

ORIGINAL ARTICLE

Hepatitis C prevalence among men who have sex with men attending a gay bathhouse

Sakkarin Chirapongsathorn 

Division of Gastroenterology and Hepatology, Department of Medicine, Phramongkutklao Hospital and College of Medicine, Bangkok, Thailand

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Correspondence

Sakkarin Chirapongsathorn, Division of Gastroenterology and Hepatology, Phramongkutklao Hospital and College of Medicine, 315 Ratchawithi Road, Ratchathewi, Bangkok 10400, Thailand.
Email: sakkarin.chi@pcm.ac.th

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Abstract

Background and Aim: Related research has found that men who visit public sex environments such as a gay bathhouse engage in unprotected anal intercourse and tend to have multiple sexual partners during their visit. We aimed to assess the risk of hepatitis C virus (HCV) transmission among men attending a gay bathhouse.

Methods: A prospective study of the prevalence of HCV among men attending a gay bathhouse was conducted in Bangkok, Thailand, from October 2019 to March 2020. HCV risks and risk perceptions were evaluated using a self-administered questionnaire. HCV testing with result notification was provided on site.

Results: Of the 40 participants (median age 30 years), one subject (2.5%) was positive for HCV antibody. Bathhouse patrons reported engaging in high-risk sexual behavior, including sexually transmitted infection history and Chemsex experience. The subject tested positive for HCV antibody reported a frequency of attending gay bathhouse of around 2–4 times monthly and had multiple partners while attending a gay bathhouse. Only 15% of subjects realized that hepatitis C can be transmitted through sexual intercourse.

Conclusion: Our findings support HCV transmission-reducing guidelines recommending providing selective HCV testing among men who have sex with men (MSM). Bathhouse patrons reported low literacy levels on HCV transmission. Nevertheless, HCV screening should cover a population exhibiting high-risk sexual behaviors such as attending a gay bathhouse.

Introduction

Hepatitis C virus (HCV) infection is a major health concern due to the associated mortality and morbidity rates.¹ Recently, WHO has set aims for HCV elimination by 2030, but estimates show an increase in seroprevalence of acute HCV transmission.² The risk of sexual transmission of HCV remains highly controversial. However, multiple studies have identified cases of sexual transmission among men who have sex with men (MSM).^{3,4} Specific factors have been identified for sexual transmission of HCV among MSM including co-infection with human immunodeficiency virus (HIV), having other sexually transmitted infections (STIs), having sex with multiple partners, engaging in anal sex, using recreation drugs to intensify sex, and sexual practices resulting in damage to the rectal mucosa.^{5,6} HCV has emerged as a sexually transmitted disease among MSM, especially those who are HIV positive.⁷

A gay bathhouse, also known as a gay sauna or a gay steam bath, is a unique commercial venue for MSM. In general,

a gay bathhouse is used to engage in sexual activity rather than only bathing. Bathhouse patrons have reported engaging in high-risk sexual behaviors including having unprotected anal sex and multiple sexual partners.⁸ Bathhouses remain locations for ongoing spread of sexually transmitted diseases and provide opportunities for intervention to reduce risky sexual behaviors among bathhouse attendees. This study aimed to assess the prevalence of sexual behaviors and HCV transmission among MSM attending a bathhouse, using an on-site voluntary counseling and testing (VCT) station.

Methods

Study participants and setting. This study was conducted in Bangkok, Thailand, which is the capital city. The number of MSM in Bangkok has been estimated as between 120 000 and 250 000, accounting for around one-fourth of the MSM population in Thailand.⁹ We established a VCT station in a gay bathhouse administered in cooperation with the Rainbow Sky

Association of Thailand (RSAT), a non-governmental organization (NGO) for MSM in Thailand. The entry fee to the bathhouse was 240 THB (approximately US\$7.19). Eligibility criteria included male subjects, 18 years of age or older, having had sexual intercourse including oral or anal intercourse with another male in the last 12 months, and willingness to participate and provide informed consent. After obtaining informed consent, subjects received face-to-face pre-testing counseling and then HCV testing using a point-of-care HCV antibody test kit (Colloidal Gold, InTec, Xiamen, Fujian China) and HIV testing with an iCare HIV home test kit (JAL Innovation, Singapore) using blood samples from fingerprick. They also completed an anonymous electronic questionnaire using Google Forms (Mountain View, CA, USA). The collected information was entered in a spreadsheet with nonidentified subjects. Those subjects who turned out to be HCV positive by rapid test were then invited to a hospital for HCV antibody and STI testing.

Study design. The questionnaire collected information on sociodemographic details, sexual risk behaviors, HCV and HIV risk awareness, and HIV testing history. Sociodemographic information included date of birth, race, domicile, education level, marital status, STI history, Chemsex experience (i.e. the use of certain substances immediately before or during sexual activities to facilitate/prolong and/or intensify sexual experience), prostitution experience, and prostitution status. Subjects reported whether they had been tested for STI history and self-disclosed their prostitution status during the questionnaire survey. Subjects were also assessed on their knowledge of safer sex practices, HCV, HIV, and acquired immunodeficiency syndrome.

HCV and HIV testing and counseling. All subjects were given face-to-face counseling before testing and on completing informed consent. Subjects waited in the rest area to receive their results, during which the questionnaire was completed. Subjects self-entered their answers in an anonymous electronic questionnaire using Google Forms. HCV testing was performed initially using the HCV antibody test kit, and HIV testing was performed initially using an iCare HIV home test kit. When the initial results were negative, the participant was considered HCV and HIV negative and was given post-test counseling including discussing the possible significance of a window period for recent high-risk sexual behavior. Moreover, counseling emphasized the need to repeat the test for final confirmation and reinforced the behavioral changes needed to prevent HCV and HIV transmission in future including prescription for condoms and avoidance of needle-using behaviors. When the results from either test or both tests were positive or indeterminate, the subject was considered HCV/HIV positive and was referred to a repeat test for final confirmation and receive treatment services. The VCT station was administered by trained staff with an in-charge physician providing pre- and post-test counseling as risk reduction plans.

Statistical analysis. Data were entered in an anonymous electronic questionnaire using Google Forms. Owing to lack of estimate rate of HCV prevalence among MSM in Thailand, the sample size calculation was based on the estimated HIV rate among MSM in Bangkok of 16.5%. The sample size required for

participants undergoing screening totaled 148 subjects to detect this HIV rate at the level of significance of 0.05 and error of 6%. All statistical analyses were conducted using SPSS. Descriptive data are presented in number (percent), median, and interquartile range (IQR). Categorical variables were compared using Pearson's χ^2 or Fisher's exact test as appropriate.

Ethic statement. The investigator collected the data, and the Institutional Review Board of the Royal Thai Army Medical Department approved and monitored the study. All patients had been properly informed and consented to participate in this trial by signing the informed consent form provided by Institutional Review Board of the Royal Thai Army Medical Department Committee. The author had complete access to the study data. All methods were conducted according to the relevant guidelines and regulations by the Institutional Review Board of the Royal Thai Army Medical Department using the Guidelines for Good Clinical Practice: ICH Harmonized Tripartite Guidelines and the Declaration of Helsinki regulations.

Results

Study participants. The sample size required for participants undergoing screening was 148 subjects. However, due to the COVID-19 pandemic, the study was terminated early during the pandemic-induced lockdown in 2020. Bathhouses in Thailand were forced to close for extended periods. All subjects who were approached and participated in the testing between October 2019 and March 2020 were included in the study. During the study period, 40 men were voluntarily recruited. The mean age of the MSM subjects who completed the survey was 29 years (range 20–56 years). Most subjects (50%) were aged 20–25 years, and 70% were homosexual. All subjects were Thai locals, and most were not married with a female (97.4%), and 77.5% were single without any long-term relationship with males. Most participants had a Bangkok household registration (67.5%), and the majority had at least a bachelor's degree (70%) or above (20%). Table 1 summarizes the characteristics of the participants.

Details of sexual behaviors and demographic characteristics. Subjects reported frequent bathhouse visits averaging 2–4 days monthly (47.5%) or more than 4 days monthly (27.5%). Most had more than one sex partner during a bathhouse visit (55%), and most subjects always used condoms during anal intercourse. Most subjects (87.5%) had no report of STIs during the last 12 months, but four subjects (10%) were diagnosed with urethral gonorrhea and four subjects had tattoos. Five subjects (12.5%) had experience with Chemsex including popper (the inhalant drug amyl nitrite), and two subjects had experienced intravenous drug injection. One subject had received a blood transfusion. The highest reported frequency of sexual intercourse was more than once monthly, and 15 subjects (37.5%) had average sexual activity of more than four times monthly. Thirty subjects (75%) had sexual activity with people who were not in a dating or serious relationship, and most (62.5%) had more than one sexual partner. Three participants used to be a sex worker.

Table 1 Characteristics of all participants

Characteristic	n (%)	Behavior	n (%)
Age (year, median, IQR)	25 (22–35)	Number of having sex other than partners within the past month	
		0	10/40 (25)
Education (degree)		1	5/40 (12.5)
Less than bachelor's degree	4/40 (10)	More than 1	25/40 (62.5)
Bachelor's degree	28/40 (70)		
More than bachelor's degree	8/40 (20)		
Income per month (THB)		Tested HIV positive	
15 000 or less	6/40 (15.4)	Yes	1/40 (2.5)
15 000–30 000	15/40 (38.5)	No	39/40 (97.5)
30 000–50 000	10/40 (25.6)		
More than 500 000	8/40 (20.5)	Frequency of attending (per month)	
		1	10/40 (25)
Birthplace		2–4	19/40 (47.5)
Bangkok	27/40 (67.5)	More than 4	11/40 (27.5)
Northern Thailand	6/40 (15)		
Other	7/40 (17.5)	Number of new sexual partners during visit to bathhouse	
		1	18/40 (45)
Marital status		More than 1	22/40 (55)
Single/never married	38/40 (97.4)		
Married	1/40 (2.6)	Condom use	
		Always	32/40 (80)
Have domestic partner		Most of the time	8/40 (20)
Yes	9/40 (22.5)		
No	31/40 (77.5)	Prior HIV testing	
		Yes	31/40 (77.5)
		No	9/40 (22.5)
Sexual orientation		Prior HCV testing	
Gay (homosexual, queer)	28/40 (70)	Yes	14/40 (35.9)
Bi/straight something else	12/40 (30)	No	25/40 (64.1)
		History of STDs within the past year	
		Yes	35/40 (12.5)
		No	5/40 (87.5)
		Using drug with sex within 30 days	
		Never	33/40 (82.5)
		Sometimes	7/40 (17.5)
		Unprotected anal intercourse	
		Yes	19/40 (46.2)
		No	21/40 (53.8)
		Having anal sex	37/40 (92.5)
		Having vaginal sex	8/40 (20)

HCV, hepatitis C virus; HIV, human immunodeficiency virus; IQR, interquartile range; STD, sexually transmitted disease.

Experience of HIV and HCV testing among participants. Thirty-one subjects (77.5%) received an HIV test once or more in the past, and nine subjects (22.5%) were first-time testers. Among repeat testers, 22 subjects (66.7%) were tested because of their high-risk sexual behaviors. One participant became HIV positive and is currently on antiviral treatment.

Fourteen subjects (35.9%) received HCV testing, but only six subjects (15%) realized hepatitis C could be transmitted through sexual intercourse. One participant was HCV positive but never received HCV treatment.

HIV and HCV prevalence among participants. A total of 40 participants were tested for HIV and HCV. Two subjects tested positive for HIV and another subject tested positive for HCV. The subject who was HCV positive reported visiting a gay bathhouse around 2–4 times monthly and had multiple partners while at the bathhouse. He was a bisexual and had multiple sex partners in the last 1 month. Participants were invited to confirm testing and receive further treatment. Among HIV positive subjects, one subject was a known case receiving antiretroviral treatment and one subject was referred to an infection clinic to start treatment. Subjects testing positive for HCV received HCV

genotyping and HCV viral load to confirm the disease and initiate treatment with sofosbuvir/velpatasvir for a 12-week regimen. After completing treatment for 12 weeks, sustained virologic response was achieved. Investigators provided counseling and health education to reinforce safe sex practices and reduce HCV re-infection from high-risk sexual activity after achieving successful treatment.

Discussion

Our study had two key findings. First, bathhouse patrons reported engaging in high-risk sexual behavior including sexually transmitted infection history and Chemsex experience. Second, they reported low literacy levels on HCV transmission, especially that HCV could be transmitted through sexual intercourse. HCV has emerged as an STI among MSM, especially those who are HIV positive.^{10,11} Related studies have shown that gay bathhouse patrons engage in high-risk sexual behaviors and are at risk of STI.^{12,13} Moreover, the number of sexual partners during their visit potentially increases the opportunity to transmit diseases efficiently, especially when there is a rapid turnover of partners, such that having high-risk sexual behavior with multiple partners in a given visit might greatly increase the spread of HIV and HCV. Our small survey revealed the prevalence of HIV and HCV among bathhouse patrons accessing VCT services. The study indicated an HIV prevalence of 5% and HCV prevalence of 2.5% among all MSM tested. Several outbreaks of sexually transmitted HCV among HIV-positive MSM have been reported,^{7,14} and recently acute HCV has been reported among HIV-positive MSM.¹⁵ The recent spread of Chemsex and pre-exposure prophylaxis (PrEP) has also been associated with HCV prevalence.^{15,16} Healthcare providers treating adolescents and adults who are HIV-positive or with high-risk sexual behavior should be alert for their HCV status.

To reduce the risk of sexually transmitted HCV, MSM and bathhouse owners should be informed about the high risk of HCV transmission associated with high-risk sexual behaviors including sharing any sex toy or equipment used for preparing and injecting or snorting drugs. MSM should be advised to use condoms during all sex acts. The venue owners and staff should provide adequate condoms free of charge and promote safer sexual behaviors.

Although PrEP can reduce the risk of HIV transmission, it cannot protect against other STIs, especially against HCV. HIV-positive MSM taking PrEP should receive STI risk reduction counseling and be clear and nonjudgmental about reducing their risk for sexually transmitted HCV and prevent HCV re-infection after HCV treatment.

The study had several limitations. First, our study included a small sample size, and the study was terminated early because of the pandemic-induced lockdown in 2020. Bathhouses in Thailand were forced to close for extended periods. The limitation of small denominator makes it prone to bias. However, we demonstrated the risk of HCV among bathhouse patrons, as well as this venue's possibility to target HCV elimination. Second, the prevalence of self-reported behaviors may be prone to social desirability bias. However, our questionnaire contained sensitive items and were posed to respondents in face-to-face interviews. Therefore, to reduce

bias in participants' answers, we decided to use an anonymous electronic questionnaire, self-reported by participants. Third, we recruited only those patrons who were visiting the VCT during the sampling period. Thus, our data may not represent other patrons not attending the VCT or represent MSM not attending the bathhouse as frequently. Despite these limitations, this study represents descriptions of risky sexual behaviors among patrons of a gay bathhouse. Prevention services should involve collaboration among healthcare organization, bathhouse owners, and the LGBT organizations to provide an effective strategy to reduce the transmission of HIV, HCV, and other STIs.

In conclusion, HCV is an emerging STI among MSM with high-risk sexual behavior. Further studies are needed to evaluate strategies and interventions to improve linkage to HCV prevention and care among MSM in Thailand.

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References

- 1 Cooke GS, Lemoine M, Thursz M *et al.* Viral hepatitis and the Global Burden of Disease: a need to regroup. *J. Viral Hepat.* 2013; **20**: 600–1.
- 2 Dore GJ, Bajis S. Hepatitis C virus elimination: laying the foundation for achieving 2030 targets. *Nat. Rev. Gastroenterol. Hepatol.* 2021; **18**: 91–2.
- 3 Jin F, Matthews GV, Grulich AE. Sexual transmission of hepatitis C virus among gay and bisexual men: a systematic review. *Sex. Health.* 2017; **14**: 28–41.
- 4 Jin F, Dore GJ, Matthews G *et al.* Prevalence and incidence of hepatitis C virus infection in men who have sex with men: a systematic review and meta-analysis. *Lancet Gastroenterol. Hepatol.* 2021; **6**: 39–56.
- 5 Centers for Disease Control and Prevention (CDC). Sexual transmission of hepatitis C virus among HIV-infected men who have sex with men—New York City, 2005–2010. *MMWR Morb. Mortal. Wkly Rep.* 2011; **60**: 945–50.
- 6 Gorgos L. Sexual transmission of viral hepatitis. *Infect. Dis. Clin. North Am.* 2013; **27**: 811–36.
- 7 Urbanus AT, van de Laar TJ, Stolte IG *et al.* Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS (London, England).* 2009; **23**: F1–7.
- 8 Van Beneden CA, O'Brien K, Modesitt S, Yusem S, Rose A, Fleming D. Sexual behaviors in an urban bathhouse 15 years into the HIV epidemic. *J. Acquir. Immune Defic. Syndr.* 1999; **2002**: 522–6.
- 9 van Griensven F, Thienkrua W, McNicholl J *et al.* Evidence of an explosive epidemic of HIV infection in a cohort of men who have sex with men in Thailand. *AIDS (London, England).* 2013; **27**: 825–32.
- 10 Bradshaw D, Matthews G, Danta M. Sexually transmitted hepatitis C infection: the new epidemic in MSM? *Curr. Opin. Infect. Dis.* 2013; **26**: 66–72.

- 11 van de Laar TJ, Matthews GV, Prins M, Danta M. Acute hepatitis C in HIV-infected men who have sex with men: an emerging sexually transmitted infection. *AIDS (London, England)*. 2010; **24**: 1799–812.
- 12 Bingham TA, Secura GM, Behel SK, Bunch JG, Simon PA, MacKellar DA. HIV risk factors reported by two samples of male bathhouse attendees in Los Angeles, California, 2001–2002. *Sex. Transm. Dis.* 2008; **35**: 631–6.
- 13 Woods WJ, Binson D, Blair J, Han L, Spielberg F, Pollack LM. Probability sample estimates of bathhouse sexual risk behavior. *J. Acquir. Immune Defic. Syndr.* 1999; **2007**: 231–8.
- 14 Wandeler G, Gsponer T, Bregenzer A *et al.* Hepatitis C virus infections in the Swiss HIV Cohort Study: a rapidly evolving epidemic. *Clin. Infect. Dis.* 2012; **55**: 1408–16.
- 15 Hoornenborg E, Achterbergh RCA, Schim van der Loeff MF *et al.* MSM starting preexposure prophylaxis are at risk of hepatitis C virus infection. *AIDS (London, England)*. 2017; **31**: 1603–10.
- 16 Pufall EL, Kallan MJ, Shahmanesh M *et al.* Sexualized drug use ('chemsex') and high-risk sexual behaviours in HIV-positive men who have sex with men. *HIV Med.* 2018; **19**: 261–70.