.66–13.34
Married (opposite sex)	2.21*	1.06–4.62	1.21	0.50–2.93
Married (same sex)	1.30	0.93–1.81	0.94	0.66–1.34
Single	Reference		Reference	
# of male sex partners, past 6 months				
6+	1.16	0.88–1.51	--	--
2–5	0.91	0.71–1.17	--	--
1	Reference		--	--
Primary place to find sex partners				
Internet	Reference		--	--
Bars/dance parties/friends	1.11	0.83–1.47	--	--
Sex clubs/gay saunas/cruising spots	1.25	0.95–1.63	--	--
Being paid for sex, past 6 months				
Yes	1.07	0.76–1.50	--	--
No	Reference		--	--
HIV testing				
Ever	0.97	0.78–1.19	--	--
Never	Reference		--	--
HIV status				
Don't know	1.02	0.83–1.26	--	--
Positive	1.49	0.95–2.34	--	--
Negative	Reference		--	--

	Unadjusted		Adjusted [†]	
	OR	95% CI	OR	95% CI
Frequencies of any recreational drug use, past 6 months				
<i>Weekly</i>	1.70	0.88–3.27	--	--
<i>Monthly</i>	1.02	0.65–1.58	--	--
<i>A few times</i>	0.83	0.64–1.09	--	--
<i>Never</i>	Reference		--	--
Anal sex role during sexarche				
<i>Both insertive and receptive</i>	1.09	0.83–1.56	--	--
<i>Receptive</i>	0.92	0.70–1.20	--	--
<i>Insertive</i>	Reference		--	--
Condom use during anal intercourse, past 6 months				
<i>Always</i>	Reference		Reference	
<i>Not always</i>	2.15**	1.76–2.64	2.59**	2.08–3.22
Partner's age during anal sexarche				
<i>Older</i>	0.42*	0.33–0.53	0.46**	0.36–0.58
<i>Same or younger</i>	Reference		Reference	

Note:

* $p < .05$;

** $p < .01$.

[†] List-wise deletion was used for missing values in the final model iteration ($N=1784$).